



गुरु घासीदास विश्वविद्यालय, बिलासपुर  
Guru Ghasidas Vishwavidyalaya, Bilaspur



## 1.3.2 List of Value Added Courses with Contents





### Value Added Programme/Diploma Offered

**University : Guru Ghasidas Vishwavidyalaya**

#### **List of Value Added Programme/Course**

Sr. No.	Programme/Course Code	Name of the Programme
<b>Value Added Programmes</b>		
1	CYUATA1	CHEMISTRY IN EVERYDAY LIFE
2	CYUATL1	SCIENCE COMMUNICATION AND POPULARIZATION
3	PSUATA4	HUMAN RIGHTS
4	RTUATA1	ORGANIC FARMING ENGLISH COMMUNICATION / MIL (HINDI COMMUNICATION)
5	RTUATL1 & RTUALL1	HORTICULTURE AND LANDSCAPING
6	ASUCTL3 & ASUCLL3	STATISTICAL PACKAGE FOR SOCIAL SCIENCE IN BIO-SOCIAL SCIENCES
7	LSABU01, LBE01	STATISTICAL PACKAGE FOR SOCIAL SCIENCE
8	HIUATLI	रचनात्मक लेखन
9	HIUATA1	हिंदी व्याकरण और सम्प्रवेश
10	HIUATA2	हिंदी भाषा
11	PPUATL1	ANALYTICAL TECHNIQUES IN PHYSICS
12	ZOUATL1	AQUACULTURE
13	AMUATA2	BASICS OF STATISTICS
14	BTUATA1	BIOTECHNOLOGY AND HUMAN WELFARE
15	BOUDTL4	BOTANICAL GARDEN AND LANDSCAPING



16	SWUATL70	COUNSELING SKILLS FOR SOCIAL WORK PRACTICE
17	COUATA1	CREATIVITY AND ENTREPRENEURSHIP
18	HSUATA1	CULTURAL ECOLOGY: ISSUES AND CONCERN
19		TOURISM: HISTORY AND APPLICATION
20	COUATL1	E-COMMERCE
21	PLUATA1	ELECTRONICS IN DAILY LIFE
22	ESUATA4	ENGLISH COMMUNICATION
23	ESUATA5	ENGLISH LANGUAGE
24	FOUATA1	ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT
25	PSUATA5	FEMINISM: THEORY AND PRACTICE
26	LAIATA5	GENERAL & LEGAL ENGLISH- I
27	FSUATL1	HANDWRITING IDENTIFICATION AND RECOGNITION
28	HSUATL1	UNDERSTANDING POPULAR CULTURE
29	COUATL2	STOCK MARKET OPERATIONS
30	COUATA2	SPIRITUAL MANAGEMENT
31	ESUATL6	SOFT SKILL DEVELOPMENT AND POWERPOINT PRESENTATION
32	AMUATA1	SET THEORY AND LOGIC
33	JMUATA2	RADIO PRODUCTION
34	BTUATL1	PLANT TISSUE CULTURE
35	JMUATA1	PHOTOGRAPHY
36	FOUATL1	NURSERY TECHNOLOGY
37	ENUATA1	NSS AND SOCIAL ECONOMIC DEVELOPMENT
38	SWUATA60	NGO MANAGEMENT
39	PLUATL1	NETWORK CIRCUIT ANALYSIS



40	BOUATA3	MUSHROOM CULTURE TECHNOLOGY
41	ENUATL1	MONEY AND FINANCIAL MARKETS
42	JMUATL2	MEDIA, GENDER AND HUMAN RIGHTS
43	LIUATA1	LIBRARY LITERACY
44	PSUATL6	LEGISLATIVE PROCEDURES IN INDIA
45	AMUATL1	INTRODUCTION TO CRYPTOGRAPHY
46	FSUATA1	INTRODUCTION TO CRIMINALISTICS
47	CIUATA1	INFORMATION COMMUNICATION TECHNOLOGY
48	PPUATA1	INDIAN CONTRIBUTION TO PHYSICS
49	ZOUATA1	HUMAN HEALTH AND SEX EDUCATION
50	CIUATL1	HTML AND INTRODUCTION TO JAVA SCRIPT
51	CAUATA1	SOFT SKILLS
52	CYUATA2	CHEMINFORMATICS
53	CYUATL2	FERMENTATION SCIENCE & TECHNOLOGY
54	FOUATA2	MEDICINAL PLANT & AROMATIC PLANT
55	AEC	WATER REMEDIATION AND CONSERVATION
56	FSUBTA2	FORENSIC RADIOLOGY
57	FSUBTL1	INTRODUCTION TO BIOMETRY
58	PLUATL2	SIMULATION AND DESIGN OF DIGITAL CIRCUIT COMPONENTS
59	PLUATA1	ELECTRONICS IN DAILY LIFE
60	ENUBTL2	ENVIRONMENTAL ECONOMICS
61	ESUBA2	LANGUAGE LEARNING THROUGH LITERATURE
62	SEC 2	PUBLIC POLICY IN INDIA
63	AEC3	INTELLECTUAL PROPERTY RIGHTS AND





		ENTREPRENEURSHIP
64	AMUATA1	SET THEORY AND LOGIC
65	HIUBTA2	हिंदी भाषा : एक सामान्य परिचय
66	BTUBTA1	BIO-MANAGEMENT OF ENVIROMENT
67	JMUBTL2	DOCUMENTARY PRODUCTION
68	CYUBTL1	IPR AND BUSINESS SKILL FOR CHEMIST
69	COUBTA1	BUSINESS COMMUNICATION
70	AMUBTL1	GRAPH THEORY
71	RTUBTL1	HERBAL PRODUCTION TECHNIQUES
72	JMUBTA1	INTRODUCTION TO FILM STUDIES
73	CIUBTL3	INTRODUCTION TO INTERNET OF THINGS
74	CIUBTA1	INTRODUCTION TO JAVA
75	PSUBTL5	MANAGING ELECTION AND ELECTION CAMPAIGN
76	COUBTL1	NEW VENTURE PLANNING AND DEVELOPMENT
77	COUBTL2	PERSONAL TAX PLANNING AND TAX MANAGEMENT
78	BOUBTA	PLANTS IN TRADITIONAL SYSTEM OF MEDICINE
79	SWUBTL2	PROGRAMME MEDIA IN SOCIAL WORK
80	SWUBTA2	SOCIAL ACTION AND SOCIAL MOVEMENTS
81	AMUBTA1	THEORY OF INTERPOLATION
82	COUBTA2	TRIBAL ECONOMICS
83	HIUBTL1	साहित्य और हिंदी सिनेमा
84	AECPP02	PHYSICS FOR SUSTAINABLE FUTURE
85	SECPP02	RENEWABLE ENERGY AND ENERGY HARVESTING



Certificate Courses	
86	CERTIFICATE COURSE IN YOGIC SCIENCE
87	VEDIC WISDOM & LIFE SKILLS
88	BAMBOO WORK ARTISAN
89	FITNESS TRAINER
90	OCCUPATIONAL STANDARD FOR BEAUTY & WELLNESS

**Director**

Internal Quality Assurance Cell  
Guru Ghasidas Vishwavidyalaya  
Koni, Bilaspur (C.G.) 495009



## CHEMISTRY IN EVERYDAY LIFE

### *Learning Objective:*

On completion of this course, the students will be able to:

1. Understand the chemical processes involved in daily life
2. Know the respiration process in terms of chemistry
3. Understand chemicals hazardous for health
4. Understand chemical structures of various vitamins
5. Understand role of minerals in important biological processes.

### **Unit I: Respiration and energy production in human body**

**8 Lectures**

Respiration, Respiratory enzymes, brief outline of hemoglobin and myoglobin, oxygen transport mechanism in body, co-operativity, Respiration in lower animals, hemocyanine, hemerythrin. Energy production in body, ATP; enzyme responsible for food digestion, mechanism of food digestion, active site of cytochrome c-oxidase.

### *Unit II: Chemical aspects of some common health hazards*

**5 Lectures**

Anemia, sickle cell anemia, leukemia, blood pressure irregularity, blood sugar, arthritis, carbon monoxide poisoning in mines, cyanide poisoning, fluorosis etc.

### *Unit III: Vitamins and minerals*

**5 Lectures**

Need for vitamin in body, types of vitamins, water soluble and fat-soluble vitamins, Vitamin B-12, vitamin C (Ascorbic acid), D, Vitamin K. Role of minerals in body, iodine deficiency and remedy.

### **Unit IV: Significance of Radical chemistry in living system**

**10 Lectures**

Radical production in environment, superoxide and peroxide, health impact, action of radicals, cell mutation, diseases caused by free radical, cancer, radical quencher, anti-oxidants, natural anti-oxidants like vegetables, beverages like tea and coffee, fruits. Radical destroying enzymes: superoxide dismutase, catalase, peroxidase, mechanism of action.

### *Unit V: Chemistry of Materials*

**10 Lectures**

Soaps and Detergents – their action, Biofuels – production of biofuels and its utility as alternative fuel source, Fibers: natural fibers, cotton, wool, silk, rayon, artificial fibers, polyamides, acrylic acid, PVC, PVA; Examples of natural biodegradable polymers, cellulose, cellulose acetate, cellophane, soy protein, corn, zein protein, wheat gluten protein, synthetic biodegradable polymers. Use of polymeric materials in daily life.

### **Suggested Laboratory experiments:**

1. Analysis of soaps and detergents.
2. Analysis of Biofuels - flash point, pour point, cloud point
3. Preparation of Nylon 6/6
4. Testing of adulterant in food, oil and vegetable



## SCIENCE COMMUNICATION AND POPULARIZATION

### *Learning outcomes:*

After the completion of this course, the learner will be able to:

1. Identify the need and role of science communication in human development
2. utilize visual media science communication for creating scripts and documentaries
3. Contribute in science popularization through internet communication and public sensitization

### *Keywords:*

Print science, Visual media, Internet communication, Blogs, Outreach talks, Public sensitization

### *Unit I: Print Science Communication*

*9 lectures*

Need for Science Journalism: Science has potential for breaking news, impact on Human life, impact on technology. Role of science and technology in human development. Framing policies at national and international levels. Writing and communicating popular articles effectively, case studies of celebrated works of science communicators including Cosmos by Carl Sagan, works of Bill Bryson, Richard Dawkins, Richard Feynman, Isaac Asimov, Carl Zimmer and Matt Riddley, importance for communication through regional languages.

### *Unit II: Visual Media Science Communication*

*7 lectures*

Science outreach through visual media: Creating science documentaries, creating the outline and expanding, scripts, citing authentic sources, case study: Famous documentaries of Carl Sagan, David Attenborough and Prof. Yashpal

### *Unit III: Internet Science Communication*

*7 lectures*

Science outreach through internet: Social media, Websites, Blogs, Youtube, Podcast etc.

### *Unit IV: Science Outreach Talks and Public Sensitization*

*7 lectures*

Tactics for providing a charismatic and effective public talk, use of metaphors, speaking in context, Science outreach for biodiversity conservation sensitization of public

### *Suggested Readings*

1. Selected works of Carl Sagan, works of Bill Bryson, Richard Dawkins, Richard Feynman, Isaac Asimov, Carl Zimmer and Matt Riddley.
2. Gigante, E. Marie (2018). Introducing Science Through Images: Cases of Visual Popularization (Studies in Rhetoric/Communication), University of South Carolina Press.

### *Course Outcome:*

Graduate will have understanding of:

1. Identify the need and role of science communication in human development
2. Utilize visual media science communication for creating scripts and documentaries
3. Contribute in science popularization through internet communication and public sensitization





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## HUMAN RIGHTS

### HUMAN RIGHTS

#### Course Objective:

The purpose of the course is to build conceptual understanding in students about human rights and enable them to critically examine key issues and areas often talked about in human rights discourses. Apart from state actors and institutions, agencies and law associated with them, which occupy the central place is discussion, the module also engages with social, religious, political and economic ideologies which unleash several critical issues pertaining to human rights. Thus, it is not the conflict zones but industrialization and pursuit of political and religious hegemony also throw serious human rights challenges.

#### Learning Outcomes:

- a. The student will be able to explain the meaning of human rights and examine human rights issues in different social, political and cultural contexts.
- b. The students will be able to relate human rights with other rights of individuals.
- c. They will come to know how ideologies which seek to create hegemony; religious or political, pose threats to the human rights of individuals.
- d. Students will be able to examine and explain issues of human rights when state and its agencies apply the methods and techniques of surveillance, interrogation and counter-terrorism operations.
- e. They will come to know about the human rights of the armed forces.

#### Unit I: Introduction to Human Rights

- a. Meanings of Human rights and its correlation with other rights
- b. Institutionalization of Human Rights: Universal Declaration of Human Rights

#### Unit II: Conflict Zones, Violence and the Issues in Human Rights

- a. Terrorism, Police Encounter and Human Rights

#### Unit III: Human Rights Discourses in India

- a. Gender, Caste and Untouchability
- b. Industrialization, Displacement and Land questions

#### Readings:

- Aggarwal, G. P. et al. (2013). *Human Rights in Changing Times*. UK: Cambridge Scholars Publishing.
  - Hoffman, J., & Graham, P. (2006). 'Human Rights', *Introduction to Political Theory*. Delhi: Pearson, pp. 436-458.
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## ORGANIC FARMING

Course Title: ORGANIC FARMING		
Course Code: RTUATA1	Credit: 01	Marks:100

### Learning outcomes

On completion of the this course, the students would be able to

- Understand the concepts of organic farming and disseminate the knowledge about organic farming among the farmers to overcome the threat of excess use of chemical fertilizer and pesticide.
- Understand about different components of organic farming and produce organic crop.

Organic farming- meaning, concept, definition, types of organic farming and benefits of organic farming. Principle of organic farming. Scope and present status of organic farming; India and Chhattisgarh.

Components of Organic farming –organic manure, green manure, animal based manure, agro industry based manure, crop rotation, biological management, Bio-fertilizers.

Organic crop management through – integrated pest management (IPM), integrated disease management (IDM), integrated nutrient management (INM), integrated water management (IWM), integrated weed management (IWM).

Organic crop production practice in - Rice, Wheat, Pigeon pea, plantation crops like Mango and Guava.

Organic farming Certification- Policies and incentive of organic production, Agencies and institution related to organic farming, procedures of certification for organic farming.

Course Title: LABORATORY COURSE BASED ON THEORY		
Course Code: RTUALA1	Credit:01	Marks:100

1. To study the components of organic farming.
2. To study the production methods of organic manures.
3. To study the methods of application of organic manures.
4. To study the IPM, IDM, IMM and IWM for organic farming.
5. To study the certification process of organic farming



## HORTICULTURE AND LANDSCAPING

Course Title: HORTICULTURE AND LANDSCAPING		
Course Code: RTUATL1	Credit: 02	Marks:100

### Learning outcomes

On completion of this course, the students will be able to:

- Understand the knowledge about horticulture practices and its importance.
- Learn detail information of orchard establishment and management will be able to disseminate this knowledge to the farmers.
- Adopt horticulture as entrepreneurship.

Horticulture: Concept, scope, definition, economic importance and classification of horticultural crops, fruit and vegetable zones of India, exports and imports opportunities, Government schemes / programs related to horticulture and landscaping.

Establishment of orchard: site selection, principles, planning and layout of orchard, tools and implements. Management of orchard-Planting systems, training and pruning, nutrient, water, weeds, and pests management in orchard trees. Cultivation practices of major fruit crops-Citrus fruits, papaya, banana, ber, Guava and Mango.

Fundamental of Floriculture, Scope and importance of floriculture in India, Importance and production technology of cut flowers and loose flowers. Production techniques of ornamental plants like rose, marigold, chrysanthemum, gladiolus, jasmine, dahlia, tuberose and gerbera.

Landscaping: Principles and components, landscape designs, Styles of garden: formal, informal and free style gardens; types of landscape: Urban landscaping, bio-aesthetic planning, eco- tourism, theme parks, indoor gardening.

Plant components for landscaping: Lawns-Establishment and maintenance, Plants- herbs, annuals, hedges, climbers and creepers, cacti and succulents, flower borders and beds, ground covers, carpet beds, bamboo groves.





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## **STATISTICAL PACKAGE FOR SOCIAL SCIENCE IN BIO SOCIAL SCIENCES**

### **Course Objectives**

- The course is designed to provide the basic concept of SPSS software.
- To study the types of variables, data presentation & summarization.
- To understand descriptive statistics & solving statistical problems.

### **Syllabus Contents**

- Unit I: Descriptive statistics: Types of variables
- Unit II: Measures of Central Tendency,
- Unit III: Measures of dispersion
- Unit IV: Frequency Distribution: Histogram, Bar graph, Pie Chart, Polygraph
- Unit V: Test of Inference

### **Suggested Readings**

1. B.L. Agarwal. Basic Statistics. New Age International Publishers. Fourth Edition, 2006.
2. Fox and Alan. Elementary Statistics in Social Research. Gian Publishing House,
3. Sunder Rao, P.S.S. et al. An introduction to Biostatistics & Research Method. New Arrivals-PHI
4. Wackerly Dennis D, Mendelhall III, Wiliam et al. Mathematical Statistics with application Duxbury Press, Pacific Grove.
5. Gaur AS, Gaur SS. Statistical Methods for Practice and Research. A guide to data analysing using SPSS. SAGE Response, New Delhi, India, 2009.
6. Sunder Rao, P.S.S. et al. An introduction to Bio-statistics & Research Method. New Arrivals-PHI.
7. Conover W.J. Practical Nonparametric Statistics. Third Edition. Wiley India (P) Ltd. Ansari Road, Daryaganj, New Delhi. 1999.

### **Course Outcomes**

- Understand different variables, summarization & presentation of data.
  - Understand textual, tabular & graphical illustration of data.
  - Students will be able to use the knowledge in solving statistical problems
  - Meaningful research inferences and conclusion can be drawn by students.
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**Statistical Package for Social Science (SPSS)**

**Paper Code- LS/ANT/SEC-301**

**Credit-2**

Presentation and summarization of data: Types of variables and Data presentation (tabulation, illustration)

Test of Inference: Chi-Square Test, Students't' test, ANOVA, Z score.

Correlation: Coefficient of Co-variation, Coefficient of Correlation

**Practical**

Descriptive statistics & Solving Statistical problems: Measures of Central Tendency, Frequency Distribution: Histogram, Bar graph, Pie Chart, Polygraph

**Suggested Readings**

1. B.L. Agarwal. Basic Statistics. New Age International Publishers. Fourth Edition, 2006.
  2. Fox and Alan. Elementary Statistics in Social Research. Gian Publishing House,
  3. Sunder Rao, P.S.S. et al. An introduction to Biostatistics & Research Method. New Arrivals-PHI
  4. Wackerly Dennis D, Mendelhall III, Wiliam et al. Mathematical Statistics with application Duxbury Press, Pacific Grove.
  5. Gaur AS, Gaur SS. Statistical Methods for Practice and Research. A guide to data analysing using SPSS. SAGE Response, New Delhi, India, 2009.
  6. Sunder Rao, P.S.S. et al. An introduction to Bio-statistics & Research Method. New Arrivals-PHI.
  7. Conover W.J. Practical Nonparametric Statistics. Third Edition. Wiley India (P) Ltd. Ansari Road, Daryaganj, New Delhi. 1999.
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## रचनात्मकलेखन

### रचनात्मक लेखन

पाठ्यक्रम संख्या : HIUATL1

#### ❖ रचनात्मक लेखन : स्वरूप एवं सिद्धांत

- जनभाषा और लोकप्रिय संस्कृति
- लेखन के विविध रूप : मौखिक-लिखित, गद्य-पद्य, कथात्मक-कथेतर, नाट्य-पाठ्य

#### ❖ विविध विधाओं की आधारभूत संरचनाओं का व्यावहारिक अध्ययन

- क. कविता : संवेदना, काव्यरूप, भाषा-सौष्ठव, छंद, लय, गति और तुक  
ख. विविध गद्य-विधाएँ : कहानी, नाटक, निबंध, संस्मरण और व्यंग्य  
ग. बाल साहित्य की आधारभूत संरचना

#### ❖ सूचना-तंत्र के लिए लेखन

- प्रिंट माध्यम : फीचर-लेखन, यात्रा-वृत्तांत, साक्षात्कार, पुस्तक-समीक्षा
- इलेक्ट्रॉनिक माध्यम : रेडियो, दूरदर्शन, फिल्म पटकथा लेखन, टेलीविजन

#### संदर्भ सूची :

1. आस्था और सौन्दर्य – डॉ. रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
2. भवन्ती – अज्ञेय, हिन्दी साहित्य सम्मेलन, प्रयाग, इलाहाबाद
3. एक साहित्यिक की डायरी- गजानन माधव मुक्तिबोध, भारतीय ज्ञानपीठ, नई दिल्ली
4. हिन्दी स्वरूप और संवेदना का विकास- रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद
5. एक कवि की नोटबुक – राजेश जोशी, राजकमल प्रकाशन, नई दिल्ली
6. कविता का जनपद – अशोक बाजपेयी, राधाकृष्ण प्रकाशन, नई दिल्ली
7. मंडी में मीडिया – विनीत कुमार, वाणी प्रकाशन, नई दिल्ली
8. हिन्दी पत्रकारिता- कृष्ण बिहारी मिश्रा, प्रभात प्रकाशन, दिल्ली



## हिंदी व्याकरण और सम्प्रेषण

पाठ्यक्रम संख्या : HIUATAI

- हिंदी व्याकरण एवं रचना - संज्ञा, सर्वनाम और विशेषण। उपसर्ग, प्रत्यय तथा समास। पर्यायवाची शब्द, विलोम शब्द, अनेक शब्दों के लिए एक शब्द, शब्द शुद्धि, वाक्य शुद्धि, मुहावरे और लोकोत्तियां।
- सम्प्रेषण की अवधारणा और महत्व
- सम्प्रेषण के प्रकार एवं माध्यम
- सम्प्रेषण की तकनीक
- सम्प्रेषण के चरण : श्रवण एवं अभिव्यक्ति

### संदर्भ सूची :

1. हिन्दी व्याकरण- कामता प्रसाद गुरु, प्रभात प्रकाशन, दिल्ली
2. हिन्दी अनुशासन- विशोरी प्रसाद वानपेयी, नागरी प्रचारिणी सभा, काशी
3. अच्छी हिन्दी – रामचन्द्र वर्मा, साहित्य रत्नमाला, बनारस
4. आधुनिक हिन्दी व्याकरण और रचना – वसुदेव नन्दन प्रसाद, भारती भवन प्रकाशन, पटना
5. सामान्य हिन्दी – ओंकारनाथ शर्मा, अरिहंत प्रकाशन, मेरठ



## हिंदी भाषा

पाठ्यक्रम संख्या : HIUATA2

### भाषा एवं रचना :

हिंदी ध्वनियों का सामान्य परिचय, ध्वनि-परिवर्तन, ध्वनि परिवर्तन के कारण, हिंदी में आगत विदेशी ध्वनियाँ।

### साहित्य-खंड (गद्य) :

पंच परमेश्वर	:	प्रेमचंद
फूलों का कुर्ता	:	जयपाल
भोलाराम का जीव	:	हरिशंकर परसाई

### साहित्य-खंड (काव्य) :

हिमाद्री तुंग शृंग से...	:	जयशंकर प्रसाद
आओ-आओ जलद-जलद पैर बाँधो	:	सूर्यकांत त्रिपाठी निराला
पदिए गीता	:	रघुवीर सहाय

### संदर्भ सूची :

1. भाषा और समाज – डॉ. रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
2. भाषा विज्ञान- भोलानाथ तिवारी, किताब महल, दिल्ली
3. कहानी : स्वरूप और संवेदना – राजेंद्र यादव, वाणी प्रकाशन, नई दिल्ली
4. विवेक के रंग – देवी शंकर अवस्थी, भारतीय ज्ञानपीठ, नई दिल्ली
5. कहानी : नई कहानी – डॉ. नामवर सिंह, लोकभारती प्रकाशन, इलाहाबाद
6. कुछ कहानियाँ कुछ विचार – विद्यानाथ त्रिपाठी, राजकमल प्रकाशन, नई दिल्ली
7. छायावाद- डॉ. नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
8. राग-विराग- डॉ. रामविलास शर्मा, राधाकृष्ण प्रकाशन, नई दिल्ली
9. कविता के नए प्रतिमान - डॉ. नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली





## Analytical Techniques in Physics

Course Code: SECPP01

### Course Objective

- The course focuses on the properties, functions of the internal structure, and arrangement of atoms in a crystalline material. It offers an insight into how x-ray diffraction, can solve crystallographic issues related to single and poly-crystalline material, right from the base. This course will also cover the basic principles and techniques of scanning electron microscopy and Atomic Force microscopies along with demonstrations on the instrument details and imaging experiments. The sample preparation techniques

for the microstructural analysis and surface Morphology analysis will be discussed. Structural studies by Fourier transform IR (FTIR) and Raman spectroscopies will be discussed.

### Course learning outcomes:

- Students will have achieved the ability to: 1. apply appropriate characterization techniques for microstructure examination at different magnification level and use them to understand the microstructure of various materials 3. Determine crystal structure of specimen and estimate its crystallite size by X-ray Diffraction technique 4. Use appropriate spectroscopic technique to measure vibrational / electronic transitions.

**Unit – I: Structure and Microstructure analysis by X-ray and electron diffraction:** The geometry of crystals and reciprocal lattice, Basics of x-rays and their production and detection, X-ray diffraction, Determination of crystal structure: Qualitative and quantitative analysis, Particle size determination by x-rays, X-rays and stress analysis,

**Unit – II: Scanning electron microscopy techniques and Composition analysis by Energy dispersive X-ray (EDX):** Introduction to Scanning electron microscopy, Basic principles and components, Different examination modes (Bright field illumination, Oblique illumination, Dark field illumination, Phase contrast, Instrumental details and image formation, Energy-dispersive x-ray spectroscopy (paired with scanning electron microscopy) analysis to gain elemental information about samples.

**Unit – III: Structural studies by Fourier transform IR (FTIR) and Raman spectroscopies:** Basics of Fourier Transform Infrared (FT-IR) spectrometry, Different regions in infrared radiations, Modes of vibrations in diatomic molecule, characteristic absorption bands, Instrumental details, Qualitative treatment of Rotational Raman effect, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, Instrumental details & data accusation process.

**Unit – IV: Ultra-violet and Visible Absorption Spectroscopy:** Principle of UV Spectroscopy, Beer's Law and Quantitation, Deviations and limitations to Beer's Law, Instrumentation for UV-VIS spectroscopy i) Components and design ii) Actual commercial instruments, Methods and applications of absorption spectroscopy

### Reference Books:

- Li, Lin, Ashok Kumar Materials Characterization Techniques Sam Zhang; CRC Press, (2008).
- Cullity, B.D., and Stock, R.S., "Elements of X-Ray Diffraction", Prentice-Hall, (2001).
- Murphy, Douglas B, Fundamentals of Light Microscopy and Electronic Imaging, Wiley-Liss, Inc. USA, (2001).

SEC -1: Analytical Techniques in Physics Lab

Credits = 1 (0+0+1)

Course Code: SECPP01

- Study X-ray diffraction for the purpose of (a) identifying (cubic) crystal systems, (b) determining the lattice constant, a,
- Study scanning electron microscopy (SEM) technique to obtain real space atomic resolution images of conductive surfaces, Energy-dispersive x-ray spectroscopy (paired with scanning electron microscopy) analysis to gain elemental information about samples.
- Observation and analysis of a given Spectra to understand IR & Raman spectroscopy. .
- Study Ultra-violet and Visible Absorption Spectroscopy for finding the bandgap of a given sample. (Only Data Analysis)



## AQUACULTURE

### About the course

This course will give the students an understanding of the principles of aquaculture, including production systems, water quality, nutrition, spawning, larval culture and culture methodologies with special reference to fish, and prawn. The course will include an opportunity to conduct hands-on activities related to culture and husbandry of animals

### Learning outcomes

After completing this course the learners will be able to

- understand the aquaculture systems
- Understand conditioning factors and how they can be manipulated
- Describe water depuration mechanisms
- Understand the environmental impacts of aquaculture

### Theory

#### Unit I: Freshwater aquaculture systems

Aquaculture concept, Culture systems: Freshwater prawn culture, fish culture in paddy fields, Brackish water culture, Mariculture: Oyster culture, Crab culture, Lobster culture, mussel culture, culture of Eels, Culture of aquatic weeds. Composite fish culture: Definition and various patterns. Mixed fish farming in India. Techniques of composite culture. Culture of buffalo fish ..Culture of Catfishes. Culture of miscellaneous fishes. Cray fish culture.

#### Unit II: Preparation and management of fish culture ponds

Nursery ponds. Predatory and Weed fishes and their control. Fish toxicants. Fertilization. Aquatic insects and their control. Fish food organisms and their production. Supplementary feeding. Transport of fish seed and Brood fish. Causes of mortality in transport. Methods for packaging and transport. Open systems. Closed systems. Use of chemicals in live fish transport. Anesthetic drugs. Antiseptics and Antibiotics.

#### Unit III: Fish pathology

Parasitic infections. Fungus infections. Protozoan diseases. Bacterial diseases. Worm diseases. Non parasitic diseases. Rearing ponds, Stocking ponds. Fish breeding: Natural and artificial. Harvesting: Fishing techniques, preservation & processing of fish. Fresh water prawn culture. Introduction. Breeding characteristics. Juvenile prawn migration. Seasonal & regional distribution of seeds. Identification of juveniles. Controlled breeding. Culture: Ponds, Monoculture. Mixed culture.

#### Unit IV: Technologies in Fisheries development

Role of hard water in culture of Macrobrachium species. Fertilization & feeds. Pearl culture: Introduction, Pearl producing mollusks, pearl formation, collection of oysters, Rearing of oysters, insertion of nucleus, harvesting of pearls, composition & quality of pearl. Recirculation technology, Geographic Information System (GIS) technology, passive Acoustics in fisheries, Use of Information Communication Technology (ICT) in fishes: production aspects, marketing aspects.

### Recommended readings

1. Jingran, V. G. (1983) Fish and fisheries of India, Hindustan pub. corp. New Delhi.
2. Hute, M. and Kahn, H. (2000) Textbook of fish culture, Blackwell Scientific Publication, Australia.
3. Srinivasulu, M., Reddy, K.R.S., Rao, S. (1999) Text book of Aquaculture, Discovery Publishing House New Delhi.
4. Yawn Mehta, Fisheries & Aquaculture Biotechnology (2011) Campus Books International, Prahalad street, Ansari Road, Durga Ganj, New Delhi.

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**BASICS OF STATISTICS**

**Paper Code: AMUATA2**

**BASICS OF STATISTICS**

**Course Learning Outcomes:** This course will enable the students to:

1. Explain the basic ideas of measures of central tendency, dispersion and their applications.
2. Adapt the knowledge of various Probability distributions and their applications.
3. Apply statistical techniques for sampling of big data.
4. Explain a formulation helping to predict one variable in terms of the other that I, correlation and linear regression.

**Unit-1: Review on Probability**

Measures of Central Tendency, Measures of Dispersion, Probability, Conditional Probability, Random Variables, Expected Value, Moment generating function, Probability Distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

**Unit-2: Sampling Methods**

Random Sampling and Methods of Samplings, Sampling distribution and standard error, Sampling distribution of the Sample Mean, Central limit theorem, Sampling distribution of the sample proportion, Sampling distribution of the difference between two sample means and Sampling distribution of the difference between two sample proportions.

**Unit-3: Correlation and Regression**

Correlation Karl Pearson's Coefficient of correlation, Rank correlation, linear regression, Lines of regression, Inferences concerning the regression coefficients.

**References:**

1. S. C. Gupta and V. Kapoor, Fundamentals of mathematical Statistics, Sultanchand and Son's, New Delhi.
  2. Robert V. Hogg, Joseph W. McKean & Allen T. Craig(2013), Introduction to Mathematical Statistics( 7<sup>th</sup> Edition), Person Education.
  3. Irwin Miller & Marylees Miller (2014). *John E. Freund's Mathematical Statistics with Applications* (8th edition). Pearson. Dorling Kindersley Pvt. Ltd. India. Jim Pitman (1993). *Probability*, Springer-Verlag.
  4. Sheldon M. Ross (2014). *Introduction to Probability Models* (11th edition). Elsevier.
  5. A. M. Yaglom and I. M. Yaglom (1983). *Probability and Information*. D. Reidel Publishing Company. Distributed by Hindustan Publishing Corporation (India) Delhi.
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## **BIOTECHNOLOGY AND HUMAN WELFARE**

### **Biotechnology and Human Welfare**

**CREDITS: 2**

#### **Course Objective**

The objective of this course is to introduce the scope of biotechnology for human welfare.

#### **Course Learning Outcomes**

Learning outcomes on completion of this course the students will be able to;

- Understand industrial biotechnology related techniques.
- Understand agriculture and environmental biotechnology related techniques.
- Understand forensic science related technique
- Understand molecular diagnosis techniques.

#### **Course contents**

##### **Unit I**

Industry: protein engineering; enzyme and polysaccharide synthesis, activity and secretion, Enzyme immobilization: methods and application.

##### **Unit II**

Agriculture and Environments: Plant Tissue culture, N<sub>2</sub> fixation, transgenic plants: insect resistance, bacterial/ fungal stress tolerance, drought/salt tolerance, bioremediation, biofertilizers, biopesticides, biofuels and bioleaching.

##### **Unit III**

Forensic science: solving violent crimes such as murder and rape; solving claims of paternity and theft etc. using various methods of DNA finger printing, Polymerase chain reaction, Restriction fragment length polymorphism.

##### **Unit IV**

Health: development of non- toxic therapeutic agents, recombinant live and DNA vaccines, gene therapy, Molecular diagnosis: (monoclonal antibodies, DNA probes, Microarrays), transgenic animals.

#### **Suggested Reading**

1. Sateesh MK Bioethics and Biosafety, I. K. International Pvt Ltd.
  2. Sree Krishna V Bioethics and Biosafety in Biotechnology, New age international publishers
  3. Gupta, Elements of Biotechnology
  4. Dubey, T. B. of Biotechnology
  5. Kumar H. Modern Concept of Biotechnology
  6. Jogdand, Advances in Biotechnology
  7. Chatwal, T. B. of Biotechnology
  8. Primrose, Molecular Biotechnology
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## **BOTANICAL GARDEN AND LANDSCAPING**

### **Botanical Garden and landscaping**

L	T	P	Cr
2	0	0	2

#### **Learning outcomes:**

After the completion of this course the learner will be able to:

- Apply the basic principles and components of gardening
- Conceptualize flower arrangement and bio-aesthetic planning
- Design various types of gardens according to the culture and art of bonsai
- Distinguish between formal, informal and freestyle gardens
- Establish and maintain special types of gardens for out door and indoor landscaping

#### **Keywords:**

Gardening, Landscaping, Flower arrangement, Vertical gardens, Roof gardens, Computer aided designing

#### **Unit I**

**8 lec**

Principles of gardening, garden components, adornments, lawn making, methods of designing rockery, water garden, etc. Special types of gardens, their walk-paths, bridges, constructed features. Greenhouse. Special types of gardens, trees, their design, values in landscaping, propagation, planting shrubs and herbaceous perennials. Importance, design values, propagation, planting, climbers and creepers, palms, ferns, grasses and cacti succulents.

#### **Unit II**

**7 lec**

Flower arrangement: importance, production details and cultural operations, constraints, post-harvest practices. Bio-aesthetic planning, definition, need, round country planning, urban planning and planting avenues, schools, villages, beautifying railway stations, dams sites, hydroelectric stations, colonies, river banks, planting material for playgrounds.

#### **Unit III**

**8 lect**

Vertical gardens, roof gardens. Culture of bonsai, art of making bonsai. Parks and public gardens. Landscaped designs, Styles of garden, formal, informal and freestyle gardens, types of gardens, Urban landscaping, Landscaping for specific situations, institutions, industries, residents, hospitals, roadsides, traffic islands, dams sites, IT parks, corporate.

#### **Unit IV**

**7 lect**

Establishment and maintenance, special types of gardens, Bio-aesthetic planning, eco-tourism, theme parks, indoor gardening, therapeutic gardening, non-plant components, water scaping, xeriscaping, hardscaping; Computer Aided Designing (CAD) for outdoor and indoor scaping Exposure to CAD (Computer Aided Designing)



## **COUNSELLING SKILLS FOR SOCIAL WORK PRACTICE**

### **Course Objective:**

1. Counselling is a chance to work with a professional counsellor to make positive changes in your life.
2. Counselling can help you to sort through thoughts and feelings in a safe environment, and to find strategies to help you cope with difficult situations.

<b>Title of Paper: COUNSELLING SKILLS FOR SOCIAL WORK PRACTICE</b> <b>UNIT- I</b>	<b>Meaning of Counseling</b> <ul style="list-style-type: none"> <li>Counseling –Meaning ,Definition, goals and Objectives; counseling process, stage of counseling</li> <li>Counseling situations :Developmental, preventive, facilitative, crisis; general factors and their influences on counseling</li> </ul>
<b>UNIT-II</b>	<b>Process and Principle</b> <ul style="list-style-type: none"> <li>Processes of counseling</li> <li>Basic Principles of Counseling</li> </ul>
<b>UNIT-III</b>	<b>Individual and Group Counseling</b> <ul style="list-style-type: none"> <li>Individual counseling: Client as a person(Client system as a unit), voluntary and non-voluntary, expectation, Behavior, communication-verbal and non verbal; couple and family counseling</li> <li>Counseling for group: process, advantages and disadvantages; crisis counseling with bereavement affecting communities.</li> </ul>
<b>UNIT-IV</b>	<b>Approaches and Techniques</b> <ul style="list-style-type: none"> <li>Approaches to counseling: person centered, rational emotive, transactional analysis,</li> </ul>

	behavioral approaches, gestalt, existential approaches, egan's three stage model, eclectic model <ul style="list-style-type: none"> <li>Techniques of counseling: initiating contact, intact, rapport-establishing, structure, interaction. attending behavior , observation, responding, rating and its interpretation</li> </ul>
<b>UNIT-V</b>	<b>Application of Counseling</b> <ul style="list-style-type: none"> <li>Counseling in Social Work Practice; Social Worker as a Counselor</li> <li>Application of Counseling in various setting</li> </ul>





## CREATIVITY AND ENTREPRENEURSHIP

**Objective:** The course aims to enable learners to explore approaches used by managers and organizations for creating and sustaining high levels of innovation.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Analyze the creative thoughts of renowned personalities in the past and its contribution towards the success and shortcomings of business model;
2. Generate Innovative idea for business and defend/ justify the same;
3. Interpret the Business Competence achieved by various organisations by using the Innovative Business Model;
4. Describe the significance of Innovative Leadership;
5. Analyze patents already granted in their field of interest and make a case with innovative idea for filing a new patent.

### COURSE CONTENTS:

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<b>Introduction</b> Meaning & Concept of Creativity; Creativity Process; Nature & Characteristics of Creativity and Creative Persons; Factors affecting Creativity; Recognizing and Avoiding Mental Blocks; Thinking Preferences; Risk Taking; Creativity Styles; Creative Thinking Tools; Innovation vs Creativity.	20	✓	
Unit - 2	<b>Idea Generation &amp; Creativity in Problem Solving</b> Ideation; Pattern Breaking Strategies; Mind stimulation: games, brain-twisters and puzzles; Idea-collection processes: Brainstorming/Brain-writing.	20	✓	✓
Unit - 3	<b>Innovation Management</b> Invention and Discovery- Process and Typology; Methods and Techniques; Arenas of Innovative Competence; Categories of Innovation: Product, Process, and Service Finance (Venture Capital, Angel Investors).	20	✓	
Unit - 4	<b>Setting the Right Ecosystem for Innovation</b> The Essence of Right Ecosystem; Intrinsic Motivation & Extrinsic Motivation; Leadership Styles fostering Innovation; Creating Self-Sustaining Culture of Innovation.	20	✓	✓
Unit - 5	<b>Intellectual Property</b> Introduction to intellectual property: Patents (novel, useful, and not obvious), Copyrights, Trademarks.	20	✓	✓

### Practical Exercises:


The learners are required to:


1. Identify a creative person to comprehend, study, analyze, and present a report highlighting the contribution of his/her creative work.
2. Generate a creative idea for business and present the same in the class for critical evaluation by other learners regarding its uniqueness and feasibility.
3. Identify an Innovative Business Model (like Amazon, Redubs, Flipkart, Ola, Uber, Big Basket, Zomato, Swiggy, etc.) used by an organisation recently and present a report on Business Competence achieved by it.
4. Analyze the case study on Innovative Leader like Steve Jobs who launched Apple's iPod & iPhone or any other case study on innovation and present a report on the key learnings.
5. Select an aspect (in the field of their interest) on which patent has been granted already and think of an innovative idea so that it makes a case for filing a new patent application.

### Suggested Readings:

1. Harvard Business Essentials. (2003). Managing Creativity and Innovation. Boston: Harvard Business School Publishing.
2. Prather, C. (2010). The Manager's Guide to Fostering Innovation and Creativity in Teams. New York: McGraw-Hill Education.

**Note:** Learners are advised to use the latest edition of textbooks.

  
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## **CULTURAL ECOLOGY: ISSUES AND CONCERNS**

### **Paper - I (HSUATA1): Cultural Ecology: Issues and Concern**

Learning outcomes: This course aims to introduce students to important issues related to the environment and ecology and to develop their thoughts about cultural ecology. They will learn to appreciate the ethical value, cross-cultural and historical context of environment issues and the links between human & natural system. Also understand the conservation through ages including comparison between past & present.

#### **Unit-1: Understanding the Concepts of Cultural Ecology**

- Definition, Objectives, Scope & Significance
- Components of Environment
- The interrelationship of exploitative or productive technology and environment
- Impact of the human-environment nexus on the other aspects of culture

#### **Unit 2: Relationship between Human and Environment**

- Human's place in Nature, Srishti / Universe and its Attributes
- Agriculture and Animal Husbandry
- Representation of environment in popular and classical tradition
- Environmental consciousness in Religious belief (in reference to Hindu, Islam and Christian)
- Changes and continuity

#### **Unit-3: Development and environmental concerns**

- Mainstream view, reformist view, futuristic View
- Critical discourse - Deep ecology, Social ecology, Eco-Socialism
- Present challenges

#### **Unit-4: Conservation through ages**

- Indian view of Conservation
- Conservation practice in History

#### **ESSENTIAL READINGS**

R. Mash, The Rights of Nature, Madison, 1989

O.P. Dwivedi & S.N. Tiwari, Environmental crisis and Hindu Religion, New Delhi, 1987

Environmental science, William P. Cunningham & Barbara Woodworth Saigo, USA, 1990

Fundamental of Ecology, (ed.) E.P. Odum, W.B. Philadelphia Pennsylvania USA-1959

Social, Cultural and Economic History of India Vol-1

Chopra, Puri & Das, The Princeton Report, Man's Role in Changing the Face of the Earth





## **TOURISM: HISTORY AND APPLICATION**

### **DEPARTMENT OF HISTORY GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)**

#### **Skill Enhancement Courses (SEC)**

##### **Paper-II: Tourism: History and Application**

This course will enable students to understand the different facets of heritage and their significance. It highlights the legal and institutional frameworks for heritage protection in India as also the challenges facing it. The implications of the rapidly changing interface between heritage and history will also be examined. The course will be strongly project-based and will require visits to sites and monuments. At least two Projects will be based on visits to Museums/Heritage Sites.

##### **I. Meaning, Definition, Characteristic and Importance**

##### **II. Types of Tourism**

- [a] Eco Tourism
- [b] Historical Tourism
- [c] Spiritual and Religious Tourism
- [d] Folk art and Tourism

##### **III. Tourism in India**

- [a] Tourism Opportunity in India.
- [b] Major tourist places in India  
- Delhi, Aagra, Amritsar, Varanasi, Samath, Puri, Khajuraho, Tirupati, Kanyakumari etc

##### **IV. Tourism in Chhattisgarh**

- [a] Tourism Opportunity in Chhattisgarh
- [b] Major tourist place in Chhattisgarh  
- Champaranya, Rajim, Ratanpur, Boramdev, Baster, Sirpur, Mainpat, Sarguja, Giraudhpuri etc

##### **V. Skill and Management in Tourism**

- [a] Tourism Policy in India
- [b] Tourism as an Industry

##### **ESSENTIAL READINGS**

1. David Lowenthal, Possessed By The Past: The Heritage Crusade and The Spoils of History, Cambridge, 2010.
2. Layton, R. P. Stone and J. Thomas. Destruction and Conservation of Cultural Property. London: Rutledge, 2001.
3. Lahiri, N. Marshaling the Past - Ancient India and its Modern Histories. Ranikhet: Permanent Black. 2012, Chapters 4 and 5.
4. S.S. Biswas, Protecting the Cultural Heritage (National Legislations and International Conventions). New Delhi: INTACH, 1999.
5. O.P. Agrawal, Essentials of Conversations and Museology, Delhi, 2006.
6. S. Chainani, Heritage and Environment, Mumbai: Urban Design Research Institute, 2007.





## **E -COMMERCE**

**Objective:** The course aims to enhance skills for effective and contemporary applications of E-commerce.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Describe the challenging needs of the society in the field of E-commerce;
2. Identify various activities and operations in the context of online transactions;
3. Describe various e-payment systems;
4. Analyse security issues in E-commerce and determine various provisions in the IT Act, 2000.


### **COURSE CONTENTS:**

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<b>Introduction to E- Commerce</b> Concepts and significance of E-commerce; driving forces of E-commerce; E-commerce business models - Functions of E- Commerce; Types of E-Commerce; E-Commerce Systems and Prerequisites, Scope of E-Commerce, E- Commerce Models.			
	<b>E-Commerce Activities and Operations</b> Various E-Commerce activities; various manpower associated with e-commerce activities; Types of E-Commerce Providers and Vendors; Modes of operations associated with E-Commerce; E-Commerce types. E-commerce applications in various industries (banking, insurance, payment of utility bills and others), e- marketing, e-tailing, online services, e-auctions, online portal, online learning, e-publishing and e-entertainment,online shopping.	50	✓	✓
Unit - 4	<b>E-payment System</b> E-payment Methods- Debit card, Credit card, Smart cards, E-Money, E-Wallets; Digital signatures- procedures and legal position; Payment gateways; Online banking- concepts, importance; Electronic fund transfer; Automated Clearing House. Automated Ledger Posting. Emerging modes and systems of E-payment (M-Paisa, PayPal and other digital currency), UPI Apps, Aadhar Enabled Payment Systems, BHIM App E-payments risks.	50	✓	✓
	<b>Security and Legal Aspects of E-commerce</b> E-commerce security – meaning and issues. Security threats in the E-commerce environment- security intrusions and breaches, attacking methods like hacking, sniffing, cyber-vandalism etc.; Technology solutions- encryption.			

### **Practical Exercises:**

The learners are required to:

1. Help others to learn the use of e-wallet, e-payment, and digital signatures. Prepare a report on the skills used by them to help others learn.
2. Design their own webpage (Blog), highlighting their strengths, weaknesses, and prepare their CV. Use the link in their CV while applying for the job.
3. Use the Internet banking facility to buy a product from any online website.
4. Open internet banking account and operate it.
5. Create their own YouTube channel and post one video on awareness of cyber security and crime.

  
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## **ELECTONICS IN DAILY LIFE**

**AEC - 1: Electronics in daily life**  
**Course Code: AECPL01**

**Credits = 2 (2+0+0)**

**Unit – I: History of Electronics:** The vacuum tube era, The semiconductor revolution, Integrated circuits, Compound Semiconductor, Digital electronics Materials, Optoelectronics, Superconducting electronics, Flat-panel displays

**Unit – II:** Different Electronic Components / Semiconductor Components, Passive Components-Resistors: specifications and colour coding. Capacitors: Principle, specifications and colour coding. Inductors: Principle, specifications and classification, Battery, Battery holders and connectors ,Fuses ,Transistors, Oscillation, thyristors ,Light-emitting diodes (LEDs) AC fundamentals: Generation of alternating voltages, Basic electronic functions Rectification, Amplification Using n-p-n transistor, Multimeters, MOSFETs.

**Unit – III:** Application of Electronics: Consumer Electronics Office Gadgets like calculators, Personal computers, Digital Camera, FAX machines, Printers, Scanners, Front Projector, etc. Home appliances Robot Vacuum Cleaner, Electric Deep Fryer Refrigerator, AC, Coffee Maker Machine, Hair dryer Water Purifier/Dispenser, Storage Devices

Advanced Consumer Electronic Devices: Smart Phones, iPod and Tablets, Wi-Fi and the Internet, barcode scanners, ATM, Dishwasher and POS terminals.

Medical Electronics: Stethoscope, Respiration Monitors Glucose meter, The Pacemaker, MRI, CT scan

**Unit – IV:** Industrial and Automotive Electronics: Power Windows, Electronic Control Unit (ECU),Airbag control , all vehicles etc. Meteorological and Oceanographic Electronics: Barometer: .Anemometer: Anemometer Hygrometer ,Data logger Smart Grid Systems Image Processing, Entertainment and Communication Electronics:Smart TVs, Set Top Boxes, Speakers , receivers etc.

Defence Application: RADAR technology, Electronic Warfare Systems, Military electronic equipments etc.

### **Reference Books:**

1. Getting Started in Electronics by Forrest, M.Mims, Master Publishing, Inc
  2. Make Electronics – Learning by Discovery by Charles Platt ,Maker Media Publishers
  3. Practical Electronics for Inventors , Paul Scherz, McGraw-Hill Education
  4. Everyday Electronics and You: A Guide to Maintaining and Getting the Best Out of Your Everyday Electronics Devon A. Smith Kindle Edition ,
  5. Complete Guide to Home Appliance Repair – Evan Powel, Better Homes & Garden Books Publication.
  6. A Text book of Electrical Technology Vol. 1 and 2,.B.L.Thereja S. Chand & Company
  7. Domestic appliances servicing, K.P.Anwer,Scholar Institute Publications.
  8. Basic Electrical Engineering, M.L. Anwani,DhanpatRai Publication.
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## **ENGLISH COMMUNICATION**

### **Paper 2: English Communication**

#### **Learning outcomes-**

- To develop a deep understanding of the fundamentals of communication in business world.
- To understand basic rules of business etiquette and how to follow them, both in person and online.
- To improve communication skills by appreciating the importance of speaking, and learning essential techniques to improve the same.
- To develop good presentation and interview skills by learning the essential steps for its planning and preparation.
- To enhance writing skills of the learners by enabling them to write effective resume and other forms of business correspondence.

#### **Unit-I Communication in Business**

- i. Role of communication in the business world
- ii. Patterns of business communication

#### **UNIT- II Business Correspondence-**

- i. Business letters
- ii. Writing memos
- iii. Writing minutes
- iv. Writing agenda
- v. Writing circulars
- vi. Writing notices
- vii. Writing CV
- viii. E-communication

#### **UNIT-3 Etiquettes of Communication**

- i. Etiquettes of Telephonic Communication.
- ii. Office Etiquettes
- iii. E-mail Etiquettes
- iv. Meeting and Social Etiquettes

#### **UNIT-4 Oral Communication**

- i. Placement interview
- ii. Presentation skills

#### **Suggested Readings:**

1. Bhatia, R.C., Business Communication, New Delhi: Ane Books Pvt Ltd
  2. Scot, Q. Contemporary Business Communication, New Delhi: Biztnatra
  3. Parikh, JP et al, Business Communication: Basic Concepts and Skills Hyderabad: Orient Blackswan
  4. Ramon & Prakash, Business Communication, Oxford.
  5. Sydney Greenbaum Oxford English Grammar, Oxford
  6. Successful Communications, MalraTreece (Allyn and Bacon)
  7. Effective Technical Communication, M. Ashraf Rizvi.
  8. Anjaneethi & Bhavana Adhikari, Business Communication, Tata McGraw Hill
  9. Creative English for Communication, Krishnaswamy N, Macmillan
  10. Communication skills, Sanjay Kumar, Pushpalata, 1stEdition, Oxford Press, 2011
  11. Organizational Behaviour, Stephen .P. Robbins, 1stEdition, Pearson, 2013
  12. The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5thEdition, Pearson, 2013
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## **ENGLISH LANGUAGE**

### **Paper 1: English Language**

#### **Course Level Learning Outcomes**

The purpose of this course is to introduce students to the theory, fundamentals and tools of communication and to develop in them vital communication skills which should be integral to personal, social and professional interactions. One of the critical links among human beings and an important thread that binds society together is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal. In the context of rapid globalization and increasing recognition of social and cultural pluralities, the significance of clear and effective communication has substantially enhanced.

The present course hopes to address some of these aspects through an interactive mode of teaching-learning process and by focusing on various dimensions of communication skills. Some of these are:

Language of communication, various speaking skills such as personal communication, social interactions and communication in professional situations such as interviews, group discussions and office environments, important reading skills as well as writing skills such as report writing, note-taking etc.

Continued.....



While, to an extent, the art of communication is natural to all living beings, in today's world of complexities, it has also acquired some elements of science. It is hoped that after studying this course, students will find a difference in their personal and professional interactions.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

### **COURSE CONTENT**

- 1. Introduction:** Theory of Communication, Types and modes of Communication
- 2. Language of Communication:**  
Verbal and Non-verbal  
(Spoken and Written)  
Personal, Social and Business  
Barriers and Strategies  
Intra-personal, Inter-personal and Group communication
- 3. Speaking Skills:**  
Monologue  
Dialogue  
Group Discussion  
Effective Communication/ Mis- Communication  
Interview  
Public Speech
- 4. Reading and Understanding**  
Close Reading Comprehension  
Summary Paraphrasing  
Analysis and Interpretation  
Translation (from Indian language to English and vice-versa) Literary/Knowledge Texts
- 5. Writing Skills**  
Documenting  
Report Writing  
Making Notes  
Letter writing

### **Recommended Readings:**

1. *Fluency in English* - Part II, Oxford University Press, 2006.
2. *Business English*, Pearson, 2008.
3. *Language, Literature and Creativity*, Orient Blackswan, 2013.
4. *Language through Literature* (forthcoming) ed. Dr. Gauri Mishra, Dr Ranjana Kaul, Dr Brati Biswas



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## **ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT**

### **AEC 01: ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT**

#### **CR:2**

Introduction to environmental studies, Scope and importance, Ecosystems: Structure and function  
Natural Resources management, biodiversity and tribal populations. Biodiversity and its  
Conservation. Environmental Pollution: types, causes, effects and controls of air, water, soil and  
noise pollution. Solid waste management, Environmental legislation and Practices. Human and the  
Environment, Sustainable development, Environmental movements. Public awareness, natural  
disasters, climate change, man- made disaster, Disaster Management.

#### **PRACTICAL**

Field work: Visit a local area to document environmental assets river/ forest/ grassland/hill. Visit to  
a local polluted sites- urban/ rural/ industrial/ agricultural. Study and documentation of common  
herbs, shrubs and trees, insects, birds. Study of simple ecosystem- pond, river, hill slopes etc. Nature  
trail, Soil waste analysis.

#### **Suggested Readings:**

- P.H.Gleickm (1993). Waterin Crisis. Pacific Institute for Studies in Dev., Environment & Security.  
Stockholm Environmental Institute, Oxford Univ. Press.
- R. Grumbine, Edward, and M.K. Pandit (2013). Threats from India's Himalaya dams. Science  
Journal.
- R. Sengupta (2003). Ecology and economics: An approach to sustainable development. OUP.
- N.S. Sodhi, L. Gibson and P.H. Raven (2013). Conservation Biology: Voices from the Tropics. John  
Wiley & Sons.
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## **FEMINISM: THEORY AND PRACTICE**

### **FEMINISM: THEORY AND PRACTICE**

#### **Course Objective:**

This course seeks to understand the nature, phases and core issues of the feminist movement, both in Anglo-American and India. Besides, attempts have been made to understand how the social and cultural construction of role for the women has not only undermined her position as an equal member in the society but also does not take cognizance of her contribution to the family.

#### **Learning Outcomes:**

After reading this course the students will be able to explain

- a. How different schools have understood patriarchy and feminist questions differently.
- b. The origin, evolution and key issues which are at the core of the feminist movement both in Anglo-American world and India.
- c. The representation of the women in the political space of India.
- d. How the immense contribution that women make to the family are neglected in computation?

#### **Unit I: Understanding Patriarchy**

- a. Meaning of Patriarchy
- b. Sex /Gender Distinction
- c. Theories of Feminism: Liberal, Marxist and Feminist (Liberal, Socialist, Radical Schools)

#### **Unit II: Women and Politics**

Women and their Representation in Politics and Administration

#### **Unit III: Violence and Discrimination against Women**

- a. Domestic Violence
- b. Sexual Harassment
- c. Women Trafficking

#### **Readings:**

- Shinde, T. (1993). Stree Purusha Tulna. In Lalitha, K., & Tharu, S. (Eds.), *Women Writing in India*, New Delhi, Oxford University Press, pp. 221-234.
- McDermott, R., & Hatemi, P. (2011). Distinguishing Sex and Gender. Ps: *Political Science and Politics*, 44(1), pp. 89-92.
- Kachuck, B. (1995). Feminist Social Theories: Theme and Variations. *Sociological Bulletin*, 44(2), pp. 169-193.
- Sinopoli, R., & Hirschmann, N. (1991). Feminism and Liberal Theory. *The American Political Science Review*, 85(1), pp. 221-233.
- Graham, G. (1994). Liberal Vs Radical Feminism Revisited. *Journal of Applied Philosophy*, 11(2), 155-170.





## **GENERAL AND LEGAL ENGLISH**

### **GENERAL AND LEGAL ENGLISH**

**Marks: 100 [70+30]**

**Course credits: 2**

1. Legal Language:

Legal terminology. Legal terms - meaning.

Explanation of the following Latin Glossary/Maxims either in English or Hindi-Ab-initio, Ad hoc, Ad-interim, Ad-litem guardian, Actus non-faciet reum nisi mens sit rea, Abuse of process, Injuria sine Damnum, Damnum sine injuria, Novus actus interveniens, Respondent superior, Res Ipsa loquitur, Restitution in integrum, Caveat emptor, Res-judicata, Prima facie, Malafides, Bonafides, Expost facto, Ex-parte, Ex-gratia, Trespass-ab-initio, Sine-die, Non-compos mentis, Nemo-dat-quod-non habeat.

2. Abbreviation of Law Magazines & Journals

The following Abbreviations are prescribed for study.

AIR, S.C.C., M.P.L.J., J.L.J., M.P.W.N., Cal. LR, S.C.R, S.C.W.R., AL.I.L.J., Cal. L.J., O.L.R, Cr. L.J., All L.J., I.B. Rev., I.L.R., Al. Cr. C., S.C.J., I.T.R., I.T.J., Bom. L.R., An. L.T.

3. Translation of the Hindi passage into English

4. Proficiency in regional language : Translation of the English passage into Hindi.

5. Precise writing

6. Essay writing on the following topics of legal interest

Marriage under Hindu Law, Marriage and Divorce under Mohammedan Law, Essentials of a valid contract, Master's liability under the law of Tort, Right of private defence under Criminal Law, Fundamental Rights under the Indian Constitution, Emergency provisions, Theories of punishment, Independence of Judiciary.

7. General English

Gender, Number (Singular, Plural), Article, Tenses, Active and Passive voice, Preposition, Narration, One word Substitution, Antonyms and synonyms, Correction of Common Errors.



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## **HANDWRITING IDENTIFICATION AND RECOGNITION**

### **Handwriting Identification and Recognition**

#### **Credits: 2**

*Learning Objectives: After studying this paper the students will know*

- a. *The importance of examining questioned documents in criminal cases.*
- b. *The tools required for examination of questioned documents.*
- c. *The significance of comparing handwriting samples.*
- d. *The importance of detecting frauds and forgeries by analyzing questioned documents.*

#### **Unit 1: Handwriting Identification**

Basis of handwriting identification, Characteristics of handwriting – scope and application, class and individual characteristics. Arrangement, alignment, margin, slant, speed, pressure, spacing, line quality, embellishments, movement and pen lifts. Factors influencing handwriting – physical, mechanical, genetic and physiological.

#### **Unit 2: Handwriting Examination**

Basis of handwriting comparison, Collection of handwriting samples, Forgery detection, Counterfeiting, Examination of altered and erased documents. Tools used in handwriting examination.

#### **Unit 3: Handwriting Recognition**

Basis of handwriting recognition, off-line and on-line handwriting recognition. Steps involved in handwriting recognition – pre-processing, feature extraction and classification. Application of handwriting recognition.

#### **Unit 4: Basic tools for examination of Documents**

Application of basic tools for the examination of Questioned Document, Ultraviolet, Visible and Fluorescence Spectroscopy. Photomicrography, Video Spectral Comparator, Electrostatic Detection Apparatus.



## UNDERSTANDING POPULAR CULTURE

### **Paper - I (HSUATL1): Understanding Popular Culture**

The paper examines some popular cultures expressed in different mediums like visual, oral and cultural. In the process of their evolution, these cultures eclectically draw from traditions, articulate anxieties, and even give rise to new traditions. The paper endeavours to equip students with understanding such phenomena historically, with special reference to India. It is imperative that the students use electronic devices to view, record, and document the subject matter.

#### **I. Introduction**

- a) Defining Popular Culture and Understanding it Historically

#### **II. Visual Expressions**

- b) Folk Art, Painting, Photography

#### **III. Performance**

- a) Indian Art of Music
- b) Indian Art of Dancing
- c) Indian Architecture

#### **IV. The Audio-Visual: Cinema and Television**

- a) Indian cinema in Pre-Independence (1930s and 40s)
- b) Indian cinema in Post-Independence.
- c) Changing Mood of Indian Cinema in 1970s and 80s.
- d) Expressions of Popular Culture in Television

#### **V. Fairs and Festivals**

- a) Religious and Regional festivals of India
- b) Famous Festivals in Different States of India

#### **VI. Popular culture in a globalized world**

- a) The Impact of the Internet and Audio-Visual Media

#### **ESSENTIAL READINGS**

- Dissanayake, W. and K. M. Gokul Singh, Indian Popular Cinema, Trentham Book, London, 2004
- John Storey, Cultural Theory and Popular Culture, London, 2001
- Oberoi, Patricia, Freedom and Destiny: Gender, Family and Popular Culture in India, Delhi, 2009
- Christopher Princy, Camera Indica: The Social Life of Indian Photographs, Chicago, 1998
- Pankaj Rag, Dhunoke Yatri, Rajkamal, New Delhi, 2006
- Ramaswamy, V. 'Women and the 'Domestic' in Tamil Folk Songs' in Kumkum Sangari and Uma Chakravarti, eds., From Myths to Markets: Essays on Gender, Shimla, 1999
- Singh, Lata (ed.), Theatre in Colonial India: Playhouse of Power, New Delhi, 2009





## **STOCK MARKET OPERATION**

### **Stock Market Operations [SEC – 1 (b)]**

**Objective:** The course aims to impart basic knowledge about the structure and functioning of the stock market in India and to learn trading on the stock exchange.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Explain the basic concept of securities market;
2. Practice trading on stock market;
3. Explain different segment of Stock Exchange;
4. Perform demat trading.

### **COURSE CONTENTS:**

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<b>Introduction:</b> Concept and types of Securities; Concept of return; Concept, types and measurement of risk; Development of Securities market in India.	15	✓	
Unit - 2	<b>Primary Market:</b> Concept, Functions and Importance; Functions of New Issue Market (IPO, FPO & OFS); Methods of Floatation-fix price method and book building method; Pricing of Issues; Offer Documents; Appointment and Role of Merchant Bankers, Underwriters, Lead Managers, Syndicate Members, Brokers, Registrars, Bankers, ASBA and Listing of Securities.	35	✓	✓
Unit - 3	<b>Secondary Market:</b> Concept; Functions and Importance; Mechanics of Stock Market Trading-Different Types of Orders, Screen Based Trading, Internet-Based Trading and Settlement Procedure; Types of Brokers.	35	✓	
Unit - 4	<b>Demat Trading:</b> Concept and Significance; Role of Depositories and Custodian of Securities in Demat Trading.	15	✓	✓

### **Practical Exercises:**

The learners are required to:

1. Prepare the steps involved in pre and post management of hypothetical case of IPO/FPO.
2. Make a comparative analysis of IPOs to identify parameters of success and causes of failure.
3. Equip them to trading screen of National Stock Exchange ([www.nseindia.com](http://www.nseindia.com)) and demonstrate Procedure of placing buying /selling order.

### **Suggested Readings:**

1. Gordon E. and Natarajan K. (2019). Financial Markets and Services. New Delhi: Himalaya Publishing House.
2. Benjamin, G. (1949). The Intelligent Investor. New York: Harper Publishing.
3. Dalton, J. M. (2001). How The Stock Market Works? New York: Prentice Hall Press.
4. Machiraju, H. R. (2019). Merchant Banking. New Delhi: New Age Publishers.
5. Gala, Jitendra (2020). Guide to Indian Stock Market. Mumbai, Maharashtra: Buzzingstock Publishing House
6. Kiyosaki, Robert T. (2017). Rich Dad, Poor Dad. USA: Plata Publishing
7. Basu, Debashis & Dalal, Sucheta (2019). The Scam: From Harshad Mehta to Ketan Parekh. Mumbai, Maharashtra: KenSource Information Services Pvt. Ltd.
8. SEBI Regulations from SEBI Website





## SPIRITUAL MANAGEMENT

### Spiritual Management [AEC – 1 (b)]

**Objective:** This course aims at gaining insight into spirituality. The spiritual process is not logical or linear but associative and re-iterative. Further, we learn spirituality by going more subtly into what we already know. Like the undercurrents of the sea, barely seen but certainly felt, much of spiritual growth goes on subtly underneath the surface and for this reason sometimes it is difficult to describe.

The key purpose of this course is to help the students to develop an awareness of their inner peace, powers, and potentials and a moral compass for living and to teach practical spiritual skills and tools for expressing their potential.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Define emotional energy.
2. Describe healing emotional scars.
3. Establish regular meditation. Describe insecurity.
4. Describe self-hypnosis/trance.
5. Describe the astounding effects of visualization.
6. Summarize positive and negative affirmations.
7. Define personal beliefs and values.
8. Describe the conference of the spirits.
9. Describe using fear to your advantage.

### COURSE CONTENTS:

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<ul style="list-style-type: none"> <li>✓ Understanding of Origin and Development of Spirituality</li> <li>✓ Elements of Spirituality: Truthfulness, Integrity, Honesty, Dutifulness, Ethics, Values and their roles in Spirituality</li> <li>✓ Spiritual values: - Signs of success-Reflection points- Introspection—Peace—Courage— Self-authority— Self Sovereignty—Dedication- Self—actualization</li> <li>✓ Personality Development: Communication - Proper and adequate communication, Spiritual leadership, considering elements for decision-making.</li> </ul>	50	✓	✓
Unit - 2	<ul style="list-style-type: none"> <li>✓ Spirituality in Everyday Life - Right Thought, Deed and Practices</li> <li>✓ Spirituality for Managerial Excellence: Strategies for performance Power of Problem Solving and Analytical Techniques- Brainstorming - Generating Options -</li> <li>✓ Critical Path Analysis - Planning and Scheduling Complex Tasks-Decision Trees - Powerful Quantitative Analysis of Decision Impact-Force Field Analysis - Analysis of all Pressures For and Against Change</li> <li>✓ Consciousness – What is consciousness - Religious perspectives - scientific perspectives - Spiritual perspectives-Vies of philosophers, Self Image &amp; Self Motivation.</li> </ul> <p><b>Motivation Effect on thoughts-</b> External influences on thoughts-Roots of low Self esteem-3 steps to a good self Image-Motivating factors- Criticism for motivation-Signs of De motivators-Laws of motivation-Skills for -Wheel of motivation-Principles of Motivational Leader.</p>	50	✓	✓



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**SOFT SKILL DEVELOPMENT AND POWER POINT PRESENTATION**

**Paper 1: Soft Skill Development and Power Point Presentation**

- Soft Skills: Communication: Verbal and Non-Verbal, Teamwork, Problem Solving, Decision-Making, Ability, Time Management, Negotiation and Conflict Resolution, Persuasion
- Mock interview
- Emotional Intelligence
- Group discussion
- PowerPoint Presentation: techniques and application
- Digital Literacy: Using web for development of individuals.

**RECOMMENDED READINGS**

- Keep Talking: Friederike Klippel, CUP
  - Speaking power point. The new language of business by Bruce k Gabriella.
  - Presentation Zen by Garr Reynolds.
  - Slide:ology: The Art and Science of Creating Great Presentations. Nancy Duarte
  - Bridging the Soft Skills Gap by Bruce Tuglan.
  - Personality Development and Soft Skills. BY Braun Mitra
  - Communication skills by Sanjay kumar
  - Professional speaking Skills: Aruna Koneru, OUP
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## SET THEORY AND LOGIC

### SET THEORY AND LOGIC

Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, contra positive and inverse propositions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations.

Sets, subsets, Set operations and the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Standard set operations. Classes of sets. Power set of a set.

Difference and Symmetric difference of two sets. Set identities, generalized union and intersections. Relation: Product set, Composition of relations, Types of relations, Partitions, Equivalence Relations with example of congruence modulo relation, Partial ordering relations, and n-ary relations.

#### **Books Recommended:**

1. R.P. Grimaldi, *Discrete Mathematics and Combinatorial Mathematics*, Pearson Education, 1998.
  2. P.R. Halmos, *Naive Set Theory*, Springer, 1974.
  3. E. Kamke, *Theory of Sets*, Dover Publishers, 1950.
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## **RADIO PRODUCTION**

### **SEC 1 ( Skill Enhancement Course) Semester III**

#### **Radio Production**

##### **Course contents:**

##### **Unit 1 –**

Broadcast Formats, Public service advertisements\*, Jingles\*, Radio magazine\*, Interview, Talk Show, Discussion, Feature, Documentary

##### **Unit 2:**

Broadcast Production Techniques, Working of a Production Control Room & Studio: Types and functions, acoustics, input and output chain, studio console: recording and mixing. Personnel in Production process – Role and Responsibilities

##### **Unit 3- Stages of Radio Production Pre-Production – (Idea, research, RADIO script)**

Production–Creative use of Sound; Listening, Recording, using archived sounds, (execution, requisite, challenges) Editing, Creative use of Sound Editing.

##### **Suggested Exercise- Producing any Radio format mentioned in the Unit 1. (Duration-5 minutes).**

\*Only introductory in nature. These formats will be dealt with in detail in Advanced Broadcast paper.

##### **Suggested reading list-**

1. Aspinall, R. (1971) *Radio Production*, Paris: UNESCO.
  2. Flemming, C. (2002) *The Radio Handbook*, London: Routledge.
  3. Keith, M. (1990) *Radio Production, Art & Science*, London: Focal Press.
  4. McLeish, R. (1988) *Techniques of Radio Production*, London: Focal Press.
  5. Nisbett, A. (1994) *Using Microphones*, London: Focal Press.
  6. Reese, D.E. & Gross, L.S. (1977) *Radio Production Work*, London: Focal Press.
  7. Siegel, E.H. (1992) *Creative Radio Production*, London: Focal Press.
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## **PLANT TISSUE CULTURE**

### **Course Objective**

The course deals with the Plant tissue culture principles and basic techniques. The objective of the course is to make students well-versed with the methods and techniques of plant tissue culture and its application.

### **Course Learning Outcomes**

- Students will acquire skills related to plant tissue culture
- Students will acquire skills on plant tissue culture techniques
- Students will acquire skills on Micropropagation
- Students will acquire skills related to In-vitro Fertilization

### **Course contents**

#### **Unit-I (Introduction to Plant Tissue culture)**

Introduction to Plant Tissue culture, Terms and definitions, Historical background, Laboratory organization, Tools and techniques, methods of sterilization. Laboratory contaminants- it's control and measures.

#### **Unit-II (Media and Culture Preparation)**

Role of Micro and macro nutrients, Vitamins and carbon source in tissue culture, Media preparation- pH, Temperature, Solidifying agents, Slant Preparations etc. Maintenance of cultures, Environmental Conditions, explants characteristics.

#### **Unit-III (Culture techniques)**

Explants selection, sterilization and inoculation; Various media preparations; MS, B5, SH PC L-2; Callus and cell suspension culture.

#### **Unit-IV (Initiation of Cultures)**

Induction and growth parameters; Culture initiation, Callus culture., Micropropagation through various explants

#### **Unit-V (In-vitro Fertilization)**

Role of Ovary and ovule in In-vitro Fertilization in production of agricultural and horticultural crops. Techniques and significance of Androgenesis and Gynogenesis (ovary, ovule, egg, synergids culture)

### **Suggested Reading**

1. Bhojwani S.S. And Rajdan M.K. (1983). Plant Tissue Culture : Theory and practice.
  2. Reinert J. and Bajaj Y.P.S. (1977). Applied and Fundamental Aspects of Plant
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Cell, Tissue and Organ Culture, By Springer - Verlag, Berlin

3. Amritrao, P.V.D.A. Evans, W.P.Sharp and Bajaj Y.P.S. (1990) Handbook of Plant Cell Culture volumes I-V, McGraw Hill Publishing Co.,New York.
4. Chawla, H.S. 2000. Introduction to Plant Biotechnology. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi.
5. Dixon, R.A. and Gonzales, R. A. (Eds.) 1994. Plant Cell Culture - A Practical Approach. Oxford University Press, New York.
6. Gamborg, O.L and Phillips, G.C. 1998. Plant Cell, Tissue Organ Culture. Narosa Publishing House, NewDelhi.



## PHOTOGRAPHY

### JMUATA1 Photography

#### Course Objectives:

1. To know the concept of photography and its development
2. To know the mechanism of photography
3. To know the different camera handling and their process
4. To know the photo journalism

#### Course contents:

##### Unit I:

History of Photography Definition and origin of Photography , The birth of Camera and its evolution, Modernization of Photography and its use in Mass Media Invention of Digital Photography

##### Unit II:

Equipments of Photography Cameras, Lenses, Tripods, Monopods Camera bags, Digital storage

##### Unit III:

Lighting -the different types of lighting-Natural lighting-and Artificial Lighting, The reflection of light Recommended equipment for outdoor lighting , Introduction to indoor lighting and Photographing

##### Unit IV:

Types of Photography and Photo Journalism , News Photography, Sports Photography, Nature photography, Portrait photography, Fashion photography and, advertisement photography, The basics of photojournalism and importance of context in photojournalism.

##### Unit V:

Editing Photo editing software: Microsoft Office Picture manager, Corel Draw, Adobe Photoshop Elements, Photoshop CC (Creative Cloud) Correcting imperfect images: Picture Orientation, Cropping, Levels, Altering brightness and contrast, Red eye.

#### Course outcomes:

1. Understanding of the concept of photography and its historical development
2. Understanding of photography process
3. Understanding of the uses of different photography camera and lights
4. Learning of art of the photo journalism and the photo editing

#### Suggestive Readings:

The Photography Book by Editors of Phaidon Press, 30 April 2000.  
All about Photography by Ashok Dilwali, National Book trust , Year of Publication:2010 New Delhi.  
Practical photography by O.P. SHARMA HPB/FC (14 March 2003).  
The Photographer's Guide to Light by Freeman John Collins & Brown, 2005.  
Lonely Planet's Best Ever Photography Tips by Richard l'Anson published by Lonely Planet

CO	PO			PSO			
	PO1	PO2	PO3	PSO1	PSO2	PSO3	PSO4
CO1	2	2	1	2	2	1	1
CO2	3	2	1	3	2	2	1
CO3	3	2	2	3	2	2	2



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## **NURSERY TECHNOLOGY**

### **SEC 01: NURSERY TECHNOLOGY**

**CR: 2**

Nursery, introduction, objectives and scope, types of nursery, choosing nursery site, design and layout of the nursery, preparation of nursery beds, producing plant from seed, seed handling, dormancy and treatments, methods of sowing, time and season, potting mixtures, transplanting of young seedlings, plant containers, compost and mulches, nutrient and soil management, disease and pest control, sale and marketing.

#### **PRACTICAL**

Site selection and its assessment, preparation of different types of nursery bed, study of plant containers, seed treatment, seed sowing, preparation of potting mixtures, application of mulches, application of weedicides, Compost preparation, Tools and instruments, nursery record. Assessment of plantation site, visit of nursery and plantations, pruning methods in newly and old plantations, fertilizer and weed management practices. Marketing management of nursery grown seedlings.

#### **Suggested Readings:**

- Keats C Hall. 2003 Manual on nursery practice. Forest Department, Jamaica. E book
- Kumar, Vinod, (2016), Nursery and Plantation Practices in Forestry, Scientific publishers India.
- Luna RK. (2006). Plantation forestry in India. International book distributor, Dehradun India.
- PawarPankaj (2007). Practical Manual of plantation forestry. Scientific publisher, Jodhpur
- Sharma and Singh NP. (2011). Soil and orchard management. Daya Publishing House, Delhi





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## **NSS AND SOCIAL ECONOMIC DEVELOPMENT**

**Objectives :** The main objectives of this course are:

1. To help learners know about environmental issues and disaster management.
2. To understand the role of entrepreneurship in social development.
3. To learn documentation and reporting.

**Outcome :** Learners will learn to appreciate the concerns regarding the environment. They will have the background information to start a venture. They will also be able to prepare a socio-economic development plan.

### **UNIT 1: Environmental Issues**

Natural Resource Management, Sustainable Development, Renewable & Non Renewable Resources, Environment & Development Trade-off;

### **UNIT 2: Disaster Management**

Introduction; Definitions and types of disasters; Disaster Management, Role of NSS in disaster management; Civil defence & Disaster Management.

### **UNIT 3: Entrepreneurship**

Definition and meaning; Characteristics of Entrepreneurs; Types of Entrepreneurs  
Types of Entrepreneurship; Entrepreneurs and the Economy;

### **UNIT 4: Funding a Venture**

Sources of funding and formalities

### ***Suggested Readings:***

1. Biodiversity, Environment and Disaster Management by Shamna Hussain (Unique Publishers)
  2. Environmental Studies by P K Pandey (Mahaveer Publications)
  3. Fundamentals of Entrepreneurship by H Nandan (PHI)
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## **NGO MANAGEMENT**

**Title of Paper: B. NGO Management**

**Objectives:**

1. Develop an understanding of non-governmental organizations
2. Acquire skills and competence in managing NGOs

**Course Content:**

**Unit I: Conceptual Framework and Historical Development**

- Basic concepts: NGOs, Voluntary Action, Voluntary Organization, Civil Society
- Organisations Historical development of NGOs in India

**Unit II: Initiating an NGO**

- Formation of By-laws
- Registration of NGO

**Unit III: Managing NGO.**

- Record keeping, documentation, budgeting, accounting and auditing
- Staffing Capacity Building, Training and Development Organizational behaviour

**Unit IV: Resource Mobilization and management**

- Mobilizing human and material resources
- Fund raising and Grant-in-aid

**Unit V: Project planning and execution**

- Formulation of project proposals
- Project implementation
- Project appraisal -Social, Technical and Financial
- Project Monitoring and Evaluation
- Documentation

**Readings:**

- PRIA 2000 Defining Voluntary Sector in India: Voluntary Civil or Non-profit, New Delhi: PRIA (Unit I)
  - PRIA 2001 Historical Background of Non-profit Sector in India, New Delhi PRIA (Unit I)
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- Levis, David & Ravichandran, N. 2008 NGO And Social Welfare Administration New Research Approaches, Jaipur: Rawat Publication. (Unit II)
- Levis, David 2001 The Management of Non-Governmental Development Organization an Introduction, London: Routledge. (Unit II & V)
- Edwards, Michael 2002 The Earthscan Reader on NGO Management, London: Alan Fowler. (Unit II & III)
- Dadrawala, N.H. 2004 The Art of Successful Fund Raising, New Delhi: CAP (Unit IV)
- Mukherjee, K.K. Mukherjee, S. 1999 A Guide Book for Strengthening Voluntary Organizations. Ghaziabad: Gram Niyojan Kendra. (Unit I & II)
- Padaki, V. & Vaz, M. 2004 Management Development and Non-Profit Organization. New Delhi: Sage Publication (Unit IV)
- Goel, S.L. & Jain, R.K. 1988 Social Welfare Administration: Theory and Practice, (Vol. I & II). New Delhi: Deep and Deep Publications. (Unit II, III, IV & V)
- Robbins, S.P. & Sanghi, S. 2005 Organizational Behaviour. Delhi: Pearson Education. (Unit V)
- Jackson, J 1989 Evaluation for Voluntary Organizations. Delhi: Information and News Network. (Unit III)
- Coley, S.M. & Sheinberg, C.A. 1990 Proposal Writing (Sage Human Services Guides). New Delhi: Sage Publications (Unit III)
- Chandra, S. 2001 Non-Governmental Organizations: Structure, Relevance and Function. New Delhi: Kanishka Publishers (Unit I & II)



## Network Circuit Analysis

### Network Circuit Analysis

Credits = 1 (1+0+0)

#### Course Objectives:

1. The objective of the course is that the student acquires the knowledge of basics of electrical network.
2. To gain the knowledge and critical analysis of electrical circuit with network theorem.

#### Course Outcomes:

1. Understand the basic concepts, basic laws and methods of analysis of electrical networks and reduce the complexity of network using different network theorems.

#### Unit-I

**Analysis of Electrical Network:** Active and passive element of circuit. Resistance Colour Code, Review of series, parallel and series-parallel circuit, Voltage divider and current divider circuit, Ground Connections in Electrical Network, Short circuit and open circuit, Electrical power, power in short and open circuit.

#### Unit—II

**Electrical Network:** Concept of Branch, Node, Loop, Mesh and Super-Mesh, Kirchhoff's Current Law (KCL), Kirchhoff's Voltage Law (KVL), Node Analysis, Mesh Analysis, Star-Delta Conversion.

**Network Theorems:** Concept of Ideal and practical Sources, Thevenin theorem, Norton theorem, Thevenin-Norton conversion, Superposition theorem, Maximum Power Transfer theorem.

#### Reference Books

1. Grob's Basic Electronics, 11<sup>th</sup> ed., Mitchel E. Schultz, McGraw Hill.
2. Electronic Device and Circuit Theory, Boylestad & Nashelsky, 11<sup>th</sup> ed. Pearson Publication.
3. Engineering Circuit Analysis J David Irwin et al Wiley India 10th Edition, 2014
4. Electric Circuits Mahmood Nahvi McGraw Hill 5th Edition, 2009
5. Introduction to Electric Circuits Richard C Dorf and James A Svoboda Wiley 9th Edition, 2015
6. Circuit Analysis; Theory and Practice Allan H Robbins Wilhelm C Miller Cengage 5th Edition, 2013 project managers.

#### Lab Work for Network Circuit Analysis

##### List of Experiments

1. Use a Multi-Meter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current, (d) Capacitances, and (e) Checking electrical fuses.
2. Soldering of Electrical wires and Networks.
3. To verify the Open Circuit Voltage, Thevenin's resistance and Thevenin Theorems.
4. To verify Short-Circuited Current and Norton theorems.
5. To verify Maximum power transfer theorem.
6. To study response curve of a Series LCR circuit and determine its (a) Resonant frequency, (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width.
7. To study the response curve of a parallel LCR circuit and determine its (a) Anti-resonant frequency and (b) Quality factor Q.





## MUSHROOM CULTURE TECHNOLOGY

### **Learning outcomes:**

On completion of this course, the students will be able to:

- Recall various types and categories of mushrooms.
- Demonstrate various types of mushroom cultivating technologies.
- Examine various types of food technologies associated with mushroom industry.
- Value the economic factors associated with mushroom cultivation
- Devise new methods and strategies to contribute to mushroom production.

### **Keywords:**

Edible mushrooms, Poisonous mushrooms, Cultivation technology, Mushroom bed, Mushroom unit, Storage and Nutrition

### **Unit I**

**7 lect**

Introduction, History. Nutritional and medicinal value of edible mushrooms; Poisonous mushrooms. Types of edible mushrooms available in India - *Volvariella volvacea*, *Pleurotus citrinopileatus*, *Agaricus bisporus*.

### **Unit II**

**9**

**lec** Cultivation Technology : Infrastructure: substrates (locally available) Polythene bag, vessels, Inoculation hook, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag. Pure culture: Medium, sterilization, preparations of spawn, multiplication. Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves. Factors affecting the mushroom bed preparation - Low cost technology ; Composting technology in mushroom production.

### **Unit III**

**7lect**

Storage and nutrition: Short-term storage (Refrigeration – up to 24 hours) Long term Storage (canning, pickles, papads), drying, storage in salt solutions. Nutrition- Proteins- amino acids, mineral elements nutrition- Carbohydrates, Crude fibre content- Vitamins.

### **Unit IV**

**7lect**

Food Preparation: Types of foods prepared from mushroom. Research Centres- National level and Regional level. Cost benefit ratio- Marketing in India and abroad, Export Value.



## **MONEY AND FINANCIAL MARKET**

### **Money and Financial Market**

#### **Course Outcomes**

This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control. Financial and banking sector reforms and monetary policy with special reference to India are also covered.

#### **Course Outline**

##### **1. Money**

Concept, functions, measurement; theories of money supply

##### **2. Financial Institutions, Markets, Instruments and Financial Innovations**

Money and capital markets: organization, structure and reforms in India; role of financial institutions

##### **3. Banking System**

Indian banking system: Changing role and structure; banking sector reforms.

##### **4. Central Banking and Monetary Policy**

Central Bank: Functions, goals, targets, instruments of monetary control; current monetary policy of India.

#### **Readings**

1. F. S. Mishkin and S. G. Eakins, Financial Markets and Institutions, Pearson Education, 6th edition, 2009.
2. F. J. Fabozzi, F. Modigliani, F. J. Jones, M. G. Ferri, Foundations of Financial Markets and Institutions, Pearson Education, 3rd edition, 2009.
3. L. M. Bhole and J. Mahikud, Financial Institutions and Markets, Tata McGraw Hill, 3th edition, 2011.
4. M. Y. Khan, Indian Financial System, Tata McGraw Hill, 7th edition, 2011.
5. Various latest issues of R.B.I. Bulletins, Annual Reports; Reports on Currency and Finance and Reports of the Working Group, IMF Staff Papers.



## **MEDIA, GENDER AND HUMAN RIGHTS**

### **Media, Gender and Human rights**

#### **Course contents:**

#### **Unit I**

Media and the social world, Media impact on individual and society, Democratic Polity and mass media, Media and Cultural Change, Rural-Urban Divide in India: grass-roots media

#### **Unit II**

Gender Conceptual Frameworks in Gender studies, Feminist Theory, History of Media and Gender debates in India (Case studies), Media and Gender - Theoretical concerns., Media and Masculinity, Media: Power and Contestation, Public Sphere and its critique, "Public sphere" of the disempowered?

#### **Unit III**

Media and Social Difference: class, gender, race etc. Genres – Romance, Television, Soap Opera, Sports  
Presentation: a) Watch a Indian TV Soap Opera /reality show for a week and for representation of Family. b) Project on use of internet by the marginalized groups.

#### **Unit IV**

Media and Human Rights, Human Rights- Theoretical perspectives, Critique Universal Declaration of Human Right, Human Rights and Media ( Case Studies)  
Presentation: Representation of Human Rights issues and violations in International and media

#### **Essential Readings**

1. Street, John. *Mass media, politics and democracy*. Palgrave Macmillan, 2011.
2. Balnaves, Mark, Stephanie Donald, and Brian Shoesmith. *Media theories and approaches: A global perspective*. Palgrave-Macmillan. 2009 ( Pg No. 3-10, 11-34, 35-53)
3. Mackay, Hugh, and Tim O'Sullivan, eds. *The media reader: continuity and transformation*. SAGE Publications Limited, 1999. 13-28, 43-73, 287-305.
4. Asen, Robert & Brouwer, Daniel, 2001. Counter Publics and the State, SUNY Press. 1-35, 111-137

#### **Readings:**

1. Ninan, Sevanti. *Headlines from the heartland: Reinventing the Hindi public sphere*. SAGE Publications Pvt. Limited, 2007.
2. Curran, James. "Rethinking mass communication." *Cultural studies and communications*. London: Arnold (1996).
3. McQuail, Denis. *Mass communication theory: An introduction*. Barcelona, 1991. 79-111
4. Berger, Arthur Asa. *Media and society: A critical perspective*. Rowman & Littlefield, 2012. Pg 9-21, 167-180
5. Nichols, Joe & Price, John, *Advanced Studies in Media*, Thomas Nelson, 1999. 42-55
6. Thirumal, P., and Gary Michael Tartakov. "India's Dalits search for a democratic opening



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## **LIBRARY LITERACY**

### **Objectives:**

**Basic objectives of this course are to-**

- Provide basic knowledge about library and its uses.
- Literate about library services.
- Provide basic training on information storage, searching & retrieval system.
- To inculcate the ethical use of information among the learners.
- To familiarize the learners with the organization of information sources.

### **Learning Outcomes:**

- Create awareness among the learners about various information sources & their use.
- To develop necessary skills among learners for utilizing the library and information services to supplement studies and for solving day-by-day problems.
- Inculcate interest in the learners in the LIS which may help them to opt the subject as a career

### **Unit -1 Library and Society**

- Libraries Definition, Functions, types.
- Five laws of Library Science
- Library rules and users
- Librarianship as a profession

### **Unit – 2 Knowledge Organizations and Retrieval**

- Classification
  - Cataloguing
  - Indexing and Abstracting
- 
-





## **LEGISLATIVE PROCEDURES IN INDIA**

### **Course Objective:**

### **LEGISLATIVE PROCEDURES IN INDIA**

The purpose of this course is to familiarize the students with the legislative activities in India both in the states and the center and to train them in skills of back-end support to the legislatures and parliamentarians through research inputs in order to strengthen the legislative business. It requires, therefore, a proper understanding of the process, procedure and working of the parliament and state legislature and the role of the legislators and the parliamentarians. Besides, the purpose of the course is also to equip the students about media monitoring which involves news analysis and their use in the legislative and policy - making activities. Apart from teaching the texts, the students would be exposed to workshops for imparting skills in providing legislative support to the parliamentarians.

### **Learning Outcomes:**

- a. Students will be able to know how the bills are drafted and presented in the parliament and state legislatures and what are the stages they pass through before becoming a law.
- b. Students will be able to know about the role of the legislature in the parliament and what are the research inputs they need to make an effective contribution to the parliamentary debates and legislative businesses.
- c. The students would know how to scan and filter out media reports and use them for legislative inputs.

### **Unit I: Functions of Legislative Members**

- a. How laws are made?
- b. What are stages and procedures of legislation?

### **Unit II: Legislative Communications**

- a. Working of Parliamentary Committees

### **Unit III: Budget**

- a. Budget Preparation and Passage of Budget

### **Reading list:-**

- Kashyap, S. (2011). Our Parliament, New Delhi: National Book Trust.
- Sharma, B. K. (2018). Introduction to Indian Constitution. New Delhi: PHI Learnings.
- Hiranandani, S. (1964). Legislative Drafting: An Indian View. The Modern Law Review, 27(1), 1-8.
- Motiwal, O. P. (1974). The Principles of Legislative Drafting. Journal of Law Institute, (16), Indian Law Institute, Delhi, pp. 11-47.



## **INTRODUCTION TO CRYPTOGRAPHY**

### **INTRODUCTION TO CRYPTOGRAPHY**

**(02 Credit: L: 2-T: 0-P: 0)**

Basic Concept of Cryptography, Information security, Background on functions, Basic terminology and concepts, Symmetric-key encryption, Digital signatures, Authentication and identification, Public-key cryptography, Hash functions, Protocols and mechanisms, Key establishment, management and certification, Pseudorandom numbers and sequences, Classes of attacks and security models, Identification and Entity Authentication, Digital Signatures, Efficient Implementation, Patents and Standards. Basic concepts of elliptic curve and quantum cryptography.

#### **Text Books:**

1. Wenbo Mao, Modern Cryptography: Theory and Practice. Pearson Education, 2004
2. J Buchmann, Introduction to Cryptography, Springer (India) 2004
3. A. Menezes, P. van Oorschot and S. Vanstone, Handbook of Applied Cryptography, CRC Press



## **INTRODUCTION TO CRIMINALISTICS**

### **Introduction to Criminalistics**

#### **Credits: 2**

*Learning Objectives: After studying this paper the students will know*

- a. The importance of criminology.*
- b. The causes of criminal behavior.*
- c. The significance of criminal profiling to mitigate crime.*
- d. The consequences of crime in society.*
- e. The elements of criminal justice system.*

#### **Unit 1: Introduction to Crime and Criminology**

Nature and Scope, Concept of Crime, Criminals and Criminology, Classification of Crime and Criminals, Methods and Techniques in Criminology, Introduction to IPC, CrPC, IEA and their relevant sections.

#### **Unit 2: Organised Crime and Police Administration**

Crime Against Women and Children, Crime Against Property, Juvenile Delinquency, Cyber Crimes, Economic Crimes, Inquest, INTERPOL

#### **Unit 3: White Collar Crime**

History and Definition, Elements of White-Collar Crime, Types of White-Collar Crime, White Collar Crime in India.

#### **Unit 4: Punishment and Prison System**

Concept and Types of Punishment, Theories of Punishment, Probation and Parole, Criminal Behavior, Recidivism.



## **INFORMATION COMMUNICATION TECHNOLOGY**

### **COURSE**

This course aims at acquainting the students with basic ICT tools which help them in their day-to-day life as well as in office and research.

UNIT-I: Fundamentals of Internet: Internet applications & threats, Internet addressing, URL and its parts, Browsers and utility of Browsers, Search Engines, Introduction to Social Networking apps: Twitter, Tumblr, LinkedIn, Facebook, flickr, Skype, yahoo, YouTube, WhatsApp

UNIT-II: Introduction to Electronic mail: Email Addresses, Domain Names, Mailers, parts of an E-mail Message, Composing E-mail Message, Mail Management through pop client apps online/offline.

UNIT-III: Overview of Internet security: E-mail threats and secure E-mail, Viruses and antivirus software, Firewalls, Cryptography, Digital signatures, Copyright issues.

UNIT-IV: Google Apps: Google drive, Google documents, Google spread sheets, Google Slides and Google forms, Google Meet, Google Classroom

UNIT-V: GOI digital initiatives in higher education: SWAYAM, SwayamPrabha, National Academic Depository, National Digital Library of India, E-Sodh-Sindhu, Virtual labs, e-acharya, e-Yantra and NPTEL

### **REFERENCE BOOKS:**

1. In-line/On-line: Fundamentals of the Internet and the World Wide Web – by Raymond Greenlaw Publishers: McGraw Hill Education
2. Internet Technology and Web Design, McGraw Hill Education India.
3. Information Technology – The Breaking Wave, Dennis Curtin, Kunal Sen, Kim Foley and Cathy Morin, TMH.

### **COURSE OUTCOMES:**

Students would

- Understand the literature of social networks and their properties.
- Explain which network is suitable for whom.
- Develop skills to use various social networking sites like twitter, flickr etc.
- Learn few GOI digital initiatives in higher education.
- Apply skills to use online forums, docs, spreadsheets, etc. for communication, collaboration and research.
- Get acquainted with internet threats and security mechanisms.





## **INDIAN CONTRIBUTION TO PHYSICS**

### **Course Objectives**

- This course would empower the student to understand the ancient contribution of India towards Classical Physics.
- It will also enable the students to analysis Vaiseshika Darshan originated by Kanada with the principles of Classical Physics.
- The students will also be able to understand the great contribution of Indian Physicists towards the growth of Science and Technology

### **Learning Outcomes**

- Upon successful completion of this course, students will be able to understand the ancient contribution of India towards Classical Physics.
- It will also enable the students to analysis Vaiseshika Darshan given by Kanada with the principles of Classical Physics.
- The students will also be able to understand the great contribution of Indian Physicists towards the growth of Science and Technology

### **Unit -1**

- ❖ Need to understand the ancient contribution of India towards Classical Physics.
- ❖ Development of Classical Physics in Western civilization, Ancient Engineering, temples, Dam, Monastery etc.
- ❖ Basic framework of Classical Physics of ancient indian origin.
- ❖ vaisheshika darshan- introduction on important vaisheshika sutras
- ❖ Dharma of physical world, Kanada atomic theory of universe, importance of ancient thoughts in this context.

### **Unit -2**

- ❖ Contributions of contemporary indian physicists towards the growth of science and technology:
  - a) Dr. C.V. Raman (1888-1970), and discovery of Raman effect.
  - b) Satyendranath Bose (1894-1974), Bose-Einstein condensate.
  - c) Dr. Chandrashekhar (1910-1995) and Chandrashekhar limit in Astrology.
  - d) Dr. Meghnad Saha (1893-1956) and Saha Ionization equation.
  - e) Dr. H.J.Bhabha (1909-1966)
  - f) Vikram Sarabhai (1919-1971)
  - g) G.N. Ramachandran (1922-2001)
  - h) Jayant Narlikar (1938)

### **Suggested Readings:**

1. O. Hilton, Scientific Examination of Questioned Documents, CRC Press, Boca Raton (1982)
2. A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence in Civil and Criminal Cases, 4<sup>th</sup> Edition, Foundation Press, New York (1995)
3. Albert S. Osborn; Questioned Documents, 2<sup>nd</sup> Edition, Universal Law Pub., Delhi.
4. Wilson R. Harrison; Suspected Documents and their Scientific Examination.
5. Saferstein, Criminalistics: An Introduction to Forensic Science. Prentice, Hall.
6. Sharma, B.R.: Forensic Science in Criminal Investigation and Trials, Central Law Agency, Allahabad, 1974.



## **HUMAN HEALTH AND EDUCATION**

### **Ability Enhancement Course (AEC): A1**

Semester	Core Course	Course Title	Credits
I-V	AEC-I	Human Health and Sex Education	Theory: 01, Practical: 01

#### **About the course**

The course is designed to address problems associated with health and sex thereby, promoting fitness and well being.

#### **Learning outcomes**

After the completion of this course, the students will be able to:

- .. understand the importance of good health.
- .. observe clean sexual habits thereby warding off sexually transmitted diseases.

### **Theory**

#### **Unit I: Health: Physical and spiritual**

Health as a state of wellbeing, health awareness, Physical health, immunization and vaccination, healthy food, balanced diet, food supplements, proper sleep, exercise and keeping away from stress, pathogens and pollution. Reproductive health, adolescence, senescence. Prevention from mental illness and disabilities, alcoholism, tobacco addiction, de-addiction, lifestyle diseases. Spiritual health, yoga and meditation.

#### **Unit II: Human reproductive and developmental cycle**

Human reproductive system: structural details of male reproductive system, semen, hormonal control. Female reproductive system- structure of ovary, puberty, reproductive cycles and hormonal control, gestation period, hysterectomy, menopause. Events of human reproduction: Gametogenesis- spermatogenesis and oogenesis, ovulation, fertilization, embryonic development, parturition.

#### **Unit III: Infertility and assisted reproductive techniques**

Human intervention in reproduction: Contraception and birth control-barrier method, hormonal methods, natural methods, sterilization, termination of pregnancy. Infertility-male and female infertility, causes and treatment for infertility. Advanced Reproductive Technologies- IVF, GIFT, ZIFT, Donor Insemination (DI). Sperm transfer techniques. Surrogacy.

#### **Unit IV: Sex education and prevention from Sexually transmitted diseases**

Sexually transmitted diseases: Syphilis, chlamydia, trichomoniasis, gonorrhea, AIDS, Sex education: Adolescent sexual activity, teenage pregnancy, sexual harassment, sexual awareness and policies (legal aspects), lesbian and gay sex, bisexual, transgender youth, adolescent stress management

#### **Recommended readings**

1. Kothari P. (1994) Common sexual problems and solutions by, UBS Publishers and Distributors Ltd.
2. Hadley, Mac. E.. (2004) Endocrinology. (5th edition) Pearson Education, Singapore.
3. Taylor, D.J., Green, N.P.O., Stout G. W. (2005) Biological Science. (Editor R. Soper) 3rd Edition, Cambridge University Press.
4. The Complete Manual of Fitness and Well-being. The Reader's Digest Association, Inc. Pleasantville, New York / Montreal.
5. Guyton, A.C. and Hall, J.E..Textbook of Medical Physiology.



## **HTML AND INTRODUCTION TO JAVA SCRIPT**

### **HTML and Introduction to JAVA Script**

#### **COURSE OBJECTIVES:**

- To impart the basic concepts of HTML
- To understand concepts about web Pages and CSS
- To Understand basic concepts about JavaScript .
- To understanding about creating web pages and step by step approach in making the web pages attractive and interactive with the help of HTML Tags, CSS and embedding JavaScript in HTML.

#### **SYLLABUS:**

#### **UNIT I: INTRODUCTION TO HTML**

**Introduction:** Overview of HTML, need of HTML, Use of it, HTML Tags: concept of Tag, types of HTML tags, structure of HTML program **Text formatting through HTML:** Paragraph attributes, line breaks, background formatting **Emphasizing material in a web page:** Heading styles, drawing lines, text styles. Text styles and other text effects-centering, spacing, controlling font size & color Lists: Using unordered and ordered lists.

#### **UNIT II: TABLES, LINKS and FRAMES**

**Handling Tables:** Use of table tag and its attributes. **Linking Documents:** Concept of hyperlink, types of hyperlinks **Frames:** Introduction To frames, using frames & frameset tags, targeting named frames.

#### **UNIT III: INTRODUCTION TO CSS**

Introducing CSS, Types of CSS, Use of color attributes, Use of background and Text attributes in CSS, External Style Sheets.

#### **UNIT IV: INTRODUCTION TO JAVA SCRIPT**

**Overview of Java Script:** advantages, client side java Script, capturing user input, writing JavaScript into HTML ,**Basic JavaScript Techniques:** Data types, literals, variables, operators and expressions Java Script Programming .

#### **UNIT V: JAVA SCRIPT CONSTRUCTION**

**JavaScript Decision Making and Branching Statements:** If and else if, while and do while loop. **JavaScript Functions:** Function declaration, Types of functions in Java Script- Built in functions, User defined functions, **Dialog boxes:** Alert dialog box, prompt dialog box, confirm dialog box.

#### **REFERENCE BOOKS:**

1. Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI by Ivan Bayross (bpb publication)
2. HTML5 by Mark Pilgrim O'Reilly publication
3. D.R. Brooks, An Introduction to HTML and JavaScript for Scientists and Engineers, Springer W. Willard, 2009
4. HTML A Beginner's Guide, Tata McGraw-Hill Education, 2009.
5. J. A. Ramalho, Learn Advanced HTML 4.0 with DHTML, BPB Publications, 2007

#### **COURSE OUTCOMES:**

After completion of this course students should have-

- Ability to analyze the usability of a web site.



- Ability to Implement basic JavaScript.
- Ability to Create attractive web Pages using CSS.
- Ability to have knowledge of client side scripting language concepts
- 

## **SOFT SKILLS**

### **Course Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate runs thus:

CO 1: to communicate with others effectively

CO 2: to develop qualities of leadership..

CO 3: to take responsibility to undertake a work and complete it.

CO 4: to work in groups either as members or leaders

CO 5: to think critically or laterally and solve problems

CO 6: to negotiate with others to solve problems (conflict resolution)

CO 7: to cope with pressure and problems

### **COURSE CONTENT**

Teamwork

Emotional Intelligence Adaptability, Leadership Problem solving

### *Suggested*

### *Readings*

*English and Soft Skills.* S.P. Dhanavel. Orient BlackSwan 2013

*English for Students of Commerce: Precise, Composition, Essays, Poems* eds. Kaushik, et al.





## CHEMINFORMATICS

Semester	Course	Name of the course	Credits
I,II	AEC 7	Chemoinformatics	Theory:2

### *Learning Objective:*

On completion of this course, the students will be able to:

- Know about the history and prospects of chemo-informatics
- Represent molecules and chemical reaction using different notations, SMILES and Matrix representation
- Search chemical structure and application of chemo-informatics in various fields

### *Unit I*

*5 Lectures*

**Introduction to Chemo-informatics:** History, Prospects of chemoinformatics, Molecular Modelling and Structure elucidation.

### *Unit II*

*10 Lectures*

**Representation of molecules and chemical reactions:** Nomenclature, Different types of notations, SMILES coding, Matrix representations, Structure of Molfiles and Sdfiles, Libraries and toolkits, Different electronic effects, Reaction classification.

### *Unit III*

*10 Lectures*

**Searching chemical structures:** Full structure search, sub-structure search, basic ideas, similarity search, three dimensional search methods, basics of computation of physical and chemical data and structure descriptors, data visualization.

### *Unit IV*

*15 Lectures*

**Applications:** Prediction of Properties of Compounds; Linear Free Energy Relations; Quantitative Structure-Property Relations; Descriptor Analysis; Model Building; Modeling Toxicity; Structure-Spectra correlations; Prediction of NMR, IR and Mass spectra; Computer Assisted Structure elucidations; Computer Assisted Synthesis Design, Introduction to drug design; Target Identification and Validation; Lead Finding and Optimization; Analysis of HTS data; Virtual Screening; Design of Combinatorial Libraries; Ligand and structure based drug design; Applications in Drug Design.

### Recommended Books/references:

- Andrew R. Leach and Valerie, J. Gillet (2007) *An introduction to Chemoinformatics*. Springer: The Netherlands.
- Gasteiger, J. and Engel, T. (2003) *Chemoinformatics: A text-book*. Wiley-VCH.
- Gupta, S. P. (2011) *QSAR & Molecular Modeling*. Anamaya Pub.: New Delhi.

### *Course Outcome:*

Graduate will have understanding of:

- The history and prospects of chemo-informatics.
- Represent molecules and chemical reaction using different notations, SMILES and Matrix representation.
- Search chemical structure and application of chemo-informatics in various fields.



## **FERMENTATION SCIENCE & TECHNOLOGY**

### *Learning outcomes:*

After completing this course, the learner will be able to:

1. Employ the process for maintenance and preservation of microorganisms
2. Analyze the various aspects of the fermentation technology and apply for Fermentative production
3. Demonstrate proficiency in the experimental techniques for microbial production of enzymes: amylase and protease, bio product recover

### *UnitI*

*8 Lectures*

Preparation of microbial culture, Preparation and sterilization of fermentation media. Isolation and improvement of industrially important microorganisms.

### *UnitII*

*8 Lectures*

Maintenance and preservation of microorganisms, Metabolic regulations and overproduction of metabolites. Kinetics of microbial growth and product formation.

### *UnitIII*

*8 Lectures*

Scope and opportunities of fermentation technology. Principles of fermentation: Submerged, solid state, batch, fed-batch and continuous culture. Fermentative production of vinegar, alcohol (ethanol, wine, beer), acids (citric acid and gluconic acid), amino acids (lysine and glutamic acid) and antibiotics (penicillin and streptomycin).

### *UnitIV*

*6 Lectures*

Microbial production of enzymes: Amylase and Protease. Bioproduct recovery.

### *Suggested readings*

1. Waites M.J. (2008). Industrial Microbiology: An Introduction, 7th Edition, Blackwell Science, London, UK.
2. Prescott S.C., Dunn C.G., Reed G. (1982). Prescott & Dunn's Industrial Microbiology, 4th Edition, AVI Pub. Co., USA.
3. Reed G. (2004). Prescott & Dunn's industrial microbiology, 4th Edition, AVI Pub. Co., USA.
4. JR Casida L.E. (2015). Industrial Microbiology, 3rd Edition, New Age International (P) Limited Publishers, New Delhi, India.
5. Waites M.J., Morgan N.L., Rockey J.S. and Highton G. (2001) Industrial Microbiology: An Introduction. 1st Edition, Blackwell Science, London, UK.
6. Pelczar M.J., Chan E.C.S. and Krieg N.R. (2003) Microbiology. 5th Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi.

### *Course Outcome:*

Graduate will have understanding of:

1. Employ the process for maintenance and preservation of microorganisms
2. Analyze the various aspects of the fermentation technology and apply for Fermentative production
3. Demonstrate proficiency in the experimental techniques for microbial production of enzymes: amylase and protease, bio products recover



## **MEDICINAL PLANT & AROMATIC PLANT**

### **AEC 2. MEDICINAL PLANT & AROMATIC PLANT**

**CR:2**

Medicinal diversity in India, Indian Traditional knowledge on Medicinal plants: history, scopes, opportunities. Merits and demerits of using herbal products. Important medicinal plants viz. *Piper cardium*, *Rouffiasarpentina*, *Withaniasomnifera*, *DioscoreaBaladona*, *CinconaCitronellgrass*, khus grass, Mentha, Sweet flag (butch), *Ocimum*, Safedmusli, Giloe. Soil and climate requirements, Export and import potential of medicinal plants. Cultivation techniques. Utilization of medicinal and aromatic plants. Value addition and processing techniques. Medicinal/herbal garden, National Medicinal Plant Development Board, Medicinal plant conservation area (MPCA).

### **PRACTICAL**

Identification of different medicinal and aromatic plants. Collection and processing of medicinal and aromatic plants, processing techniques, storage, packaging. Visit of MPCA, forest area. Application of locally available medicinal plants, interaction with Vaidya and local healers.

#### **Suggested readings:**

Amritpal Singh Saroya (2018). Textbook of Medicinal and Aromatic Plants. Indian Council of Agriculture Research, New Delhi.

Anand Singh Bisht (2019). Hand Book of Medicinal and Aromatic Crops, Brillion Publishing House, New Delhi.

N Deepa Devi (2017). A Text Book of Medicinal and Aromatic Crops. Aavishkar Publishers, Distributors, Jaipur





## **WATER REMEDIATION AND CONSERVATION STUDIES**

### ***Learning Objective:***

On completion of this course, the students will be able to:

- Know about the various sources of water pollution
- Know the normal standard of potable water as per WHO recommendation
- Understand water conservation and erosion of soil
- Develop various water remediation and conservation studies

### ***Unit-I***

### ***10 Lectures***

Sources of water pollutants, pollutants, Industrial and human contribution, WHO recommendation about potable water, current scenario of drinking water quality, chemistry of toxicants like arsenic, fluoride, chromium, lead and mercury, cause and effects of water pollution, remediation, techniques involved such as adsorption, coagulation-filtration, Nalgonda techniques, reverse osmosis, activated charcoal detoxification, applications of non-toxic oxides and mixed oxides, regeneration and recycling, mechanisms of detoxification, bio-remediation, need of green chemistry, futurescope.

### ***Unit-II***

### ***10 Lectures***

Introduction to water conservation and erosion of soil, forms of water erosion, factors affecting water erosion, types of water erosion, mechanics of water erosion control, agronomical measures of water erosion control, Terraces for water erosion control:

Modeling of watershed processes, Case study of water-shed modeling for water conservation and water quality.

### **Recommended Books/references:**

1. Citterden J. C. , Trussell J. R., Hand D. W., Howe K. J., Tchobanoglous G. , Water treatment: Principles and Design MWHpublication.
2. De A. K. Environmental Chemistry, WileyEastern
3. Clarson D., Dara S. S. A text book of Environmental chemistry and pollution control, S Chand Co. Soil and water analyticalmethod
4. Edzwald J., Water Quality & Treatment: A Handbook on Drinking Water (Water Resources and Environmental EngineeringSeries)

### ***Course Outcome:***

Graduate will have understanding of:

1. The various sources of water pollution
2. The normal standard of potable water as per WHO recommendation
3. Water conservation and erosion of soil
4. Develop various water remediation and conservation studies





## **FORENSIC RADIOLOGY**

### **Forensic Radiology**

**Credits: 02**

*Learning Objectives: After studying this paper the students will know-*

- Basic principles of radiology
- Forensic significance of radiology
- Importance of radiological examination in species, age estimation and sex identification

#### **Unit I: Introduction to Forensic Radiology**

Definition, Historical aspects, Scope of forensic radiology.

#### **Unit II: Techniques applied in Forensic Radiology**

X-Ray, Ultrasound, CT and MRI scan, Nuclear medicine scan etc.

#### **Unit III: Identification**

Identification of dead- need, methods. Identification of living- animal or human, age, and sex determination.

#### **Unit IV: Applications of Forensic Radiology**

Smuggling/ border control, dental identification, gun-shot wounds.

#### **SUGGESTIVE READINGS:**

- 1) Petrovečki, Vedrana. "Lo Re G, Argo A, Midiri M, Cattaneo C, eds. Radiology in Forensic Medicine: from Identification to Post-mortem Imaging
- 2) Thali, M.J., Viner, M.D., & Brogdon, B.G. (Eds.). (2010). Brogdon's Forensic Radiology (2nd ed.).
- 3) Vidua, Raghvendra Kumar. "Application of Radiology Techniques and Technologies in Forensic Investigations."
- 4) Govindiah D. "Forensic Radiology made easy".
- 5) Richard W, Brant W. "Fundamentals of body CT".

*Signature*  
25/05/2022



## **INTRODUCTION TO BIOMETRY**

### **Introduction to Biometry**

#### **Credit: 2**

*Learning Objectives: After studying this paper the students will know*

- a. *The importance of biometrics systems in criminal cases.*
- b. *Knowledge and awareness regarding current and advanced biometric identification systems.*
- c. *Use of biometrics in personal identification.*
- d. *To provide information regarding the applications of biometric parameters and technologies.*

#### **Unit 1: Introduction to Biometrics**

Definition of Biometrics, Features and function of biometric system, working of biometrics, Classification of biometric systems – physical and behavioral, Strength and weakness of physical and behavioral biometrics.

#### **Unit 2: Physical Biometrics**

Physical biometrics: Fingerprints, Iris, Retina, Facial recognition, Hand geometry, DNA.

#### **Unit 3: Behavioral Biometrics**

Behavioral Biometrics: Speaker recognition, Signature, Gait biometrics

#### **Unit 4: Biometric Parameters**

Biometric parameters: FM, FNM, FTC, FTE, FAR, FRR, EER, ROC, DET; Emerging Biometric Technologies.



## **SIMULATION AND DESIGN OF DIGITAL CIRCUIT COMPONENTS**

### **Course Objectives**

- To acquaint students with various basic digital gates used in digital system and develop logical circuits using Boolean gates, construction of various logic circuits using basic gates.
- To impart practical working knowledge of Simulation and Analysis of digital circuits using MATLAB and/or SCILAB.

### **Learning Outcomes:**

On successful Completion of the course, students will be able to:

- Understand the main features and importance of the MATLAB/SCI LAB mathematical programming environment.
- Apply working knowledge of MATLAB/SCI LAB package to simulate and solve Digital Electronics circuits and Applications.

### **Basics of the circuit components**

Basics of Voltage, Current, Resistance and Power, Ohm's law, Series and parallel combinations of electrical components. Basics of electrical instruments such as multimeter, voltmeter and ammeter.

### **Basics and Applications of the MATLAB**

Fundamentals of the MATLAB software. Logic Circuits, Equivalent circuits of an NOT Gate, Exclusive OR Gate, NOR Gate as Universal Gate, NAND Gate, NAND Gate as Universal Gate, XNOR Gate, Half Adder, Full Adder, Half Adder using NAND Gate, Full Adder using NAND Gate, Comparator.

### **Reference Books:**

1. Electrical Circuits, K.A. Smith and R.E. Alley
2. Modern Digital Electronics by R.P. Jain
3. Digital Electronics by Malvino and Leech
4. Digital Signal Processing with Examples in MATLAB by Samuel D. Stearns and Don R. Hush
5. Digital Signal Processing using MATLAB by Vinay K. Ingle and Johan G. Proakis

### **SEC - 1: Simulation and Design of Digital Circuits Components Lab**

#### **Name of Experiments**

1. Design the OR, AND & NOT Gate circuits using software and Verify with experiments
2. Design the NAND Gate circuits using software and Verify with experiments.
3. Design the NOR Gate circuits using software and Verify with experiments.
4. Design the Half Adder using NAND Gate using software and Verify with experiments.
5. Design the Full Adder using NAND Gate using software and Verify with experiments.
6. Design the Comparator circuit using software and Verify with experiments.



## **Electronics in daily life**

**Unit – I: History of Electronics:** The vacuum tube era, The semiconductor revolution, Integrated circuits, Compound Semiconductor, Digital electronics Materials, Optoelectronics, Superconducting electronics, Flat-panel displays

**Unit – II:** Different Electronic Components / Semiconductor Components, Passive Components-Resistors: specifications and colour coding. Capacitors: Principle, specifications and colour coding. Inductors: Principle, specifications and classification, Battery, Battery holders and connectors ,Fuses ,Transistors, Oscillation, thyristors ,Light-emitting diodes (LEDs) AC fundamentals: Generation of alternating voltages, Basic electronic functions Rectification, Amplification Using n-p-n transistor, Multimeters, MOSFETs.

**Unit – III:** Application of Electronics: Consumer Electronics Office Gadgets like calculators, Personal computers, Digital Camera, FAX machines, Printers, Scanners, Front Projector, etc. Home appliances Robot Vacuum Cleaner, Electric Deep Fryer Refrigerator, AC, Coffee Maker Machine, Hair dryer Water Purifier/Dispenser, Storage Devices

Advanced Consumer Electronic Devices: Smart Phones, iPod and Tablets, Wi-Fi and the Internet, barcode scanners, ATM, Dishwasher and POS terminals.

Medical Electronics: Stethoscope, Respiration Monitors Glucose meter, The Pacemaker, MRI, CT scan

**Unit – IV:** Industrial and Automotive Electronics: Power Windows, Electronic Control Unit (ECU),Airbag control , all vehicles etc. Meteorological and Oceanographic Electronics: Barometer: .Anemometer: Anemometer Hygrometer ,Data logger Smart Grid Systems Image Processing, Entertainment and Communication Electronics:Smart TVs, Set Top Boxes, Speakers , receivers etc.

Defence Application: RADAR technology, Electronic Warfare Systems, Military electronic equipments etc.

### **Reference Books:**

9. Getting Started in Electronics by Forrest, M.Mims, Master Publishing, Inc
10. Make Electronics – Learning by Discovery by Charles Platt ,Maker Media Publishers
11. Practical Electronics for Inventors , Paul Scherz, McGraw-Hill Education
12. Everyday Electronics and You: A Guide to Maintaining and Getting the Best Out of Your Everyday Electronics Devon A. Smith Kindle Edition ,
13. Complete Guide to Home Appliance Repair – Evan Powel, Better Homes & Garden Books Publication.
14. A Text book of Electrical Technology Vol. 1 and 2,.B.L.Thereja S. Chand & Company
15. Domestic appliances servicing, K.P.Anwer,Scholar Institute Publications.
16. Basic Electrical Engineering, M.L. Anwani,DhanpatRai Publication.





## **ENVIRONMENTAL ECONOMICS**

### **ENVIRONMENTAL ECONOMICS**

#### **Course Outcomes**

This course focuses on economic causes of environmental problems. In particular, economic principles are applied to environmental questions and their management through various economic institutions, economic incentives and other instruments and policies. Economic implications of environmental policy are also addressed as well as valuation of environmental quality, quantification of environmental damages, tools for evaluation of environmental projects such as cost-benefit analysis and environmental impact assessments. Selected topics on international environmental problems are also discussed.

#### **Course Outline**

##### **1. Introduction**

What are environmental economics; Importance and Scope of Environmental Economics.

##### **2. Pollution**

Types of Pollution - Soil, Air, and Water, Problems and Prospects of different pollution.

##### **3. The Design and Implementation of Environmental Policy**

Overview: Implementation of environmental policy.

##### **4. International Environmental Problems**

Environmental problems; economics of climate change;

##### **5. Disaster Management and Sustainable Development**

Meaning and Importance of Disaster Management, Process and effects on environment,

#### **Readings:**

1. Charles Kolstad, *Intermediate Environmental Economics*, Oxford University Press, 2<sup>nd</sup> edition, 2010.
2. Robert N. Stavins (ed.), *Economics of the Environment: Selected Readings*, W.W. Norton, 5<sup>th</sup> edition, 2005.
3. Roger Perman, Yue Ma, James McGilvray and Michael Common, *Natural Resource and Environmental Economics*, Pearson Education/Addison Wesley, 3<sup>rd</sup> edition, 2003.
4. Maureen L. Cropper and Wallace E. Oates, 1992, -Environmental Economics: A Survey, *Journal of Economic Literature*, Volume 30:675-740.



## LANGUAGE LEARNING THROUGH LITERATURE

### Learning Objectives

- ❖ Develop an understanding of the relationships between studies in language and literature.
- ❖ Foster a lifelong interest in and enjoyment of language and literature.
- ❖ To enhance students basic knowledge of various figure of speeches
- ❖ Develop skills in interpretation, analysis and evaluation.
- ❖ To make students how to use literature in English communication skills

**Unit 1:** Understanding the Relationship between Language and Literature through Vocabulary, Literal versus Metaphorical Meaning etc.

**Unit 2:** Literary Devices

Figures of Speeches: Metaphor, Simile, Alliteration, Metonymy etc.

**Unit 3:** Rhetorical Devices

Introduction to Rhetoric, Structure and Style etc.

**Unit 4:** Study of Literary Texts: Dramas, Poetry, Fictions, Short Stories etc.

### Suggested Readings

Hill, McGraw. *Language Through Literature*. McGraw, 2001.

Simpson, Paul. *Language Through Literature: An Introduction*. Routledge, 1996.

Martino, Emilia Di. *Studying Language Through Literature*. Cambridge, 2014.

Kaul, Ranjana. *Language Through Literature*. Delhi Publication House, 2019.

Howie, H. S. (1993). Critical thinking: A critical skill for students. *Reading TODAY*, 24.



## **PUBLIC POLICY IN INDIA**

**Objective:** The paper seeks to provide an introduction to the interface between public policy and administration in India. The essence of public policy lies in its effectiveness in translating the governing philosophy into programs and policies and making it a part of the community living. It deals with issues of decentralization, financial management, citizens and administration and social welfare from a non-western perspective.

### **UNIT: I. PUBLIC POLICY**

Meaning, Definition, Characteristics and Significance

### **UNIT: II. PUBLIC POLICY FORMULATION**

### **UNIT: III. PUBLIC POLICY IMPLEMENTATION**

### **UNIT: IV. PUBLIC POLICY AND SOCIAL WELFARE**

- . Meaning of Social Welfare
- . Relationship between Public Policy and Social Welfare

### **UNIT: V. CASE STUDIES OF PUBLIC POLICY**

- . Right to Information
- . Employment: MNREGA

#### **Reading List**

- T. Dye, (1984) *Understanding Public Policy*, 5th Edition. U.S.A: Prentice Hall
- M. Howlett, M. Ramesh, and A. Perl, (2009), *Studying Public Policy: Policy Cycles and Policy subsystems*, 3rd edition, Oxford: Oxford University Press
- T. Dye, (2002) *Understanding Public Policy*, New Delhi: Pearson
- Y. Dror, (1989) *Public Policy Making Reexamined*. Oxford: Transaction Publication
- N.G.Jayal, *Democracy and The State: Welfare, Secular and Development in Contemporary India*, Oxford : Oxford University Press, 1999
- Noorjahan Bava. *Development Policies and Administration in India*, Delhi: Uppal Publishers, 2001
- Singh, S. and Sharma, P. (eds.) *Decentralization: Institutions and Politics in Rural India*. New Delhi: Oxford University Press, 2007. Jugal Kishore, *National Health Programs of India: National Policies and Legislations*. Century Publications, 2005
- K. Lee and Mills. *The Economic Of Health In Developing Countries*, Oxford: Oxford University Press, 1983
- K. Vijaya Kumar. *Right to Education Act 2009: Its Implementation as to Social Development in India*, Delhi: Akansha Publishers, 2012.
- Marma Mukhopadhyay and Madhu Parhar(ed.) *Education in India: Dynamics of Development*, Delhi: Shipra Publications, 2007
- Nalini Juneja. *Primary Education for All in the City of Mumbai: The Challenge Set By Local Actors*’, International Institute For Educational Planning, UNESCO: Paris, 2001
- Surendra Munshi and Biju Paul Abraham [eds.] *Good Governance, Democratic Societies and Globalization*, Sage Publishers, 2004



## **INTELLECTUAL PROPERTY RIGHT AND ENTREPRENEURSHIP**

### **Course Objective**

The objective of the course is to introduce the students about the basic knowledge on intellectual property rights and their implications in biological research and product development; students become familiar with India's IPR Policy; about concepts of entrepreneurship including identifying a winning business opportunity, gathering funding and launching a business, growing and nurturing the organization and harvesting there wards.

### **Course Learning Outcomes**

Learning outcomes on completion of this course the students will be able to;

- Understand different types of intellectual property rights.
- Understand the protection of products derived from biotechnology research
- Understand Indian patent Act and issues related to application and obtaining patents.
- Understand entrepreneurial skills
- Understand role of entrepreneurship in developing economy

### **Course contents**

#### **Unit I**

Introduction to Indian Patent Law, World Trade Organization and its related intellectual property provisions, Intellectual/Industrial property and its legal protection in research, design, development in Biotechnology

#### **Unit II**

Essential requirements for patenting, types of patent, things that are patentable and non-patentable, Drug patents in India, various types of patent application in India, patenting of living organism, traditional knowledge, commercial exploitation and protection.

#### **Unit III**

Concept of entrepreneur, nature of entrepreneur, entrepreneurial characteristics, functions of an entrepreneur, role of entrepreneurship in developing economy.

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## Unit IV

Entrepreneurship: Selection of a product, line, design and development processes, economics on material and energy requirement, stock the product and release the same for making etc. The basic regulations of excise: Demand for a given product, feasibility of its production under given constraints of raw material, energy input, financial situations export potential etc.

## Suggested Reading

1. Ganguli,P.(2001).IntellectualPropertyRights:UnleashingtheKnowledgeEconomy.New Delhi: Tata McGraw-Hill Pub.
  2. NationalIPRPoly,DepartmentofIndustrialPolicy&Promotion,Ministryof Commerce,GoI
  3. CompleteReferencetoIntellectualPropertyRightsLaws.(2007). Snow White PublicationOct.
  4. Kuhse,H.(2010).Bioethics:anAnthology.Malden,MA:Blackwell.
  5. OfficeoftheControllerGeneralofPatents,Design&Trademarks;Departmentof Industrial Policy & Promotion; Ministry of Commerce & Industry; Government of India.<http://www.ipindia.nic.in/>
  6. KarenF.GreifandJonF.Merz,CurrentControversiesintheBiologicalSciences- Case Studies of Policy Challenges from New Technologies, MIT Press
  7. World Trade Organisation.<http://www.wto.org>
  8. World Intellectual Property Organisation.<http://www.wipo.int>
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## **SET THEORY AND LOGIC**

### **SET THEORY AND LOGIC**

Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, contra positive and inverse propositions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations.

Sets, subsets, Set operations and the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Standard set operations. Classes of sets. Power set of a set.

Difference and Symmetric difference of two sets. Set identities, generalized union and intersections. Relation: Product set, Composition of relations, Types of relations, Partitions, Equivalence Relations with example of congruence modulo relation, Partial ordering relations, and n-ary relations.

#### **Books Recommended:**

1. R.P. Grimaldi, *Discrete Mathematics and Combinatorial Mathematics*, Pearson Education, 1998.
2. P.R. Halmos, *Naive Set Theory*, Springer, 1974.
3. E. Kamke, *Theory of Sets*, Dover Publishers, 1950.



## हिंदी भाषा : एक सामान्य परिचय

Course Code	Course Name	Periods			Duration	Scheme			Credits
		L	T	P		IA	ESE	Sub Total	
HIUBTA1	हिंदी भाषा : एक सामान्य परिचय	2	-	-	2 Hours	30	70	100	2

### Course Objective :

- हिंदी भाषा की बनावट और बुनावट का ज्ञान भाषागत प्रयोगों की दिशा और दशा को निर्धारित करती है।

### Syllabus Content :

- ❖ भाषा की परिभाषा, प्रकृति एवं विविध रूप
- ❖ हिंदी की वर्ण-व्यवस्था : स्वर एवं व्यंजन।
- ❖ स्वर के प्रकार - ह्रस्व, दीर्घ तथा प्लुत।
- ❖ व्यंजन के प्रकार - स्पर्श, अन्तस्थ, ऊष्म, अल्पप्राण, महाप्राण, घोष तथा अघोष।
- ❖ वर्णों का उच्चारण स्थान : कण्ठ्य, तालव्य, मूर्धन्य, दन्त्य, ओष्ठ्य तथा दंत्योष्ठ्य।
- ❖ बलाघात, संगम, अनुतान तथा संधि।

### सहायक ग्रंथ :

1. आधुनिक हिन्दी व्याकरण और रचना – वसुदेव नन्दन प्रसाद, भारती भवन प्रकाशन, पटना
2. सामान्य हिन्दी एवं हिन्दी व्याकरण- ब्रजकिशोर प्रसाद सिंह, यूनिकॉर्न पुस्तक, नई दिल्ली
3. हिन्दी व्याकरण – कामता प्रसाद गुरु, प्रभात प्रकाशन, नई दिल्ली
4. भाषा विज्ञान- भोलानाथ तिवारी, किताब महल, नई दिल्ली
5. हिन्दी भाषा – हरदेव बाहरी, अभिव्यक्त प्रकाशन, जोधपुर

### Course Learning Outcomes :

हिन्दी भाषा प्रदेशों में उच्च शिक्षा प्राप्त विद्यार्थियों से न्यूनतम अपेक्षा है कि वे अपनी भाषा की सामान्य विशेषताओं, लिपि और उसकी वैज्ञानिकता आदि से उनका सामान्य परिचय जरूर हो। इसे ही ध्यान में रखकर यह पाठ्यक्रम तैयार किया गया है।



## **BIO-MANAGEMENT OF ENVIROMENT**

### **Bio-management of Environment (BTUBTA1)**

**CREDITS: 2**

#### **Course Objective**

The aim of the course is to study the different techniques such as bioremediation (using microorganisms) and phytoremediation (using plants) techniques which is helpful for the degradation of environmental pollutants such as pesticides, heavy metals, radioactive substances etc. present in the soil, water and aquifers.

#### **Course Learning Outcomes**

- On the successful completion of the course, students are aware of the biomanagement of soil.
- Have knowledge about biomanagement of petroleum contaminant.
- Aware of the biomanagement of heavy metal.
- Have the knowledge of bioremediation (using microorganisms) and phytoremediation techniques.

#### **Course contents**

##### **Unit I**

Biomanagement of soil: An overview of global market and available technologies local gain, global loss: The Environmental cost of action, bioavailability of contaminants in soil, microbial remediation of metals in soils

##### **Unit II**

Biomanagement of Petroleum Contaminants: benzene-contaminated underground aquifers. Biomining, Bioleaching, Enrichment of ores by microorganisms (Gold, Copper and Uranium). Environmental significance of genetically modified microbes, plants and animals, Molecular aspects and applications in biotechnology

##### **Unit III**

Biosurfactants, strategies based on the use of fungal enzymes, anaerobic Metabolism and bioremediation of BTEX Hydrocarbons (Benzene, Toluene, Ethylbenzene, and Xylene), Treatment of municipal waste and Industrial effluents, Bio-fertilizers, Role of symbiotic and asymbiotic nitrogen fixing bacteria in the enrichment of soil, Algal and fungal biofertilizers (VAM)

##### **Unit IV**

Heavy metal phytoremediation: Microbial indicators of soil health for the assessment of remediation efficiency. Environment and the tools in rhizo- and bioremediation of





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contaminated soil molecular tools for monitoring and validating bioremediation, genetic engineering of bacteria and their potential for bioremediation

### **Suggested Reading**

1. S.C. Santra, Environmental Science
2. Pradipta Kumar Mohapatra, Environmental Biotechnology
3. Hans-Joachim Jordening and Jesef Winter, Environmental Biotechnology – Concepts and Applications
4. Metcalf and Eddy, Tata McGraw hill, Waste Water Engineering
5. S.S. Purohit, Agricultural Biotechnology
6. Alicia L. Ragout De Spencer, John F.T. Spencer, Environmental Microbiology : Methods and Protocols
7. Milton Wainwright, Introduction to Environmental Biotechnology
8. Gilbert Masters, Principles of Environmental Engineering
9. Metcalf & Eddy, Wastewater Engineering
10. Sibley, Law and Strategy of biotechnological patents. Butterworth publication
11. Ganguli-Tat McGrawhill, Intellectual property rights.
- 12 Wattal, Intellectual Property Right. Oxford Publication



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## DOCUMENTARY PRODUCTION

### Course Objectives:

1. To know the concept of documentary making
2. To know the production of documentary

### Course contents:

#### Unit 1:

Understanding the Documentary, Introduction to Realism Debate, Introduction to Shooting styles, Introduction to Editing styles, Structure and scripting the documentary.

#### Unit 2-

Documentary Production, Pre-Production, Researching the Documentary, Research: Library, Archives, location, life stories, ethnography Writing a concept: telling a story Treatment, Writing a proposal and budgeting

**Suggested Practical Exercise-** Shooting a short film (5-6 minutes) and Editing the same.

### Course outcomes:

1. Understanding of the concept of the documentary
2. Learning of the production of documentary

### Suggested Readings:

Erik Barnow and Krishnaswamy Documentary  
Charles Musser "Documentary" in Geoffrey Nowell Smith ed *The Oxford History of World Cinema*  
Oxford University Press: 1996, 322-333  
Michael Renov "The Truth about Non Fiction" and "Towards a Poetics of Documentary" in Michael Renov ed. *Theorizing Documentary* AFI Film Readers, New York and London: Routledge: 1993, 1-36  
Trisha Das *How to Write a Documentary Double Take* by PSBT

### Suggested Screenings

Michael Moore: Roger and Me  
Nanook of the North by Robert J Flaherty  
Nightmail by Basil Wright  
Bombay Our City by Anand Patwardhan  
Black Audio Collective  
City of Photos by Nishtha Jain  
Films by PSBT



## **IPR AND BUSINESS SKILL FOR CHEMIST**

### **Learning outcomes:**

After completing this course, the learner will be able to;

- Have critical understanding of environmental impact
- Learn important steps of EIA process
- Interpret the environmental appraisal and procedures in India.

### **Unit I: Origin and Development**

**8 Lectures**

Purpose and aim, core values and principles, History of EIA development, Environmental Management Plan, Environmental Impact Statement, Scope of EIA in Project planning and Implementation.

### **Unit II: EIA Process**

**8 Lectures**

Components of EIA, EIA Methodology- Screening, Scoping, Baseline data, Impact Identification, Prediction, Evaluation and Mitigation, Appendices and Forms of Application, Techniques of Assessment-Cost-benefit Analysis, Matrices, Checklist, Overlays, Impact on Environmental component: air, noise, water, land, biological, social and environmental factors. EIA Document.

### **Unit III: Main participants in EIA Process**

**7 Lectures**

Role of Project proponent, environmental consultant, PCBs, PCCs, public and IAA. Public participation.

### **Unit IV: Environmental Appraisal and Procedures in India and EIA**

**7 Lectures**

Methodology, indicators and mitigation, Environmental Audit of different environmental resources, Risk Analysis, Strategic environmental assessment, ecological impact assessment: legislation.

### **Practical**

1. Prepare a Matrix of every environmental existing resource of your college or your hostel/mohalla or any defined area and evaluate each component using established methods and make audit analysis.
2. Prepare a case report of Environmental impact of any area under development.

### **Suggested readings:**

- a. Kulkarni V and Ramachandra TV, (2006). Environmental Management, Capital Pub. Co. New Delhi.
- b. Petts, J. (2005) Handbook of Environmental Impact Assessment- Volume 1 and 2. Blackwell Publishers, UK.
- c. Glasson, J. Therivel, R. and Chadwick, (2006) A. Introduction to Environmental Impact Assessment. Routledge, London.
- d. Canter, W. L. (1995) Environmental Impact Assessment, McGraw-Hill Science/Engineering/Math, New York;
- e. Morris, P. and Therivel, R. (1995) Methods of Environmental Impact Assessment, UCL



## **BUSINESS COMMUNICATION**

### **Business Communication [AEC – 2 (a)]**

**Objective:** The course aims to enhance written and verbal communication/ presentation skills amongst the learners and ability to frame effective documentation both in digital and non-digital environment.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Realize the significance of effective communication in business;
2. Learn business vocabulary and understand varied ways/methods to present business plans;
3. Gain knowledge on drafting of official letters and documents;
4. Develop appropriate skills for report writing and different ways of documentation;
5. Explain the role of information technology for enabling business communication and documentation.

### **COURSE CONTENTS:**

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<b>Communication Roles and Flows in Organisations</b> Meaning, importance (costs & rewards) and process of communication (with reference to Mintzberg's managerial roles) and documentation in business.	10	✓	
Unit - 2	<b>Business Language and Presentation</b> Business, commercial and managerial vocabulary – terms used in trade, business plans/ proposals, presenting business plans, multimedia corporate presentations.	20	✓	✓
Unit - 3	<b>Business Correspondence</b> Inviting quotations, sending quotations, placing orders, Social and public relations correspondence; Reading and writing shorter business messages –invitations, thank you notes, greetings and congratulations.	20	✓	
Unit - 4	<b>Technology and Business Communication</b> Use of digital platforms in business communication; Handling online orders, complaints and other sales correspondence, use of social media tools for advertising, buying and selling; publicizing business ideas through blogs, web-pages etc.; online business communities; webinars and conference calls. Privacy and data security issues in business communication.	20	✓	✓
Unit - 5	<b>Business Documentation</b> Drafting simple contracts and deeds (non-legal); Project on legal documentation for bank transactions; Property documentation; Contract of employment etc.; note-sheet; Creating, storing/ archiving and retrieving folders/ documents. Document sharing and collaborative working; Privacy and data security issues in business documentation.	30	✓	✓

### **Practical Exercises:**

The learners are required to:

1. Interview employees of some organisation to find out communication issues and challenges;
2. Make a vocabulary of various terms used in business documentation;
3. Collect some samples of business correspondence and documentations and find out their effectiveness;
4. Visit the social media account of any one reputed well-established organisation and another account of a developing organisation. Compare the difference in communication, persuasion, and advertising methods, highlight the ways in which both the organisation can learn from one another.





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## GRAPH THEORY

### GRAPH THEORY

**Course Objectives:** This course aims to -

- 1) Teach students the basic concepts and terminology of graphs, such as vertices, edges, paths, cycles, and connectivity.
- 2) Introduce students to the fundamental concepts of graph theory, including Eulerian and Hamiltonian graphs, planar graphs.
- 3) Teach students how to use graphs to model and solve real-world problems, such as shortest path problems, network flow problems, and scheduling problems.
- 4) Teach students about the algorithms and data structures used to manipulate and analyze graphs such as, Kuratowski's theorem, Cayley's theorem.
- 5) Teach students how to represent and visualize graphs using graph drawing techniques, such as force-directed layout, circular layout, and layered layout.

#### **Unit-I: Paths, Circuits and Graph Isomorphisms**

Definition and examples of a graph, Subgraph, Walks, Paths and circuits; Connected graphs, disconnected graphs and components of a graph; Euler and Hamiltonian graphs, Graph isomorphisms, Adjacency matrix and incidence matrix of a graph, Directed graphs and their elementary properties.

#### **Unit-II: Trees and Fundamental Circuits**

Definition and properties of trees, Rooted and binary trees, Cayley's theorem on a counting tree, Spanning tree, Fundamental circuits, Minimal spanning trees in a connected graph.

#### **Unit-III: Cut-Sets and Cut-Vertices**

Cut-set of a graph and its properties, Fundamental circuits and cut-sets, Cut-vertices, Connectivity and separability, Network flows, 1- isomorphism and 2- isomorphism.

#### **Unit-IV: Planar Graphs**

Planar graph, Euler theorem for a planar graph, Various representations of a planar graph, Dual of a planar graph, Detection of planarity, Kuratowski's theorem.

#### **Unit-V: Graph Coloring**

Chromatic number of a graph, Chromatic partition, Chromatic polynomial, Matching and coverings, four color problem.

#### **References:**

1. R. Balakrishnan & K. Ranganathan (2012). *A Textbook of Graph Theory*. Springer.
  2. Narsingh Deo (2016). *Graph Theory with Applications to Engineering and Computer Science*. Dover Publications.
  3. Reinhard Diestel (2017). *Graph Theory* (5<sup>th</sup> edition). Springer.
  4. Edgar G. Goodaire & Michael M. Parmenter (2018). *Discrete Mathematics with Graph Theory* (3<sup>rd</sup> edition). Pearson.
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## HERBAL PRODUCTION TECHNIQUES

### Course outcomes

On completion of this course, the students will be able to:

1. Aware with the vast medicinal flora and their scientific role.
2. Gain technical confidence and skills to develop entrepreneurship.
3. Understand **herbal production** techniques of various herbal products.

### Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	-	3	3	3	1
CO2	3	3	1	-	2	3	-	3	3	3	1
CO3	3	3	1	-	2	3	-	3	3	3	1

**Weightage:** 1-Slightly; 2-Moderately; 3-Strongly

Ayurvedic dosage form – Classification, Extraction- Kwatha, Pachana, Avaleha, Bhawwan, Putapka, Fermentation- Asava & Arista, Arka, Guggulu, Ghrita, Churna, Lepa, Vati and Gutikabhasma, Lauha.

Appartus-Dolyantram, Svedaniyantram, Dhupayantram, Patanayantram, Adhaspatanyantram, Tirgapatanyantram, Vidhyadharyantum, Putas, Mahaputa, Musha, Hamspakayantram.

Utilisation and development of drugs from plants- Analgesic drugs, anti- inflammatory drugs, hypotensive drugs, antimalarial drugs, anti-cancer drugs, cardiovascular drugs, bronchodilatory drugs.

Herbal Preparations- Triphala churna, sitopaladi churna, Preparation of Avleha-Chyawanprash, Preparation of Asawas- Drakshasava, Preparation of Tooth powder, Preparation of beauty products.



## INTRODUCTION TO FILM STUDIES

### Course Objectives:

1. To understand the language of cinema
2. To learn the forms & style of cinema
3. To understand the historical development of Chhattisgarhi Cinema, its issues and prospects
4. To know the historical development of Hindi Cinema

### Course contents:

#### Unit I -

Language of Cinema Language of Cinema I – Focus on visual Language: Shot, Scene, Mis-en-scene, Deep focus, Continuity Editing, Montage Language of Cinema II – Focus on Sound and Colour: Diegetic and Non Diegetic Sound; Off Screen Sound; Sync Sound; the use of Colour as a stylistic Element Genre and the development of Classical Hollywood Cinema

#### Unit II -

Film Form and Style, German Expressionism and Film Noir, Italian Neorealism, French New-Wave

#### Unit III -

History of Chhattisgarhi Cinema, problems and prospects of Chhattisgarhi Cinema, Future of Chhattisgarhi cinema

#### Unit IV -

Hindi Cinema, Early Cinema and the Studio Era 1950s - Cinema and the Nation (Guru Dutt, Raj Kapoor, Mehboob) The Indian New-Wave, Globalisation and Indian Cinema, Film Culture

### Recommended Screenings or clips

Unit I- *Rear Window* by Alfred Hitchcock (Language of Cinema), *Battleship Potemkin* by Sergei Eisenstein (Language of Cinema), *Pather Panchaliby* Satyajit Ray, *The hour of the Furnaces* by Fernando Solanas

Unit IV - *Nishant* by Shyam Benegal/Aakrosh by Govind Nihalani (Indian New wave), *Pyasa* by Guru Dutt

### Course outcomes:

1. Understanding of the language and grammar of cinema
2. Knowing the various forms and style of cinema
3. Understanding of the historical development of Chhattisgarhi Cinema, its issues and the challenges for future prospects
4. Understanding of the historical development of Hindi Cinema

### Suggested Readings:

Andre Bazin, "The Ontology of the Photographic Image" from his book *What is Cinema Vol. I* Berkeley, Los Angeles and London: University of California Press: 1967, 9-16

Sergei Eisenstein, "A Dialectic Approach to Film Form" from his book *Film Form: Essays in Film Theory* (Edited and Translated by Jay Leyda) San Diego, New York, London: A Harvest/Harcourt Brace Jovanovich, Publishers: 1977, 45-63

Tom Gunning, "Non-continuity, Continuity, Discontinuity: A theory of Genres in Early Films," in *Ideology of Hindi Film* by Madhava Prasad. New Delhi: Oxford University Press. 1998

*Global Bollywood* by Anandam P. Kavoori and Aswin Punanthebekar Eds. New York: New York University Press. 2008





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## **INTRODUCTION TO INTERNET OF THINGS**

### **Introduction to Internet of things**

#### **COURSE OBJECTIVES:**

1. To learn the concepts of Sensors, Wireless Network and Internet
2. To learn and implement use of Devices in IoT technology.
3. To understand how to program on embedded and mobile platforms including different Microcontrollers like Raspberry Pi,

- 
4. Learn basic python programming for IoT applications
  5. To learn and design different applications in IoT.

#### **SYLLABUS**

1. Introduction to IoT: Definition, Characteristics, Applications, Evolution, Enablers, Connectivity  
Layers, Addressing, Networking and Connectivity Issues. Relevant Protocols About IOT.
2. Basics of Networking Communication Protocols, Sensor Network, Machine to Machine Communication.
3. Introduction to Python Programming, Introduction to Raspberry Pi, Implementation of IoT with Relevant Software Language.
4. Industrial IoT, Case Studies: Agriculture, Healthcare, Activity Monitoring etc.

#### **REFERENCE BOOKS**

1. The Internet of Things: Enabling Technologies, Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press).
2. Internet of Things: A Hands-on Approach", by A Bahga and Vijay Madisetti (Universities Press)

#### **COURSE OUTCOME**

1. After the completion of the course, the students will be able design some IOT based prototypes
  2. Describe what IoT is and how it works today
  3. Recognize the factors that contributed to the emergence of IoT
  4. Design and program IoT devices.
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## INTRODUCTION TO JAVA

### Introduction to JAVA

#### COURSES OBJECTIVES:

The course aims to provide exposure

- Programming in the Java programming language,
- Knowledge of object-oriented paradigm in the Java programming language,
- The use of Java in a variety of technologies and on different platforms.

#### Syllabus:-

**Unit -I.** Introduction to Java Understanding the semantic and syntax differences between C++ and Java,

Compiling and Executing a Java Program, Variables, Constants, Keywords Data Types, Operators Doing Basic Program Output, Decision Making Constructs (conditional statements and loops)

**Unit-II** Arrays, Strings and I/O Creating & Using Arrays (One Dimension and Multi-dimensional), Java Strings: The Java String class, Collection in Java.

**Unit-III** Object-Oriented Programming Overview Principles of Object-Oriented Programming, Class Constructors, Method Overloading, Class Variables & Methods, Objects as parameters, final classes. Inheritance: Single Level and Multilevel, Method Overriding,

**Unit-IV** Abstract Classes Interfaces and Packages Using Standard Java Packages (util, lang, io, net), Exception Handling Exception types, uncaught exceptions, throw, built-in exceptions .

**Unit-V** Thread creating single and multiple threads, using in File handling

#### Reference Books:

1. Y. Kanetkar, Let Us C, BPB Publication.
2. B.S. Gottfried, Schaum's outline of Theory and Problems of Programming with C, McGrawHill.
3. Programming in ANSI C - Balaguruswami, TMH 2.
4. The 'C' programming language - B.W.Kernighan, D.M.Ritchie, PHI
5. A.K. Saxena, Programming Language C : Anamaya Publishers, New Delhi.
6. C The Complete Reference - H.Sohldt, TMH 3.
7. Computer fundamentals and programming in C – Pradip Dey & Manas Ghosh, OXFORD

#### Course outcome:-

On successful completion of this course, student should be able to:

- Knowledge of the structure and model of the Java programming language, (knowledge)
- Use the Java programming language for various programming technologies (understanding) • Develop software in the Java programming language, (application)
- Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)



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## **MANAGING ELECTION AND ELECTION CAMPAIGN**

### **MANAGING ELECTIONS AND ELECTION CAMPAIGN**

#### **Course Objective:**

This course exposes students to a wide range of conceptual and practical issues and elements pertaining to electoral democracy in India. Elections and their nature have changed significantly with the support of social media and new technologies. Parties are using these mediums and techniques and adjusting to the new nuances emerging from it. Election management has become a crucial element of electoral democracy wherein parties use all their human and material resources at their disposal. This module exposes the students to the techniques of man and material resources to manage the elections.

#### **Learning Outcomes:**

- a. They will learn about how to file election nominations and the technical issues involved in it.
- b. They will be able to explain the election code of conduct including the ethics to be maintained in expenditure and elections campaign.
- c. They will be made aware of the role of new media and technology involved in election campaign.
- d. They will get to know about the required skills for media management during the elections.
- e. They will be able to answer what are debates on state funding of political parties in election.

#### **UNIT I: Electoral Democracy and Management of Elections**

- a. Electoral Democracy: A Theoretical Perspective
- b. How Crucial is Management of Elections?

#### **UNIT II: Elections and Model Code of Conducts**

- a. Model Code of Conducts: What it is?
- b. Knowing your Candidates

#### **UNIT III: Management of Election Campaign**

- a. Traditional methods of Electoral Campaign; Poster, Pamphlets
  - b. Use of New Techniques and Methods in Election Campaign
-



## **NEW VENTURE PLANNING AND DEVELOPMENT**

**Objective:** The course aims to give exposure to learners regarding different aspects of setting up a new business.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Generate a business idea using different techniques and describe sources of innovative ideas;
2. Evaluate advantages of acquiring an ongoing venture with a case study;
3. Present a comparative analysis of various government schemes which are suitable for the business idea;
4. Develop a marketing plan for a business idea;
5. Prepare and present a well-conceived Business Plan.

### **COURSE CONTENTS:**

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<b>Starting New Ventures</b> New Venture: Meaning and features. The search for new ideas. Source of innovative ideas. Techniques for generating ideas. Entrepreneurial imagination and creativity: The role of creative thinking. Acquiring an established Venture: Advantages of acquiring an ongoing Venture.	20	✓	
Unit - 2	<b>Legal Challenges in Setting up Business</b> Intellectual Property Protection: Patents, Trademarks, and Copyrights. Requirements and Procedure for filing a Patent, Trademark, and Copyright.	20	✓	✓
Unit - 3	<b>Search for Entrepreneurial Capital</b> The Entrepreneur's Search for Capital. The Venture Capital Market. Criteria for evaluating New-Venture Proposals. Evaluating the Venture Capitalist. Financing stages. Alternate Sources of Financing for Indian Entrepreneurs. Bank Funding. Government Policy Packages. Business Incubators and Facilitators. Informal risk capital: AngelInvestors. Government schemes for new ventures like: Startup India, Stand Up India, Make in India, etc.	20	✓	
Unit - 4	<b>Marketing Aspects of New Ventures</b> Developing a Marketing Plan: Customer Analysis, Geographical Analysis, Economical Analysis.	20	✓	✓
Unit - 5	<b>Business Plan Preparation for New Ventures</b> Business Plan: Concept. Pitfalls to Avoid in Business Plan. Benefits of a Business Plan. Developing a Well- Conceived Business Plan. Elements of a Business Plan: Executive Summary.	20	✓	✓

### **Practical Exercises:**

The learners are required to:

1. Generate a business idea using different techniques and describe sources of innovative ideas.
2. Evaluate advantages of acquiring an ongoing venture with a case study.
3. Present an idea which can have IPR like patents along with comparative analysis of patents already granted in similar field.
4. Present a comparative analysis of various government schemes which are suitable for the business idea (developed in exercise 1).
5. Develop a marketing plan for the business idea (developed in exercise 1).
6. Prepare and present a well-conceived Business Plan.

### **Suggested Readings:**

1. Allen, K. R. (2015). Launching New Ventures: An Entrepreneurial Approach. Boston: Cengage Learning.
2. Barringer, B. R., & Ireland, R. D. (2015). Entrepreneurship: Successfully Launching New Ventures. London: Pearson.
3. Kuratko, D. F., & Rao, T. V. (2012). Entrepreneurship: A South-Asian Perspective. Boston: Cengage Learning.

**Note:** Learners are advised to use the latest edition of textbooks.





## **PERSONAL TAX PLANNING AND TAX MANAGEMENT**

**Objective:** The course aims to enable learners to understand the importance of tax planning and use various instruments and measures for tax planning. It also aims to explain how systematic investment and selection of investment avenues can help in tax planning. The course provides an insight into tax management by developing an understanding of the provisions relating to deduction and collection of tax at source, advance tax, refund, assessment procedures and provisions relating to income-tax authorities and appeals and revisions.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Examine how tax planning is useful and essential for every tax payer and to understand the concept of tax evasion and tax planning from direct taxes point of view;
2. Determine residential status and its relationship with tax planning. Examine how tax planning is permitted under different provisions of the Income Tax Act;
3. Assess the tax liability of individuals and HUFs having income under different heads, by considering tax planning measures providing for optimal tax relief;
4. Choose the avenues of investment with an intent to reduce tax liabilities and identify merits and limitations of different means of investments and examine various provisions relating to deduction and collection of tax at source and advance tax obligations;
5. Examine the provisions relating to survey, search, and seizure and the related powers of various income-tax authorities;
6. Examine the procedure for assessment and recall the time limits for completion of assessments as well as remedies available by way of appeal and revision.

### **COURSE CONTENTS:**

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<b>Basic Concepts</b> Meaning, Need of Tax Planning- Principles and objectives of Tax Planning, Obligations of parties to Tax Planning, Tax Avoidance and Tax Evasion- Legal thinking on Tax Planning, Tax Planning-Scope of Tax Planning.	15	✓	
Unit - 2	<b>Tax Planning with reference to residential status</b> Tax planning through exempted income for residents/ non-residents, Tax planning through permissible deductions for residents/non-residents, Tax planning with reference to clubbing provisions.	15	✓	✓
Unit - 3	<b>Tax Planning under different heads of Income</b> Tax planning measures relating to income from salary, Income from House Property, profits and gains of business or profession, capital gains and income from other sources.	25	✓	✓
Unit - 4	<b>Tax Planning through investments</b> Tax planning through various tax saving investment avenues available for individuals and HUF like Mutual funds unit linked insurance plans, Bonds, Equity linked savings schemes, Post office savings schemes and others. Tax deductions under Income-Tax Act.	25	✓	✓
Unit - 5	<b>TAX MANAGEMENT</b> <b>Deduction, collection and recovery of tax</b> Advance tax, tax deduction at source, tax collection at source, refund.	20	✓	✓





## PLANTS IN TRADITIONAL SYSTEM OF MEDICINE

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### Learning outcomes:

On completion of this course, the students will be able to:

- 1. Conceptualize ethnobotany as an interdisciplinary science
- 2. Restate the established methodology of ethnobotany studies
- 3. Categories various indigenous ethnic groups and their environmental practices.
- 4. Understand the legalities associated with ethnobotany.

### Keywords:

Ethnobotany, Ethnic groups, Ethnobotanical sources, Biopiracy, Endangered taxa

### Unit I: Ethnobotany

7 lectures

Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science. The relevance of ethnobotany in the present context; Major and minor ethnic groups or Tribals of India, and their life styles. Plants used by the tribals: a) Food plants b) intoxicants and beverages c) Resins and oils and miscellaneous uses.

### Unit II: Methodology of Ethnobotanical Studies

7 lectures

a) Field work b) Herbarium c) Ancient Literature d) Archaeological findings e) temples and sacred places.

### Unit III: Role of Ethnobotany in Modern Medicine

9 lectures

Medico-ethnobotanical sources in India; Significance of the following plants in ethno botanical practices (along with their habitat and morphology) a) *Azadirachta indica* b) *Ocimum sanctum* c) *Vitex negundo*. d) *Gloriosa superba* e) *Tribulus terrestris* f) *Pongamia pinnata* g) *Cassia auriculata* h) *Indigofera tinctoria*.

Role of ethnobotany in modern medicine with special example *Rauvolfia serpentina*, *Trichopus zeylanicus*, *Artemisia*, *Withania*. Role of ethnic groups in conservation of plant genetic resources. Endangered taxa and forest management (participatory forest management).

### Unit IV: Ethnobotany and Legal Aspects

7 lectures

Ethnobotany as a tool to protect interests of ethnic groups. Sharing of wealth concept with few examples from India. Biopiracy, Intellectual Property Rights and Traditional Knowledge.

### Practical

1. Visit to the field and botanical garden in the nearby area and attempt to identify the plants
2. Attempt be made to grow the ethnobotanical plants
3. Visit the villages and rural areas to consult some senior people to discuss the traditional medicines being used since ages.

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4. Prepare a list of plants that provide parts for traditional uses and construct a chart or check-list in terms of botanical significance, chemical constituent, medicinal use, and major industries available in India and the world; Economical-value strength.

**Suggested Readings**

1. Jain, S.K. (1995). Manual of Ethnobotany, Scientific Publishers, Jodhpur.
  2. Jain, S.K. (1981). Glimpses of Indian. Ethnobotany, Oxford and I B H, New Delhi.
  3. Jain, S.K. (1989). Methods and approaches in ethnobotany. Society of ethnobotanists, Lucknow, India.
  4. Jain, S.K. (1990). Contributions of Indian ethnobotny. Scientific publishers, Jodhpur.
  5. Colton, C.M. (1997). Ethnobotany – Principles and applications. John Wiley and sons.
  6. Rama, R, N and Henry, A.N. (1996). The Ethnobotany of Eastern Ghats in Andhra Pradesh, India. Botanical Survey of India. Howrah.
  7. Sinha, R. K. (1996). Ethnobotany, The Renaissance of Traditional Herbal Medicine – INA – SHREE Publishers, Jaipur.
  8. Faulks, P.J. (1958). An introduction to Ethnobotany, Moredale pub. Ltd.
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## **PROGRAMME MEDIA IN SOCIAL WORK**

### **TITLE OF THE PAPER: Programme Media in Social Work**

UNIT- I	<b>Meaning &amp; Concept of Programme Media</b> <ul style="list-style-type: none"><li>• Programme: Meaning and purpose, Concept and significance in social work</li><li>• Role of social worker in programme planning</li></ul>
UNIT- II	<b>Modes of Programme Media</b> <ul style="list-style-type: none"><li>• Types of Programme media: Group discussion, advertisement, flip chart, flash cards, art and craft</li><li>• Interactive games and outdoor exposure</li><li>• Application of program media in various settings</li></ul>
UNIT –III	<b>Essentials of Programme Media</b> <ul style="list-style-type: none"><li>• People-centered approach to programme media</li><li>• People/target group participation in programme</li><li>• Basic principles</li></ul>
UNIT- IV	<b>Programme Media for Development Practice</b> <ul style="list-style-type: none"><li>• Information Education and Communication - relevance, types, effective usage</li><li>• IEC and Development Practice</li><li>• Participatory communication: group discussion, focus group discussion</li></ul>
UNIT- V	<b>Mass Communication</b> <ul style="list-style-type: none"><li>• Traditional and modern means of mass communication</li><li>• Propaganda and public opinion</li><li>• Role of mass communication in social change. Media in social work practice; social worker as a Mediator.</li></ul>



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## **SOCIAL ACTION AND SOCIAL MOVEMENTS**

### **Objectives:**

1. Familiarize s with conceptual issues in defining social action and social movements.
2. Provide an over view of evolution of social action as method in social work.
3. Acquaint students with various theoretical perspectives on social movement.

### **Course Content:**

#### **Unit I: Understanding Social Action**

- Social action: Concept, meaning, scope and strategies
- Models of social action
- Social action and social change

#### **Unit II: Social Work and Social Action**

- History of Radical Social Work Practice
- Settlement House Movement and Anti-oppressive Social work practice
- Critical Social work and Structural Social Work practice

#### **Unit III: Perspectives of Social Action**

- Concept of conscientisation and critical awareness
- Paulo Friere and Saul Alinsky's contribution to Social Action

#### **Unit IV: Social Movements and Social Change**

- Social Movements: Concept, nature and Components
- Classification of Social Movements
- Old and New Social Movements, Characteristics of New Social Movements

#### **Unit V: Social Movement in India**

- Overview of Social Movements in India
- Peasant Movements, Labour movements, Women's movements, Dalit movements, Tribal movements, Environmental Movements

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Cont....

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**Readings:**

- Khinduka, S.K & Coughlin, B, J1975 A Conceptualization of Social Action. The Social Review, 49 (1)1-14. (Unit I)
  - Powell, F 2001 The Politics of Social Work. London: Sage Publications. (Unit II)
  - Freire, P 1970 Pedagogy of the Oppressed. New York: Continuum. (Unit II)
  - Mullaly, R.P. and Mullaly, B. 1998 Structural Social Work: Ideology, Theory, and Practice. New York: Oxford University press. (Unit II)
  - Reisch, M & Andrews J. 2002 The Road Not Taken: A History of Radical Social Work in The United States. New York: Brunner-Routledge. (Unit II)
  - Alinsky, S. 1972 Rules for Radicals. New York: Random House
  - Shah, G. 2002 Social Movements and the State. New Delhi: Sage. (Unit IV)
  - Shah, G 2004 Social Movements in India: A Review of Literature, New Delhi: Sage Publication. (Unit IV & V)
  - Siddique, H.Y. 1984 Social Work and Social Action, New Delhi: Harnam Publications. (Unit I, II & III)
  - Siddiqui, H.Y. 1997 Analysis of Literature of Social Action.
  - Indian Journal of Social Work, 58(2), 212-232. (Unit II & III)
  - Singh, R. 2001 Social Movements, Old and New: A Post-Modernist Critique. New Delhi: Sage. (Unit IV & V)
  - Laird, S 2007 Anti-Oppressive Social Work. New Delhi: Sage. (Unit II)
  - Bailey, R and Brake, M. 1975 Radical Social Work, London: Edward Arnold. (Unit II)
  - Langan, M. Lee, P. (Eds). 1989 Radical Social Work Today. Boston: Unwin Hyman. (Unit II)
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## **THEORY OF INTERPOLATION**

### **THEORY OF INTERPOLATION**

**Course Objective:** This course will enable the students to –

- 1) To Understand Accuracy and precision with examples.
- 2) Adequate exposure to learn alternative methods and analyze mathematical problems to determine the suitable numerical techniques.
- 3) Use the concepts of interpolation, eigen value problem techniques for mathematical problems arising in various fields
- 4) Solve initial value and boundary value problems which have great significance in engineering practice using ordinary and partial differential equations.
- 5) Demonstrate elementary programming language, implementation of algorithms and computer programs to solve mathematical problems.

Finite Difference: Forward difference, backward difference, central difference, difference of polynomial, other difference operator etc.

Interpolation: Introduction, Newton's forward interpolation formula, Newton's backward interpolation formula, Central difference interpolation formula, Gauss's forward and backward interpolation formula, Sterling's and Bessel's formulae.

Interpolation with unequal intervals: Lagrange's interpolation formula, divided difference, Newton's divided difference formula.

#### **Text Books:**

1. Jain M K, Iyengar S R K and Jain R K, Numerical Methods for Scientific and Engineering Computation, 4th Edn, New Age International Pvt. Ltd (2005)
2. S S Sastry, Introductory Methods of Numerical Analysis, 5th Edn. Prentice Hall of India.

#### **Reference book:**

1. Jain M K, Numerical Solutions of Differential Equations, 2nd Edn, John Wiley and Sons Ltd (1984)

**Course Outcomes:** At the end of the course student will

- 1) Acquire basic knowledge in solving interpolation with equal interval problems by various numerical methods. Estimate the missing terms through interpolation methods.
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## **TRIBAL ECONOMICS**

### **Tribal Economics [AEC – 2 (b)]**

**Objective:** To gain comprehensive understanding of all aspects relating to Tribal Economics.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. Describe the concept of Tribal Economics;
2. Analyze various skill development and capacity building programmes of Tribal Economics;
3. Evaluate the tribal development programmes and laws in India.
4. Examine how different tribal economic systems function and evaluate implications of various tribal economic decisions.

### **COURSE CONTENTS:**

Unit	Contents	Weightage of Marks (in %)	C & K	A & A
Unit - 1	<b>Introduction:</b> Meaning of Tribe; Classification of Tribal People; Characteristic of Tribal People: Indigenous Attributes, Specialized Living, Hesitation Towards Outside World, Exploration Resistance, Indifferent Attitude Towards Human, Animal and Nature, Affection Towards Jaal-Jungle-Zameen (Water-Forest-Land).	15	✓	
Unit - 2	<b>Dimensions of Tribal Economics:</b> Food Gathering, Hunting, Agriculture, Animal Husbandry, Fisheries, Sculpture Making, Industrial Labour, Recent Trends : Education and Unorganized Business.	15	✓	✓
Unit - 3	<b>Problems of Tribal Life:</b> Extreme Poverty, Severe Unemployment, High Indebtedness, Land Alienation, Poor Health and Sanitation Conditions, Drinking, Housing, Education, Communication, Lack of Infrastructural Facilities; Lack of Professionalism	25	✓	✓
Unit - 4	<b>Tribal Markets:</b> Meaning, Features, Types of Tribal Market: Haats; Weekly Market, Fortnightly Market, Monthly Market, Occasional Markets, Cold Storage, Warehouses, Unorganized Permanent Markets; Organizations Working For Tribal Development: Tribal Cooperative Marketing Development Federation (TRIFED); National Schedule Caste and Schedule Tribe Finance and Development Corporation (NSTFDC).	25	✓	✓
Unit - 5	<b>Forest Right Act (2006) &amp; Economic Activities of Tribes:</b> Forest Right Act and its importance, Minor Forest Produce Based Business : Tendu Leaf Collection, Mahua Collection, Honey Selling, Timber Produce, Agricultural Instruments Making, Weaving, Dairy Products, Fishing, Sculpture Selling, Medicinal Plant Produce; Government Policies Towards Tribal Development.	20	✓	

### **Practical Exercises:**

The learners are required to:

1. Prepare a statistical profile of Indian tribal Economy.
2. List out the various NGO which have been undergone practices for tribal welfare.
3. Prepare a chart explaining tribal demographic development.
4. Prepare a comparative statement of urban and rural tribal areas economic activities.
5. Visit any tribal area and prepare a report on how it functions.





## साहित्य और हिंदी सिनेमा

### Course Objective :

- सिनेमा के रूप में हिंदी साहित्य का एक बड़ा बाजार संभावनाशील है।
- तकनीक के विभिन्न माध्यमों से साहित्य को आम जनमानस से जोड़ा जा सकता है।

### Syllabus Content :

- ❖ **सिनेमा और समाज** : विश्व में सिनेमा का उदय, मध्यवर्ग, आधुनिकता और सिनेमा, मनोरंजन माध्यमों का जनतंत्रीकरण और सिनेमा, मनोरंजन माध्यमों की राजनीति, साहित्य और सिनेमा।
- ❖ **हिन्दी सिनेमा का संक्षिप्त इतिहास** : भारतीय मध्यवर्ग और हिन्दी सिनेमा, भारतीय लोकतंत्र और हिंदी सिनेमा, सिनेमा में भारतीय समाज का यथार्थ, सिनेमाई यथार्थवाद और समानान्तर सिनेमा, भूमंडलीकरण बाजारवाद और हिन्दी सिनेमा, बाल फिल्में।
- ❖ **साहित्य और सिनेमा** : अंतरसंबंध, सिनेमा और उपन्यास, संवेदना का रूपान्तरण और तकनीक।
- ❖ **फिल्म समीक्षा**
  - आरंभ से 1947 : राजा हरिश्चंद्र, अछूत कन्या, देवदास।
  - 1947 से 1970 : मदर इंडिया, दो आँखें बारह हाथ, तीसरी कसम, नया दौर।
  - 1970 से 1990 : गर्म हवा, आक्रोश, शोले, आँधी।
  - 1990 से अद्यतन : तारे जमीं पर, श्री इंडियट्स, बैडिट क्वीन, मुन्नाभाई एम.बी.एस., पिक।

### सहायक ग्रंथ :

1. भारतीय सिनेमा का इतिहास – अनिल भार्गव, सिने साहित्य प्रकाशन, जयपुर
2. हिन्दी सिनेमा – आदि से अनंत- प्रह्लाद अग्रवाल, साहित्य भंडार, इलाहाबाद
3. पटकथा लेखन – मनोहर श्याम जोशी, राजकमल प्रकाशन, नई दिल्ली
4. कथा-पटकथा – मन्नू भण्डारी, वाणी प्रकाशन, नई दिल्ली
5. सिनेमा समय – विष्णु खरे, अनन्या प्रकाशन, नई दिल्ली

### Course Learning Outcomes :

आज सिनेमा को साहित्य की एक नयी विधा के रूप में स्वीकार कर लिया गया है। सिनेमा के रूप में आज इसका बहुत बड़ा बाजार भी है। हिंदी साहित्य की बहुत बड़ी व्यावसायिक संभावना के रूप में स्क्रिप्ट राइटिंग का एक क्षेत्र इस माध्यम से उद्घाटित हो रहा है। इन सबके दृष्टिगत यह प्रश्नपत्र तैयार किया गया है।





## **PHYSICS FOR SUSTAINABLE FUTURE**

### **Course Objectives**

- The students will explore the physics of energy, learning to calculate the energy content of a wide variety of systems such as speeding cars, toasty houses and hot tubs, wind, solar illumination, nuclear powerplants
- To study the basic concepts to the various energy production schemes and usages found in our lives.
- This course is meant to provide a scientific foundation for understanding the energy issues facing our country and world so that students will be able to make informed decisions regarding and participate in the ongoing debate surrounding this important global issue.
- The course goals are for each student to learn how to understand and analyze issues related to energy production and usage and its influence on the environment around us (both local and global).

### **Learning Outcome:**

By the end of the course, the student will be able to:

- Discuss the side-effects of energy production and use, and estimate energy content and conversion.
- Explain the physical concept of energy and identify it in the world around us.
- Analyze the energy usage in our lives and be well informed on the topic of energy, its use in our society, and the impact on our environment.
- Participate in the ongoing global debate and make smart decisions.

### **Unit – I: Fundamental laws of Nature**

Basic laws of Nature that govern all energy transformations like: statistics and data, the second law of thermodynamics, exponential growth depletion time of a non-renewable resource, principles of relativity and anti-matter.

### **Unit – II: Need of energy and power losses**

Power transmission and power loss. The status and current developments of energy in third-world countries. Power requirements and basics of related terminologies.

### **Unit – III: Nuclear Energy**

Radiation and human health, radioactive wastes, history and future of nuclear power technologies, nuclear fuel resources, processing, use, and disposal. Fission and fusion power, three key issues related to reprocessing, storage and disposal.

### **Unit – IV: Renewable Energy**

Types of renewable energies. Fundamentals of solar and wind energies and their environmental advantages/disadvantages. General characteristics of passive and active solar thermal energy, power generation with thermal solar energy, and solar photovoltaic systems. Wind tower and turbine design and their sustainability attributes.

### **Books Recommended:**

1. University Physics with Modern Physics, Fourteenth Edition, By Pearson.
2. Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd.
3. Sustainable Energy Si Edition by Dunlap R A, Cengage Learning.  
Textbook of Renewable Energy by S. C. Bhatia, R. K. Gupta, Woodhead Publishing India PVT.



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## **RENEWABLE ENERGY AND ENERGY HARVESTING**

### **Course Outcomes:**

- To understand the Energy policies and to know some of the renewable energy sources such as solar energy, off-shore wind energy, tidal energy, biogas energy and hydroelectricity.
- Illustrate Photovoltaic conversion mechanism.
- Appraise wind energy conversion and ocean energy
- Conversion of vibration into voltage using piezoelectric materials,
- Conversion of thermal energy into voltage using thermoelectric modules.
- The students are expected to learn not only the theories of the renewable sources of energy, but also to have hands-on experiences on them wherever possible.

### **Unit – I: Introduction to Energy Policy:**

Overview of world energy scenario; Energy Demand- present and future energy requirements; Review of conventional energy resources, Global warming; Green House Gas emissions, impacts, mitigation; sustainability; Clean Development Mechanism (CDM); Prototype Carbon Fund (PCF). Need and characteristics of photovoltaic (PV) systems, PV modules and sun tracking systems

**Unit – II: Renewable Energy Sources & Instruments:** Solar, wind, small hydro, biomass, geothermal and ocean energy, energy flow in ecosystem, Solar Energy Resources, Solar radiation: Spectrum of EM radiation, sun structure and characteristics.

Sunshine recorder, Pyranometer, Pyrheliometer, Albedometer, Radiation measurement stations, solar radiation data.

### **Unit – III: Photovoltaic Materials and Devices:**

Bulk and thin film forms of materials, single crystal and polycrystalline, amorphous and nano-crystalline semiconductor materials, Intrinsic, extrinsic and compound semiconductor, Electrical and optical properties of photovoltaic / semiconductor materials, p-n junction: homo and hetero junctions; solar cell design, Dark and illumination characteristics; Principle of photovoltaic conversion of solar energy, various parameters of solar cell.

### **Unit – IV: Solar Thermal Conversion:**

Solar radiation, its measurements and prediction; Solar thermal collectors- flat plate collectors, concentrating collectors; solar heating of buildings; solar still; solar water heaters; solar driers; conversion of heat energy in to mechanical energy, solar thermal power generation systems.

Introduction to Geothermal Energy, Hydro Energy and Piezoelectric Energy harvesting (8)

### **Reference Books**

1. Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
  2. Solar energy - M P Agarwal - S Chand and Co. Ltd.
  3. Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd.
  4. Godfrey Boyle, "Renewable Energy, Power for a sustainable future", 2004, Oxford
  5. University Press, in association with The Open University. Dr. P Jayakumar, Solar Energy: Resource Assesment Handbook, 2009
  6. J.Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).
  7. on- conventional energy resources, B H Khan, Tata McGraw-Hill Publication 2006, ISBN 0-07-060654-42
  8. Renewable Energy Resources Paperback John Twidell and Tony Weir ,Routledge, Taylor& Francis, 2015
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गुरु घासीदास विश्वविद्यालय, बिलासपुर  
**Guru Ghasidas Vishwavidyalaya, Bilaspur**  
A Central University established by the Central University Act 2009 No. 25 of 2009



# Certificate on Yogic Science

Academic Session 2021-22



**Department Organized : Physical Education**

**DEPARTMENT OF PHYSICAL EDUCATION**  
**GURU GHASIDAS VISHWAVIDYALA, BILASPUR (C.G.)**  
**SCHEME OF SIX WEEK CERTIFICATE COURSE IN YOGIC SCIENCE**

**1. General Objectives of the Course:**

- i. To enable the student to understand the benefits of yoga.
- ii. To acquaint, student with the practical knowledge of Yogasana, Kriyas, Bandhas, Mudras and Pranayama.
- iii. To enable student to prepare the Yoga programme.
- iv. To enable student to become competent and committed professionals willing to perform as Yoga trainer.

**2. Duration of the Course:**

The duration of the course shall be of Six Weeks. Each working day, shall consist of Three Hours including Practical and Theory.

**3. Eligibility for Admission:**

This course is open for all bonafide students of Guru Ghasidas University, who are physically fit.

**4. Medium of Instruction and Examination:**

Medium of Instruction shall be Hindi and/or English and question papers shall be set in Hindi & English.

**5. Passing Marks and Attendance:**

- Classes will be held from Monday to Friday.
- It is compulsory to attend 75% classes in theory and Practical both for appearing in the examination for passing the certificate course in yoga.
- Candidates are required to come with appropriate and comfortable uniform/dress as prescribed by the department at their own expenses.
- There will be a theory and practical test at the end of the course. Students have to obtain 40% or above marks in the theory and practical examinations to pass and to obtain their certificates;
- Marks shall be indicated on the certificate.

**6. The examination scheme and their respective marks will be as follows:**

Nature	Code	Subject	Max. Marks
Theory	CPY101	Yogic Science Paper-1	100
Practical	CPY102	Practical Theory Paper- II	100
	CPY103	Performance Evaluation	100
	CPY104	Teaching Skill	100
Total Marks			400

**7. Scope:** After completion of Certificate Course in Yogic Science, one can work professionally as a trainer.



**8. Programme Objectives:**

PO1: To enable the student to well acquainted with theoretical knowledge of Yoga.

PO2: To acquaint, student with the practical knowledge of Yoga.

PO3: To make proficient Yoga expert for schools level

PO4: To cater experience Yoga expert for society. .

**9. Programme Specific Objective:**

PSO1: To make competent and committed professionals willing to perform as Yoga trainer/instructor for the country.

**DEPARTMENT OF PHYSICAL EDUCATION**  
**GURU GHASIDAS VISHWAVIDYALA, BILASPUR (C.G.)**  
**SYLLABUS - SIX WEEK CERTIFICATE COURSE IN YOGIC SCIENCE**

**I.THEORY: YOGIC SCIENCE- CPY101**

**Course Objective:** To become certified to teach yoga at the most basic level. The course deals with both abstract and practical aspects of Yoga. To develop, promote and propagate the philosophy, science and art of Yoga.

**Course Outcomes:** At the end of the course the students will be:-

1. To enable the student to understand the benefits of yoga.
2. To acquaint student with the practical knowledge of Yogasana, Kriyas, Bandhas, Mudras and Pranayama.
3. To enable student to prepare the Yoga programme.
4. To enable student to become competent and committed professionals willing to perform as Yoga trainer.

➤ **INTRODUCTION OF YOGA:**

- Meaning and Definition of Yoga
- Aims of Yoga
- Yoga in the Bhagavadgita - Karma Yoga, Raja Yoga, Gyan Yoga and Bhakti Yoga

➤ **THE ASTHANGA YOGA:**

- Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana & Samadhi.

➤ **PRANAYAMA**

- Meaning of Pranayama
- Types of Pranayama
- Phases of Pranayama: Purak (inhalation), Kumbhak (retention) Rechak (exhalation)

➤ **KRIYAS:**

- Meaning of Kriyas
- Types of Kriyas
- Benefits of Kriyas

➤ **MUDRAS:**

- Hasth Mudra: Gyan Mudra, Vaayu Mudra, Aakash Mudra, Shunya Mudra, Prithvi Mudra, Prithvi Mudra, Varun Mudra, Dhyan Mudra, Chin Mudra.

➤ **BANDHAS:**

- Jalandhara Bandha, Uddiyana Bandha and Moolabandha

**Essential Readings:**

1. O.P. Tiwari - Asana why and how, Kaivalyadham SMYM samiti, Lonavala, 2012.
2. M.L. Gharote - Guidelines for Yogic Practices, Medha Publication, Lonavla.
3. Swami SatyanandaSaraswati - Asan, Pranayama, Mudra, Bandha, Yoga publication trust, Munger, 2006.
4. Pt. Shri Ram Sharma- PragyAbhiyanka Yoga Vyayam, BrahmvarchasshodhSanshan, Shantikunj, Haridwar, 1998.

**Suggested Readings:**

1. B.K.S. Iyengar - Light on Yoga, Harper Collins publisher, New Delhi, 2012.
2. B.K.S. Iyengar - Light on Pranayama, Harper collins publisher, New Delhi, 2012.
3. Swami Kuvlayanand - Asana, Kaivalyadham SMYM samiti, Lonavala, 1993.
4. Swami Kuvlayanand- Prnayama, Kaivalyadham SMYM samiti, Lonavala, 2009.

**Course Outcomes and their mapping with Programme Outcomes:**

CO	PO				PSO
	PO1	PO2	PO3	PO4	PSO1
CO1	3	2	3	3	3
CO2	3	3	3	3	3
CO3	2	3	3	3	3
CO4	3	3	3	3	2

**Weightage: 1-Sightly; 2-Moderately; 3-Strongly**

## II. PRACTICAL: PRACTICAL THEORY - CPY102

### ➤ YOGIC PRAYER

### ➤ SURYA NAMASKARAS

### ➤ YOGASANA (YOGIC POSTURES)

- **Standing Postures:** Tadasana, Virikshasana, Pada-Hastasana, ArdhakatiChakrasana, Trikonasana, Garudasana, EkaPadaUtkatasana, Natrajasana, Konasana, Virabhadrasana.
- **Sitting Postures:** Vajrāsana, Paschimottanasana, Bhadrasana, Ustrasana, ArdhaUstrasana, Suptavajrasana, ArdhaMatsyendrasana, Vakrasana, Marichasana, Sasankasana, AkarnaDhanurasana, Gumukhasana, JanuShirasasana, Badhakonasana, Padmasana, Raja Kapotasana, Shishuasana.
- **Lying Postures (Prone Postures):** Bhujangasana, Salabhasana, Dhanurasana, UrdhvaMukhaSvanasana, Makarasana, Ashtangasana.
- **Lying Postures (Supine Postures):** Halasana, Pavanmuktasana, Savasana, Naukasana, Chakrasana, Sarvangasana, Matsyasana, Setubandhasana, UttānaPādāsana, Viparitarakarni.
- **Balancing Postures:** Vrikshasana, Garudasana, Namaskarasana, Tittibhasana, Natrajasana, Sirsasana, Tadasana

### ➤ PRANAYAMA:

- Anulom-Vilom Pranayama
- Bhastrika Pranayama
- Shitali Pranayama
- Sitkari Pranayama
- Suryabhedan Pranayama
- Ujjai Pranayama
- Bhramri Pranayama
- Kapalabhati Pranayama

### ➤ MUDRAS:

- Hasth Mudra: Gyan Mudra, Vaayu Mudra, Aakash Mudra, Shunya Mudra, Prithvi Mudra, Prithvi Mudra, Varun Mudra, Dhyan Mudra, Chin Mudra.

### ➤ BANDHAS:

- JalandharaBandha, UddiyanaBandha and Moolabandha.

## III. PRACTICAL: Performance Evaluation - CPY103

The student will have to perform any five Exercises from the syllabus of his/her choice.

## IV. PRACTICAL: Teaching Skill - CPY104

Practice of teaching of one lesson plan on any skill (TwoAsana, one Pranayama and oneKriya/Bandha/Mudra) on lesson format with chart.



**DEPARTMENT OF ZOOLOGY**  
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR**



Introduces  
**VEDIC WISDOM  
&  
LIFE SKILLS**

**Value added Course**

(For all registered regular students enrolled  
for any course in GGV)

**HIGHLIGHTS**

- ✓ **Personality Development**
- ✓ **Life Management Skills**
- ✓ **Rekindling Vedic Wisdom**
- ✓ **2 Credit Course**

**Register Now**

**COURSE FEE : RS. 2000**  
(30 hour 2 credit course, includes  
Books and Study Materials)

**COURSE COORDINATOR**

**Dr. Rohit Seth**  
(Associate Professor of Zoology, GGV)



[www.ggu.ac.in](http://www.ggu.ac.in)

9630587045 / 8319990721

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dasmanikishore2016@gmail.com



**SCAN TO PAY**



Please put Course Name i.e. "Vedic Wisdom  
and Life Skills" as Remarks during Fee Payment

# **Vedic Wisdom & Life Skills**

## **A Value Added Course**

**(Minimum 30 hours / 2 credit Course)**

- **Department:** Zoology
- **Name of the Course:** Vedic wisdom and life skills
- **Nature of Course:** Value-Added Course
- **Mode of Course:** Offline
- **Number of Seats:** No limit
- **Eligibility Criteria for Admission:** All registered regular students enrolled for any course in GGV

### **Introduction and relevance of the course:**

### **Objectives of the course:**

**Learning outcome of the course:** After successful completion of the course, the students will understand the fundamental principles imbibed in our rich Vedic wisdom and effectively apply this knowledge in their daily lives. Students will also learn the importance of Human values & Ethics and apply the same in their personality development.

<b>Number of lectures:</b>	<b>15 (One lecture of 2hr every week)</b>
<b>Number of practical's :</b>	<b>Practical assignments will be given towards the end of this course</b>
<b>Syllabus:</b>	<b>Annexure I</b>
<b>Suggestive Readings:</b>	<b>Annexure I</b>
<b>Course Coordinator (Name &amp; Designation)</b>	<b>Dr. Rohit Seth, Associate Professor of Zoology, GGV</b>
<b>Evaluation Criteria:</b>	<b>Continuous &amp; progressive evaluation</b>
<b>Exam format:</b>	<b>Multiple Choice Questions &amp; Assignment</b>
<b>Fee for the Course:</b>	<b>Rs. 2000/- per student (includes study material &amp; books)</b>

Module(s) & Content	Contact Hours
<b>Module 1: Vedic Wisdom</b> <ul style="list-style-type: none"> <li>• Historical perspective</li> <li>• Actual process of acquiring Vedic knowledge</li> <li>• Relevance of this study in modern times</li> </ul>	4
<b>Module 2: Discover your inner self</b> <ul style="list-style-type: none"> <li>• Science of the soul – Who am I?</li> <li>• Evidence of soul's existence</li> <li>• Law of karma – why do bad things happen to good people?</li> </ul>	4
<b>Module 3: Mastermind behind the mysterious universe</b> <ul style="list-style-type: none"> <li>• God – Evidence from Shastras</li> <li>• God or Gods – One God or many gods?</li> <li>• Aim of life – to love and serve.</li> </ul>	4
<b>Module 4: Life skills</b> <ul style="list-style-type: none"> <li>• Mind – Friend or Enemy?</li> <li>• Meditation – Art of conquering restless mind</li> <li>• Power of Habits – Addictions</li> <li>• Time Management</li> <li>• How to study effectively</li> </ul>	8
<b>Module 5: Behavioral Science</b> <ul style="list-style-type: none"> <li>• Modes of nature – Goodness, Passion, and Ignorance</li> <li>• Family relationships and friendship – Role of an ideal - father, mother, son, daughter, friend, etc.</li> <li>• Courage and consideration – maintaining a balanced lifestyle</li> <li>• Ethics – Honesty, morality, and integrity</li> <li>• The 7 habits of highly effective people</li> </ul>	10

**References:**

- Bhagavad Gita – *as it is* by HDG A.C. Bhaktivedanta Swami Prabhupada, Founder-Acharya of ISKCON
- Basics of Bhagavad Gita – a thematic study of Bhagavad Gita by HDG A.C. Bhaktivedanta Swami Prabhupada
- The 7 Habits of Highly Effective People – by Stephen R Covey
- Recommendation: [www.futurelearn.com/courses/improving-study-techniques](http://www.futurelearn.com/courses/improving-study-techniques) by University of Groningen (Free Course)

**Assessment of the Value-added Courses**

Continuous & progressive evaluation of the students will be performed on the basis of Quizzes, Multiple Choice Questions & Assignments. The Question Papers will be framed to test different levels of learning based on Bloom's taxonomy viz. Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation/Creativity.

**Mode of Fee Payment:**

For payment of course fees, students can visit our website i.e. <https://ggu.ac.in/> or [Click here](#) to get redirected directly to the payment website. Course fee is Rs. 2000/- per student (includes study material & books).

Note: Students need to put course name i.e. "Vedic wisdom & life skills" as remarks during fee payment.

**Passing Requirement and Grading**

The passing requirement for value-added courses shall be 50% of the marks prescribed for the course. While a minimum of 40% marks in the terminal examination is essential, there is no passing minimum for internal assessment. A student shall be declared to have passed the course if he/she secures not less than 40% marks in the terminal examination and not less than 50% marks in aggregate taking Internal and End course Examination marks together. A candidate who has not secured a minimum of 50% of marks in a course (Internal + End course) shall reappear for the course in the next session with the prescribed fee.

**Examinations**

S. No.	Paper	Internal assessment (Formative)	Terminal Examination (based on Bloom's taxonomy)
1	Paper-I – Theory	20	30
2	Paper-II – Practical	20	30
3	Seminar/viva-voce examination/project report	50	
4	Total	90	60

**Certificates will be issued to the candidates on successful completion of the course**





# Bamboo Work Artisan

Electives: Bamboo Basket Making/ Bamboo Mat Weaving/ Bamboo Utility Handicraft Assembling

QP Code: HCS/Q8702

Version: 2.0

NSQF Level: 3

Handicrafts and Carpet Sector Skill Council || OCF, Plot No. 2, Pocket 9, Sector B, Vasant Kunj  
New Delhi - 110070

## Contents

HCS/Q8702: Bamboo Work Artisan .....	3
<i>Brief Job Description</i> .....	3
Applicable National Occupational Standards (NOS) .....	3
<i>Compulsory NOS</i> .....	3
<i>Elective 1: Bamboo Basket Making</i> .....	3
<i>Elective 2: Bamboo Mat Weaving</i> .....	3
<i>Elective 3: Bamboo Utility Handicraft Assembling</i> .....	4
<i>Qualification Pack (QP) Parameters</i> .....	4
HCS/N9901: Coordinate with colleagues and work as a team .....	6
HCS/N9902: Maintain Safe and Healthy Work Environment .....	12
HCS/N9903: Maintain Personal Hygiene .....	17
HCS/N8711: Carry out preparation of bamboo slivers .....	21
HCS/N8712: Carry out weaving & twining of bamboo slivers to achieve the final product as per requirement .....	26
HCS/N8713: Carry out finishing, varnishing, drying & storage of bamboo basket .....	32
HCS/N8714: Contribute to achieve quality bamboo basket making .....	38
HCS/N8705: Carry out basic pre-loom operations: Denting and attaching the warp on the loom .....	42
HCS/N8706: Carry out basic weaving operations: Shedding/ Picking/ Battening to weave mats comprising of basic weaves- Plain and Twill using hand operated loom .....	48
HCS/N8707: Contribute to achieve quality in bamboo mat weaving .....	54
HCS/N8715: Carry out cutting & processing of materials as per given size & shape .....	58
HCS/N8716: Carry out assembling different materials .....	63
HCS/N8717: Contribute to achieve quality bamboo utility handicraft assembling .....	68
Assessment Guidelines and Weightage .....	71
<i>Assessment Guidelines</i> .....	71
<i>Assessment Weightage</i> .....	72
Acronyms .....	75
Glossary .....	76

## HCS/Q8702: Bamboo Work Artisan

### Brief Job Description

Bamboo Work Artisan prepares bamboo by performing various steps and using various methods to make a final prepared bamboo product.

### Personal Attributes

The individual must have attention to detail, logical thinking, hand-eye coordination, good analytical skills, problem solving skills, reliability, good decision-making skills, basic mathematical skills and should not have colour blindness. The individual should be good at following instructions.

### Applicable National Occupational Standards (NOS)

#### Compulsory NOS:

1. [HCS/N9901: Coordinate with colleagues and work as a team](#)
2. [HCS/N9902: Maintain Safe and Healthy Work Environment](#)
3. [HCS/N9903: Maintain Personal Hygiene](#)

#### Electives(*mandatory to select at least one*):

##### Elective 1: Bamboo Basket Making

A Bamboo Basket Maker should have good eyesight, handeye coordination and vision (including near vision, distance vision, colour vision, peripheral vision, depth perception and ability to change focus).

1. [HCS/N8711: Carry out preparation of bamboo slivers](#)
2. [HCS/N8712: Carry out weaving & twining of bamboo slivers to achieve the final product as per requirement](#)
3. [HCS/N8713: Carry out finishing, varnishing, drying & storage of bamboo basket](#)
4. [HCS/N8714: Contribute to achieve quality bamboo basket making](#)

##### Elective 2: Bamboo Mat Weaving

A Bamboo Mat Weaver is the one who weaves various types of Bamboo Mats using a hand operated loom. A Bamboo Mat Weaver can weave basic weaves- Plain and Twill, using Bamboo Sticks as weft and yarns as warp on a hand operated loom. The job requires the Weaver to have the skills to attach the warp on the loom and weave the basic weaves on the loom as per pattern or design provided.

1. [HCS/N8705: Carry out basic pre-loom operations: Denting and attaching the warp on the loom](#)

2. [HCS/N8706: Carry out basic weaving operations: Shedding/ Picking/ Battening to weave mats comprising of basic weaves- Plain and Twill using hand operated loom](#)
3. [HCS/N8707: Contribute to achieve quality in bamboo mat weaving](#)

### Elective 3: Bamboo Utility Handicraft Assembling

A Bamboo Utility Handicraft Assembler is the one who processes different materials (including bamboo based materials), assembles and finishes them to get the desired product that may be an end product or an intermediary material for other jobs.

1. [HCS/N8715: Carry out cutting & processing of materials as per given size & shape](#)
2. [HCS/N8716: Carry out assembling different materials](#)
3. [HCS/N8717: Contribute to achieve quality bamboo utility handicraft assembling](#)

### Qualification Pack (QP) Parameters

<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Stitching, Weaving, Making and Finishing- Handicrafts (Bamboo)
<b>Country</b>	India
<b>NSQF Level</b>	3
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/7317.0800
<b>Minimum Educational Qualification &amp; Experience</b>	Basic Literacy and Numeracy with 5 years of relevant experience. OR 5th Class with 3 years of relevant experience OR 8th Class with 1 year of relevant experience
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	16 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	NA
<b>NSQF Approval Date</b>	



**Version**

2.0

## HCS/N9901: Coordinate with colleagues and work as a team

### Description

This NOS describes the communication and coordination skills and knowledge to work with colleagues and supervisor to achieve a smooth and hazard-free workflow.

### Scope

The scope covers the following :

- interact with supervisor or superior
- work as a team by coordinating with colleagues within and outside the department and include inputs on PwD & Gender Sensitisation
- report and Document

### Elements and Performance Criteria

#### *Interact with supervisor or superior*

To be competent, the user/individual on the job must be able to:

- PC1.** comply with health, safety gender, and PwD (People with disability) related instructions applicable to the workplace
- PC2.** actively participate in mock drills/ evacuation procedures; group discussions, training sensitization programs for gender, and PwD awareness organized at the workplace.
- PC3.** receive job orders and instructions from reporting supervisor and receive feedback on work standards.
- PC4.** understand the work output requirements, targets, performance indicators and incentives.
- PC5.** deliver quality work on time and report any anticipated reasons for delays and handover completed work to supervisor
- PC6.** report on any grievances, production defects and any potential hazards.

#### *Work as a team by coordinating with colleagues within and outside the department and include inputs on PwD & Gender Sensitisation*

To be competent, the user/individual on the job must be able to:

- PC7.** communicate maintenance and repair schedule proactively to the supervisor
- PC8.** interact and clarify doubts on design, usage of materials & tools, quality & standards compliance, etc.

#### *Report and Document*

To be competent, the user/individual on the job must be able to:

- PC9.** report in time for shortage or need of raw materials
- PC10.** communicate with colleagues from within and other departments, clearly and effectively on all aspects to carry out the work among the team
- PC11.** maintain the etiquette, use polite language, demonstrate responsible and disciplined behavior towards colleagues.
- PC12.** put team over individual goals and multi-task or share work where necessary supporting the colleagues.
- PC13.** document all the details accurately relating to ones role as required.

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** knowledge about the importance of gender equality being followed in the organization and policies for reporting any harassment or inappropriate behavior
- KU2.** knowledge about how to accommodate employees with disabilities etiquette to adhere to and proper language and terminology
- KU3.** knowledge about how to communicate, offer help, respecting space, parking etc. for people with disabilities or special needs
- KU4.** knowledge about promoting a safe, accessible and healthy workplace for disabled employees
- KU5.** company's policies on preferred language of communication, incentives, quality standards, personnel management, reporting and escalation matrix policy.
- KU6.** company's standard operating procedure (sop) and the risk and impact of not following them.
- KU7.** procedures for working with colleagues, his/her role and responsibilities in relation to this
- KU8.** organizational hierarchy and the line of reporting structure and work target and review mechanism
- KU9.** procedures to report employment related issues and to deal with conflicts
- KU10.** importance of the individuals role in the organizational workflow and details of the individual responsibilities
- KU11.** tools and equipment handling procedure and common potential hazards in the work place and the procedures to deal with them
- KU12.** effective communication with various categories of people and the different departments in the organization
- KU13.** to document the job activity as required like the check sheets, history sheets, etc
- KU14.** expressing and addressing grievances appropriately, deal with difficult work relationships and manage the internal conflicts effectively

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** create a positive and inclusive workplace atmosphere without any kind of bias/discrimination towards any employee
- GS2.** actively take part in any discussion/workshop organized for gender sensitization training
- GS3.** read and comprehend written instructions related to gender equality issues in the organization
- GS4.** identify and report any harassment or inappropriate behavior towards any employee
- GS5.** create a positive and inclusive workplace atmosphere without any kind of bias/discrimination towards any employee with disability or special needs
- GS6.** actively take part in any discussion/workshop organized for disability sensitization training.
- GS7.** read and comprehend written instructions related to equality issues in the organization related to disabled persons
- GS8.** read job sheets, design sheet and information displayed at the workplace

- GS9.** read and understand manuals, health and safety instructions, memos etc
- GS10.** fill up documentation to ones role
- GS11.** communicate effectively with supervisor
- GS12.** contribute to quality of team work and achieve smooth workflow
- GS13.** improve work processes by interacting with others and adopting best practices



## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interact with supervisor or superior</i>	<b>14</b>	<b>30</b>	-	-
<b>PC1.</b> comply with health, safety gender, and PwD (People with disability) related instructions applicable to the workplace	2	5	-	-
<b>PC2.</b> actively participate in mock drills/ evacuation procedures; group discussions, training sensitization programs for gender, and PwD awareness organized at the workplace.	2	5	-	-
<b>PC3.</b> receive job orders and instructions from reporting supervisor and receive feedback on work standards.	2	5	-	-
<b>PC4.</b> understand the work output requirements, targets, performance indicators and incentives.	2	5	-	-
<b>PC5.</b> deliver quality work on time and report any anticipated reasons for delays and handover completed work to supervisor	3	5	-	-
<b>PC6.</b> report on any grievances, production defects and any potential hazards.	3	5	-	-
<i>Work as a team by coordinating with colleagues within and outside the department and include inputs on PwD &amp; Gender Sensitisation</i>	<b>6</b>	<b>10</b>	-	-
<b>PC7.</b> communicate maintenance and repair schedule proactively to the supervisor	3	5	-	-
<b>PC8.</b> interact and clarify doubts on design, usage of materials & tools, quality & standards compliance, etc.	3	5	-	-
<i>Report and Document</i>	<b>15</b>	<b>25</b>	-	-
<b>PC9.</b> report in time for shortage or need of raw materials	3	5	-	-
<b>PC10.</b> communicate with colleagues from within and other departments, clearly and effectively on all aspects to carry out the work among the team	3	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> maintain the etiquette, use polite language, demonstrate responsible and disciplined behavior towards colleagues.	3	5	-	-
<b>PC12.</b> put team over individual goals and multi-task or share work where necessary supporting the colleagues.	3	5	-	-
<b>PC13.</b> document all the details accurately relating to ones role as required.	3	5	-	-
<b>NOS Total</b>	<b>35</b>	<b>65</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N9901
<b>NOS Name</b>	Coordinate with colleagues and work as a team
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Ceramics), Handicrafts (Fashion Jewellery), Handicrafts (Stonecraft), Glassware, Metalware, Carpet, Handicrafts (Woodware)
<b>Occupation</b>	Production Management, Research and Development, Mixing and Milling, Moulding, Finishing and Painting, Pre- Production, Furnace Operation, Quality Check, Production, Pre - Crafting, Stone Crafting, Mixing, Moulding, Cutting, Smoothing, Finishing, Designing, Metal Casting and Stamping, Metal Craft Making, Cleaning/Polishing/Buffering, Painting and Plating, Packing, Marketing and Merchandising
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	6.0
<b>Last Reviewed Date</b>	31/08/2021
<b>Next Review Date</b>	31/08/2026
<b>Deactivation Date</b>	31/08/2026
<b>NSQC Clearance Date</b>	31/08/2021

## HCS/N9902: Maintain Safe and Healthy Work Environment

### Description

This NOS is about following adequate safety procedures to make the work environment safe and Healthy.

### Scope

The scope covers the following :

- follow safety procedures and practices.
- achieve safety standards

### Elements and Performance Criteria

#### *Follow safety procedures and practices*

To be competent, the user/individual on the job must be able to:

- PC1.** carry out work functions in accordance with organizational standards, greening solutions, procedures, policies, legislation and regulations
- PC2.** apply and follow these policies and procedures within your work practices and inculcate sustainable consumption practices
- PC3.** actively get involved in improving the performance of the organization in line with their own role and responsibilities and support adaptation to more environmentally friendly processes
- PC4.** comply with safety procedures while on work to prevent accidents
- PC5.** take adequate safety measures while handling materials, chemicals and tools
- PC6.** wear appropriate personal protective gears such as gloves, protective goggles, masks etc. while working
- PC7.** wear appropriate and recommended clothing as per the work environment
- PC8.** follow recommended material handling procedure to control material and personal damage.
- PC9.** perform all procedures as per company's work instructions for controlling operational risk

#### *Achieve safety standards*

To be competent, the user/individual on the job must be able to:

- PC10.** perform the duties in a manner which minimizes environmental damage
- PC11.** dispose off waste safely and correctly in a designated area as per company's SOP
- PC12.** report any accidents, incidents or problems without delay to the supervisor and take necessary immediate action to reduce further danger
- PC13.** ensure zero accident at workplace
- PC14.** adhere to safety standards and ensure no material damage

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** making conscious and sustainable decisions for achieving effective and green workplace.
- KU2.** company's policies on work safety and occupational hazard management



- KU3.** knowledge about company's HR policies and reporting structure
- KU4.** company emergency evacuation procedure
- KU5.** accidental risks to the worker
- KU6.** how to maintain the work area safe and secure
- KU7.** how to perform the duties in a way to minimize accidental risks
- KU8.** how to handle chemicals in a safe manner
- KU9.** purpose and usage of protective gears such as gloves, protective goggles, masks, etc. while working
- KU10.** safe and correct material handling procedure
- KU11.** standard operating procedure (sop) of processes
- KU12.** precautionary activities to be followed in the processes
- KU13.** how to operate tools and electrical equipment
- KU14.** emergency procedures to be followed in case of a mishap such as fire accidents etc.

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** make conscious and sustainable decisions that help reduce, rescue, and recycle the company resources
- GS2.** identify and replace processes that create unnecessary waste.
- GS3.** read safety instructions, safety signage and safety manuals
- GS4.** read the usage of various safety tools and equipment
- GS5.** take notes on descriptions and details of various safety precautions and procedures as instructed
- GS6.** communicate supervisor about the work safety issues.
- GS7.** receive instructions from supervisor on minimizing the accidental risks
- GS8.** communicate co-workers about the precautions to be taken for accident-free work.
- GS9.** how to select appropriate safety tools and equipment
- GS10.** improve work processes by adopting best safety practices
- GS11.** coordinate with different departments on briefing the safety aspects
- GS12.** guide the team members on use of various safety tools and equipment
- GS13.** spot errors and any other disruptions and communicate with solutions
- GS14.** how to use safety equipment such as fire extinguisher during fire accidents.
- GS15.** how to store chemicals and tools in a safe way.

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow safety procedures and practices</i>	<b>18</b>	<b>46</b>	-	-
<b>PC1.</b> carry out work functions in accordance with organizational standards, greening solutions, procedures, policies, legislation and regulations	2	5	-	-
<b>PC2.</b> apply and follow these policies and procedures within your work practices and inculcate sustainable consumption practices	2	5	-	-
<b>PC3.</b> actively get involved in improving the performance of the organization in line with their own role and responsibilities and support adaptation to more environmentally friendly processes	2	5	-	-
<b>PC4.</b> comply with safety procedures while on work to prevent accidents	2	5	-	-
<b>PC5.</b> take adequate safety measures while handling materials, chemicals and tools	2	6	-	-
<b>PC6.</b> wear appropriate personal protective gears such as gloves, protective goggles, masks etc. while working	2	5	-	-
<b>PC7.</b> wear appropriate and recommended clothing as per the work environment	2	5	-	-
<b>PC8.</b> follow recommended material handling procedure to control material and personal damage.	2	5	-	-
<b>PC9.</b> perform all procedures as per companys work instructions for controlling operational risk	2	5	-	-
<i>Achieve safety standards</i>	<b>10</b>	<b>26</b>	-	-
<b>PC10.</b> perform the duties in a manner which minimizes environmental damage	2	5	-	-
<b>PC11.</b> dispose off waste safely and correctly in a designated area as per companys sop	2	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> report any accidents, incidents or problems without delay to the supervisor and take necessary immediate action to reduce further danger	2	5	-	-
<b>PC13.</b> ensure zero accident at workplace	2	5	-	-
<b>PC14.</b> adhere to safety standards and ensure no material damage	2	6	-	-
<b>NOS Total</b>	<b>28</b>	<b>72</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N9902
<b>NOS Name</b>	Maintain Safe and Healthy Work Environment
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Ceramics), Handicrafts (Fashion Jewellery), Handicrafts (Stonecraft), Glassware, Metalware, Carpet, Handicrafts (Woodware)
<b>Occupation</b>	Production Management, Research and Development, Mixing and Milling, Moulding, Finishing and Painting, Pre- Production, Furnace Operation, Quality Check, Production, Pre - Crafting, Stone Crafting, Mixing, Moulding, Cutting, Smoothing, Finishing, Designing, Metal Casting and Stamping, Metal Craft Making, Cleaning/Polishing/Buffering, Painting and Plating, Packing, Marketing and Merchandising
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	6.0
<b>Last Reviewed Date</b>	31/08/2021
<b>Next Review Date</b>	31/08/2026
<b>Deactivation Date</b>	31/08/2026
<b>NSQC Clearance Date</b>	31/08/2021



## HCS/N9903: Maintain Personal Hygiene

### Description

This NOS provides the abilities required for taking responsibility for their own health at the workplace and is about using the correct procedures to prevent, control and minimize risk to them and others at the workplace.

### Scope

The scope covers the following :

- adopt healthy work practices
- achieve work productivity while maintaining health

### Elements and Performance Criteria

#### *Adopt healthy work practices*

To be competent, the user/individual on the job must be able to:

- PC1.** always cover the mouth and nose with a dust mask while working and keep on changing when it gets blocked with dust
- PC2.** wear safety shoes while visiting the production unit to avoid any damage
- PC3.** wear personal protective equipment while visiting the different departments during production. orexample mask in the washing section, glasses and mask in an assembly line, and gloves in the printing section, etc.
- PC4.** always wash sanitize your hands after a factory unit before touching any document, laptop, cell phone, etc.
- PC5.** undergo preventive health checkups at regular intervals.
- PC6.** take prompt treatment from the doctor in case of illness.

#### *Achieve work productivity while maintaining health*

To be competent, the user/individual on the job must be able to:

- PC7.** follow SOPs for dealing with blisters; scratches; accidental fires or any other type of emergencies at work
- PC8.** ensure no productivity loss or absenteeism from work due to illness
- PC9.** ensure no long-term ill effect on personal health.

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** company's policies on personal health and occupational hazard management
- KU2.** company's HR policies.
- KU3.** company's reporting structure
- KU4.** company's emergency evacuation procedure
- KU5.** health risks to the worker at the workplace
- KU6.** healthy work practices

- KU7.** how to perform the duties in a way to minimize pollution at the workplace.
- KU8.** what personal protective equipment should be worn and how it is cared for
- KU9.** safe disposal methods for waste
- KU10.** how to provide first-aid treatment at the workplace
- KU11.** emergency procedures to be followed in case of an mishap such as fire accidents etc.

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read personal health instructions and manual
- GS2.** read the usage of various hand tools and personal protection equipment
- GS3.** take notes on descriptions and details of various personal health maintenance procedures
- GS4.** communicate supervisor about the physical symptoms
- GS5.** receive instructions from doctor and supervisor on medical care
- GS6.** how to select appropriate hand tools and personal protection equipment
- GS7.** when to change personal protection equipment during work
- GS8.** how to identify first aid needs in case and of an injury
- GS9.** how to select appropriate hand tools and personal protection equipment
- GS10.** when to change personal protection equipment during work
- GS11.** how to use materials that does not affect customer health / make injury
- GS12.** improve work processes by adopting best safety practices
- GS13.** analyze the usage of appropriate tools and consumables
- GS14.** spot errors and any other disruptions and communicate with solutions

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Adopt healthy work practices</i>	<b>18</b>	<b>48</b>	-	-
<b>PC1.</b> always cover the mouth and nose with a dust mask while working and keep on changing when it gets blocked with dust	3	8	-	-
<b>PC2.</b> wear safety shoes while visiting the production unit to avoid any damage	3	8	-	-
<b>PC3.</b> wear personal protective equipment while visiting the different departments during production. orexample mask in the washing section, glasses and mask in an assembly line, and gloves in the printing section, etc.	3	8	-	-
<b>PC4.</b> always wash sanitize your hands after a factory unit before touching any document, laptop, cell phone, etc.	3	8	-	-
<b>PC5.</b> undergo preventive health checkups at regular intervals.	3	8	-	-
<b>PC6.</b> take prompt treatment from the doctor in case of illness.	3	8	-	-
<i>Achieve work productivity while maintaining health</i>	<b>9</b>	<b>25</b>	-	-
<b>PC7.</b> follow SOPs for dealing with blisters; scratches; accidental fires or any other type of emergencies at work	3	8	-	-
<b>PC8.</b> ensure no productivity loss or absenteeism from work due to illness	3	8	-	-
<b>PC9.</b> ensure no long-term ill effect on personal health.	3	9	-	-
<b>NOS Total</b>	<b>27</b>	<b>73</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N9903
<b>NOS Name</b>	Maintain Personal Hygiene
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Ceramics), Handicrafts (Fashion Jewellery), Handicrafts (Stonecraft), Glassware, Metalware, Carpet, Handicrafts (Woodware)
<b>Occupation</b>	Production Management, Research and Development, Mixing and Milling, Moulding, Finishing and Painting, Pre- Production, Furnace Operation, Quality Check, Production, Pre - Crafting, Stone Crafting, Mixing, Moulding, Cutting, Smoothing, Finishing, Designing, Metal Casting and Stamping, Metal Craft Making, Cleaning/Polishing/Buffering, Painting and Plating, Packing, Marketing and Merchandising
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	31/08/2021
<b>Next Review Date</b>	31/08/2026
<b>Deactivation Date</b>	31/08/2026
<b>NSQC Clearance Date</b>	31/08/2021



## HCS/N8711: Carry out preparation of bamboo slivers

### Description

This unit is about carrying out basic operations of preparing bamboo slivers of required specification.

### Scope

The scope covers the following :

- To make slivers from Bamboo Splits
- Sorting & Drying of sliver
- Bundling & Storage of slivers

### Elements and Performance Criteria

#### *To make slivers from Bamboo Splits*

To be competent, the user/individual on the job must be able to:

- PC1.** appropriately use the hand saw.
- PC2.** make the bamboo sliver by handling the bamboo split in the right manner.
- PC3.** apply appropriate pressure on the bamboo split by using the hand saw to get the desired thickness of bamboo sliver
- PC4.** make the bamboo sliver of the desired size from the splits.
- PC5.** measure & maintain the uniformity of the sliver to be achieved
- PC6.** minimise and dispose of the waste materials in the approved manner
- PC7.** carry out operations at a rate that maintains workflow
- PC8.** respond appropriately incase of any errors or faults in the bamboo and other operations
- PC9.** leave work area safe and secure when work is complete
- PC10.** maintain the sharpness of handsaw
- PC11.** take safety precautions while drawing out the sliver

#### *Sorting & Drying of sliver*

To be competent, the user/individual on the job must be able to:

- PC12.** identify and segregate the usable and the disposable bamboo slivers based on width, thickness, strength and colour
- PC13.** ensure uniform and complete drying
- PC14.** minimise and dispose of the waste materials in the approved manner

#### *Bundling & Storage of slivers*

To be competent, the user/individual on the job must be able to:

- PC15.** take an appropriate amount (weight/number of pieces as per market demand) of bamboo slivers from the bulk lot
- PC16.** undertake precautions while storage to avoid moisture

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** your organization's policies, procedures, guidelines and standards for quality
- KU2.** safe working practices and organizational procedures
- KU3.** quality systems and other processes practiced in the organization
- KU4.** types of problems with quality and how to report them to appropriate people
- KU5.** the importance of complying with written instructions
- KU6.** reporting procedure in case of faults in own/ other processes
- KU7.** whom to refer problems to when they are outside the limit of your authority
- KU8.** your organization's tools, templates and processes for related operations in production
- KU9.** types of tools used
- KU10.** step-by-step process of making bamboo sliver
- KU11.** correct positioning of the tool while making bamboo sliver
- KU12.** common mistakes in the handling of tools affecting the quality
- KU13.** importance of drying

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in the local language
- GS2.** read measurement instructions
- GS3.** listen effectively and orally communicate information accurately
- GS4.** ask for clarification and advice from others
- GS5.** follow organization rule-based decision-making process
- GS6.** decide with a systematic course of actions and/or response
- GS7.** plan and organize your work to achieve targets and deadlines
- GS8.** manage relationships with customers
- GS9.** build customer relationships and use a customer-centric approach
- GS10.** analyze the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS11.** identify immediate or temporary solutions to resolve delays
- GS12.** analyze data and activities
- GS13.** pass on relevant information to others
- GS14.** apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>To make slivers from Bamboo Splits</i>	<b>22</b>	<b>43</b>	-	-
<b>PC1.</b> appropriately use the hand saw.	2	3	-	-
<b>PC2.</b> make the bamboo sliver by handling the bamboo split in the right manner.	2	3	-	-
<b>PC3.</b> apply appropriate pressure on the bamboo split by using the hand saw to get the desired thickness of bamboo sliver	2	3	-	-
<b>PC4.</b> make the bamboo sliver of the desired size from the splits.	2	3	-	-
<b>PC5.</b> measure & maintain the uniformity of the sliver to be achieved	2	3	-	-
<b>PC6.</b> minimise and dispose of the waste materials in the approved manner	2	3	-	-
<b>PC7.</b> carry out operations at a rate that maintains workflow	2	5	-	-
<b>PC8.</b> respond appropriately incase of any errors or faults in the bamboo and other operations	2	5	-	-
<b>PC9.</b> leave work area safe and secure when work is complete	2	5	-	-
<b>PC10.</b> maintain the sharpness of handsaw	2	5	-	-
<b>PC11.</b> take safety precautions while drawing out the sliver	2	5	-	-
<i>Sorting &amp; Drying of sliver</i>	<b>6</b>	<b>15</b>	-	-
<b>PC12.</b> identify and segregate the usable and the disposable bamboo slivers based on width, thickness, strength and colour	2	5	-	-
<b>PC13.</b> ensure uniform and complete drying	2	5	-	-
<b>PC14.</b> minimise and dispose of the waste materials in the approved manner	2	5	-	-
<i>Bundling &amp; Storage of slivers</i>	<b>4</b>	<b>10</b>	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15.</b> take an appropriate amount (weight/number of pieces as per market demand) of bamboo slivers from the bulk lot	2	5	-	-
<b>PC16.</b> undertake precautions while storage to avoid moisture	2	5	-	-
<b>NOS Total</b>	<b>32</b>	<b>68</b>	-	-



## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8711
<b>NOS Name</b>	Carry out preparation of bamboo slivers
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Stitching, Weaving, Making and Finishing-Handicrafts(Bamboo)
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## HCS/N8712: Carry out weaving & twining of bamboo slivers to achieve the final product as per requirement

### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Abilities required to carry out Basket making from bamboo slivers.

### Scope

The scope covers the following :

- making two dimensional Bamboo sliver base according to specified design & size on which weaving & twining is to be done
- carrying the process of weaving & twining in the definite pattern & design

### Elements and Performance Criteria

*Making two dimensional Bamboo sliver base according to specified design & size on which weaving & twining is to be done*

To be competent, the user/individual on the job must be able to:

- PC1.** take specific type (based on width & length) of bamboo slivers suitable for preparing the two dimensional base structure
- PC2.** plan out the base & fix it (specifically for round base) to obtain a rigid structure.
- PC3.** ensure that the base structure is fixed correctly before weaving bamboo slivers on to the base structure
- PC4.** make the two dimensional bamboo sliver base according to the required design & pattern
- PC5.** ask questions to obtain more information on tasks when the instructions you have are unclear
- PC6.** to be able to work according to specified shape of bamboo basket
- PC7.** check that the materials to be used are free from faults
- PC8.** conform to organization's quality standards
- PC9.** report any damaged work to the responsible person
- PC10.** leave work area safe and secure when work is complete free from hazards

*Carrying the process of weaving & twining in the definite pattern & design*

To be competent, the user/individual on the job must be able to:

- PC11.** take appropriate slivers (based on width & length) for weaving according to shape, size, colour & design pattern required in making specific basketry product
- PC12.** do basic weaving in the given structure/frame
- PC13.** analyze and maintain a uniform gap between the slivers as per the given specification
- PC14.** analyze and maintain the compactness of the sliver to ensure rigidity of the structure
- PC15.** analyze and carry out the bending wherever required according to the shape & size of the product to be achieved
- PC16.** analyze and maintain quality in giving shapes
- PC17.** ensure proper handling in making the basketry product to avoid any breakage

**PC18.** detect faults & defects

**PC19.** solve & rectify the faults

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organization's policies and procedures
- KU2.** responsibilities under health, safety and environmental legislation
- KU3.** guidelines for storage and disposal of waste materials
- KU4.** potential hazards associated with the machines and the safety precautions that must be taken
- KU5.** protocol to obtain more information on work related tasks
- KU6.** contact person in case of queries on procedure or products and for resolving issues related to defective machines, tools and/or equipment
- KU7.** details of the job role and responsibilities
- KU8.** work target and review mechanism with your supervisor
- KU9.** protocol and format for reporting work related risks/ problems
- KU10.** method of obtaining/ giving feedback related to performance
- KU11.** importance of team work and harmonious working relationships
- KU12.** process for offering/ obtaining work related assistance
- KU13.** need to sort slivers
- KU14.** need for drying
- KU15.** proper storing methods
- KU16.** knowledge of types slivers based on quality and quantity measurements
- KU17.** different types of defects/quality issues
- KU18.** common hazards in the work area and workplace procedures for dealing with them

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in local language
- GS2.** read measurement instructions
- GS3.** communicate orally with colleagues
- GS4.** follow organization rule-based decision making process
- GS5.** decide with systematic course of actions and/or response
- GS6.** plan and organize your work to achieve targets and deadlines
- GS7.** manage relationships with customers
- GS8.** build customer relationships and use a customer-centric approach
- GS9.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS10.** identify immediate or temporary solutions to resolve delays

**GS11.** analyze data and activities

**GS12.** pass on relevant information to others



## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Making two dimensional Bamboo sliver base according to specified design &amp; size on which weaving &amp; twining is to be done</i>	<b>20</b>	<b>30</b>	-	-
<b>PC1.</b> take specific type (based on width & length) of bamboo slivers suitable for preparing the two dimensional base structure	2	3	-	-
<b>PC2.</b> plan out the base & fix it (specifically for round base)to obtain a rigid structure.	2	3	-	-
<b>PC3.</b> ensure that the base structure is fixed correctly before weaving bamboo slivers on to the base structure	2	3	-	-
<b>PC4.</b> make the two dimensional bamboo sliver base according to the required design & pattern	2	3	-	-
<b>PC5.</b> ask questions to obtain more information on tasks when the instructions you have are unclear	2	3	-	-
<b>PC6.</b> to be able to work according to specified shape of bamboo basket	2	3	-	-
<b>PC7.</b> check that the materials to be used are free from faults	2	3	-	-
<b>PC8.</b> conform to organization's quality standards	2	3	-	-
<b>PC9.</b> report any damaged work to the responsible person	2	3	-	-
<b>PC10.</b> leave work area safe and secure when work is complete free from hazards	2	3	-	-
<i>Carrying the process of weaving &amp; twining in the definite pattern &amp; design</i>	<b>18</b>	<b>32</b>	-	-
<b>PC11.</b> take appropriate slivers (based on width & length) for weaving according to shape,size, colour & design pattern required in making specific basketry product	2	3	-	-
<b>PC12.</b> do basic weaving in the given structure/frame	2	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> analyze and maintain a uniform gap between the slivers as per the given specification	2	3	-	-
<b>PC14.</b> analyze and maintain the compactness of the sliver to ensure rigidity of the structure	2	3	-	-
<b>PC15.</b> analyze and carry out the bending wherever required according to the shape & size of the product to be achieved	2	3	-	-
<b>PC16.</b> analyze and maintain quality in giving shapes	2	3	-	-
<b>PC17.</b> ensure proper handling in making the basketry product to avoid any breakage	2	4	-	-
<b>PC18.</b> detect faults & defects	2	5	-	-
<b>PC19.</b> solve & rectify the faults	2	5	-	-
<b>NOS Total</b>	<b>38</b>	<b>62</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8712
<b>NOS Name</b>	Carry out weaving & twining of bamboo slivers to achieve the final product as per requirement
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Stitching, Weaving, Making and Finishing-Handicrafts(Bamboo)
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## HCS/N8713: Carry out finishing, varnishing, drying & storage of bamboo basket

### Description

This unit is about to carry out basic operations of finishing, drying & varnishings Bamboo Basketry products.

### Scope

The scope covers the following :

- clipping the extra unwanted sliver from the basket & fix the edges.
- drying of bamboo basket.
- varnishing & drying of bamboo basket
- storage of bamboo basket products

### Elements and Performance Criteria

#### *Clipping the extra unwanted sliver from the basket & fix the edges*

To be competent, the user/individual on the job must be able to:

- PC1.** appropriate usage of clipping tool
- PC2.** cut the extra edges neatly to give the fine finished look
- PC3.** analyze and apply glue to fix the edges
- PC4.** handle the bamboo basket properly to avoid any breakage
- PC5.** dispose the waste materials in the approved manner
- PC6.** carry out operations at a rate that maintains workflow
- PC7.** respond appropriately in case of any errors or faults in the bamboo and other operations
- PC8.** leave work area safe and secure when work is complete
- PC9.** maintaining the work place clean
- PC10.** maintaining sharpness of clipping tool
- PC11.** take safety precautions while clipping

#### *Drying of Bamboo Basket*

To be competent, the user/individual on the job must be able to:

- PC12.** carry out effective drying of the basket to reduce moisture content
- PC13.** take precautions while placing the baskets in a dust free area while drying

#### *Proper Varnishing & Drying of Bamboo Basket*

To be competent, the user/individual on the job must be able to:

- PC14.** handle the brush or sprayer properly
- PC15.** prepare the solution of varnish by adding an appropriate amount of thinner
- PC16.** take an appropriate amount of solution to be applied to the bamboo basketry product
- PC17.** apply solution on the bamboo basketry product uniformly
- PC18.** handle the basket properly while doing varnishing
- PC19.** ensure uniform and complete drying in sunlight to avoid stickiness

**PC20.** check & ensure the quality of the final product based on desired specifications

**PC21.** maintain the workplace clean

**PC22.** dispose of the waste materials safely in approved manner

*Storage of Bamboo Basket products*

To be competent, the user/individual on the job must be able to:

**PC23.** take precautions while stacking the lot of basket avoiding any breakage

**PC24.** store the lot of basket in a dry area avoiding direct contact with the ground

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** the organization's policies, procedures, guidelines and standards for quality

**KU2.** safe working practices and organizational procedures

**KU3.** quality systems and other processes practiced in the organization

**KU4.** types of problems with quality and how to report them to appropriate people

**KU5.** the importance of complying with written instructions

**KU6.** reporting procedure in case of faults in own/ other processes

**KU7.** who to refer problems to when they are outside the limit of your authority

**KU8.** the organization's tools, templates and processes for related operations in production

**KU9.** types of tools used

**KU10.** step by step finishing process

**KU11.** preparation of varnish solution by added a right amount of thinner

**KU12.** common mistakes in handling of product affecting the finishing quality

**KU13.** importance of even drying

## Generic Skills (GS)

User/individual on the job needs to know how to:

**GS1.** write in local language

**GS2.** read measurement instructions

**GS3.** listen effectively and orally communicate information accurately

**GS4.** ask for clarification and advice from others

**GS5.** follow organization rule-based decision-making process

**GS6.** decide with a systematic course of actions and/or response

**GS7.** plan and organize your work to achieve targets and deadlines

**GS8.** manage relationships with customers

**GS9.** build customer relationships and use customer centric approach

**GS10.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)

**GS11.** identify immediate or temporary solutions to resolve delays

**GS12.** analyze data and activities



**GS13.** pass on relevant information to others

**GS14.** apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Clipping the extra unwanted sliver from the basket &amp; fix the edges</i>	<b>11</b>	<b>33</b>	-	-
<b>PC1.</b> appropriate usage of clipping tool	1	3	-	-
<b>PC2.</b> cut the extra edges neatly to give the fine finished look	1	3	-	-
<b>PC3.</b> analyze and apply glue to fix the edges	1	3	-	-
<b>PC4.</b> handle the bamboo basket properly to avoid any breakage	1	3	-	-
<b>PC5.</b> dispose the waste materials in the approved manner	1	3	-	-
<b>PC6.</b> carry out operations at a rate that maintains workflow	1	3	-	-
<b>PC7.</b> respond appropriately incase of any errors or faults in the bamboo and other operations	1	3	-	-
<b>PC8.</b> leave work area safe and secure when work is complete	1	3	-	-
<b>PC9.</b> maintaining the work place clean	1	3	-	-
<b>PC10.</b> maintaining sharpness of clipping tool	1	3	-	-
<b>PC11.</b> take safety precautions while clipping	1	3	-	-
<i>Drying of Bamboo Basket</i>	<b>2</b>	<b>6</b>	-	-
<b>PC12.</b> carry out effective drying of the basket to reduce moisture content	1	3	-	-
<b>PC13.</b> take precautions while placing the baskets in a dust free area while drying	1	3	-	-
<i>Proper Varnishing &amp; Drying of Bamboo Basket</i>	<b>9</b>	<b>29</b>	-	-
<b>PC14.</b> handle the brush or sprayer properly	1	3	-	-
<b>PC15.</b> prepare the solution of varnish by adding an appropriate amount of thinner	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC16.</b> take an appropriate amount of solution to be applied to the bamboo basketry product	1	3	-	-
<b>PC17.</b> apply solution on the bamboo basketry product uniformly	1	3	-	-
<b>PC18.</b> handle the basket properly while doing varnishing	1	3	-	-
<b>PC19.</b> ensure uniform and complete drying in sunlight to avoid stickiness	1	3	-	-
<b>PC20.</b> check & ensure the quality of the final product based on desired specifications	1	3	-	-
<b>PC21.</b> maintain the workplace clean	1	4	-	-
<b>PC22.</b> dispose of the waste materials safely in approved manner	1	4	-	-
<i>Storage of Bamboo Basket products</i>	<b>2</b>	<b>8</b>	-	-
<b>PC23.</b> take precautions while stacking the lot of basket avoiding any breakage	1	4	-	-
<b>PC24.</b> store the lot of basket in a dry area avoiding direct contact with the ground	1	4	-	-
<b>NOS Total</b>	<b>24</b>	<b>76</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8713
<b>NOS Name</b>	Carry out finishing, varnishing, drying & storage of bamboo basket
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Stitching, Weaving, Making and Finishing-Handicrafts (Bamboo)
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQF Clearance Date</b>	NA

## HCS/N8714: Contribute to achieve quality bamboo basket making

### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Abilities required to monitor the quality while undertaking bamboo basket making to ensure that the final product meets desired specifications.

### Scope

The scope covers the following :

- Contribute to achieving the product quality in Bamboo work

### Elements and Performance Criteria

#### *Contribute to achieving the product quality in Bamboo work*

To be competent, the user/individual on the job must be able to:

- PC1.** identify and use raw materials as per the specifications provided
- PC2.** . take the necessary action when materials do not conform to quality standards
- PC3.** report and replace identified faulty materials and component parts which do not meet specifications
- PC4.** identify modifiable defects and rework on them
- PC5.** carry out work safely and at a rate that maintains work flow
- PC6.** report to the responsible person when the work flow of other production areas disrupts work
- PC7.** carry out quality checks at specified intervals according to instructions
- PC8.** apply the allowed tolerances
- PC9.** identify faults and take appropriate action for rectification
- PC10.** maintain the required productivity and quality levels

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** safe working practices and organizational procedures
- KU2.** the organization's organization's procedures and guidelines
- KU3.** quality systems and machine embroidery processes practiced in the organization
- KU4.** equipment operating procedures / manufacturers instructions
- KU5.** types of problems with quality and how to report them to appropriate people
- KU6.** methods to present any ideas for improvement to supervisor
- KU7.** the importance of complying with written instructions
- KU8.** limitations of personal responsibility
- KU9.** reporting procedure in case of faults in own/ other processes
- KU10.** different types of faults that are likely to be found



- KU11.** consequences of using incorrect tools
- KU12.** consequences of incorrect handling of tools
- KU13.** types of faults that may occur, methods of identification and deal with problems
- KU14.** different types of defects
- KU15.** the importance of segregating rejects
- KU16.** appropriate inspection methods that can be used
- KU17.** own responsibilities at work

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in local language
- GS2.** read instructions, guidelines, procedures and rules
- GS3.** communicate orally with colleagues
- GS4.** follow organization rule-based decision making process
- GS5.** decide with systematic course of actions and/or response
- GS6.** plan and organize your work to achieve targets and deadlines
- GS7.** manage relationships with customers
- GS8.** build customer relationships and use customer centric approach
- GS9.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS10.** identify immediate or temporary solutions to resolve delays
- GS11.** analyze data and activities
- GS12.** pass on relevant information to others
- GS13.** apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Contribute to achieving the product quality in Bamboo work</i>	<b>30</b>	<b>70</b>	-	-
<b>PC1.</b> identify and use raw materials as per the specifications provided	3	7	-	-
<b>PC2.</b> . take the necessary action when materials do not conform to quality standards	3	7	-	-
<b>PC3.</b> report and replace identified faulty materials and component parts which do not meet specifications	3	7	-	-
<b>PC4.</b> identify modifiable defects and rework on them	3	7	-	-
<b>PC5.</b> carry out work safely and at a rate that maintains work flow	3	7	-	-
<b>PC6.</b> report to the responsible person when the work flow of other production areas disrupts work	3	7	-	-
<b>PC7.</b> carry out quality checks at specified intervals according to instructions	3	7	-	-
<b>PC8.</b> apply the allowed tolerances	3	7	-	-
<b>PC9.</b> identify faults and take appropriate action for rectification	3	7	-	-
<b>PC10.</b> maintain the required productivity and quality levels	3	7	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8714
<b>NOS Name</b>	Contribute to achieve quality bamboo basket making
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Stitching, Weaving, Making and Finishing-Handicrafts(Bamboo)
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## HCS/N8705: Carry out basic pre-loom operations: Denting and attaching the warp on the loom

### Description

This unit is about carrying out basic pre-loom operations: Drafting, denting and attaching the warp on the loom.

### Scope

The scope covers the following :

- Prerequisite for undertaking preloom operations
- Perform denting operation to carry out weaving of Bamboo mat
- Attach the warp on the loom

### Elements and Performance Criteria

#### *Prerequisite for undertaking preloom operations*

To be competent, the user/individual on the job must be able to:

- PC1.** identify the parts of the hand operated loom and understand their functioning.
- PC2.** analyze & interpret the given design (plain or twill weave) which needs to be woven & the type of raw material that is required.
- PC3.** select and check appropriate materials for weaving the fabric as per the given specifications.
- PC4.** conform to product quality standards
- PC5.** check with in-charge /others when unsure of new product details
- PC6.** minimise and dispose the waste materials in the approved manner
- PC7.** carry out operations at a rate which maintains workflow
- PC8.** leave work area safe and secure when work is complete

#### *Perform drafting operation to carry out weaving of Bamboo mat*

To be competent, the user/individual on the job must be able to:

- PC9.** understand basic or plain drafting
- PC10.** carry out drafting- drawing the warp threads into heald eyelets using the hook as per the given specifications.
- PC11.** detect, analyse and rectify faults while drafting
- PC12.** gradually knot the threads after drafting a set of ends to avoid mistakes in drafting

#### *Perform denting operation to carry out weaving of Bamboo mat*

To be competent, the user/individual on the job must be able to:

- PC13.** draw the warp threads in the warped beam through the reed dents as per the given specifications
- PC14.** maintain the reed hook to ensure smooth functioning

#### *Attach the warp on the loom*

To be competent, the user/individual on the job must be able to:

- PC15.** attach the warp rolled beam on the loom, in order to keep the loom ready to commence weaving operations

- PC16.** knot the warp threads uniformly to the rod attached to the breast beam/fabric beam
- PC17.** maintain the correct tension of the warp threads to prepare the loom for weaving
- PC18.** analyze and maintain the tension of the warp threads uniformly by beating and inserting dummy weft
- PC19.** respond appropriately in case of any errors or faults in the warp and other pre-weaving operations and take corrective measures

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organizations policies, procedures, guidelines and standards for quality.
- KU2.** safe working practices and organisational procedures.
- KU3.** quality systems and other processes practiced in the organization.
- KU4.** types of problems with quality and how to report them to appropriate people.
- KU5.** the importance of complying with written instructions.
- KU6.** reporting procedure in case of faults in own/ other's processes.
- KU7.** who to refer problems to when they are outside the limit of your authority
- KU8.** your organizations tools, templates and processes for weaving related operations in production
- KU9.** different parts of the hand operated loom and their functioning.
- KU10.** loom dimensions and other specifications.
- KU11.** different parts of the hand operated loom and their functioning
- KU12.** different types of tools and implements used in a looms.
- KU13.** the step-by-step process flow involved in the pre-loom operations.

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in local language.
- GS2.** read a design specifications sheet.
- GS3.** listen effectively and orally communicate information accurately.
- GS4.** ask for clarification and advice from others.
- GS5.** follow organization rule-based decision making process.
- GS6.** take decision with systematic course of actions and/or response.
- GS7.** plan and organize your work to achieve targets and deadlines.
- GS8.** manage relationships with customers.
- GS9.** build customer relationships and use customer centric approach.
- GS10.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s).
- GS11.** identify immediate or temporary solutions to resolve delays.
- GS12.** analyze data and activities.



- GS13.** pass on relevant information to others.
- GS14.** apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action.

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prerequisite for undertaking preloom operations</i>	<b>16</b>	<b>22</b>	-	-
<b>PC1.</b> identify the parts of the hand operated loom and understand their functioning.	4	6	-	-
<b>PC2.</b> analyze & interpret the given design (plain or twill weave) which needs to be woven & the type of raw material that is required.	3	3	-	-
<b>PC3.</b> select and check appropriate materials for weaving the fabric as per the given specifications.	1	3	-	-
<b>PC4.</b> conform to product quality standards	1	2	-	-
<b>PC5.</b> check with in-charge /others when unsure of new product details	1	2	-	-
<b>PC6.</b> minimise and dispose the waste materials in the approved manner	1	2	-	-
<b>PC7.</b> carry out operations at a rate which maintains workflow	3	3	-	-
<b>PC8.</b> leave work area safe and secure when work is complete	2	1	-	-
<i>Perform drafting operation to carry out weaving of Bamboo mat</i>	<b>12</b>	<b>17</b>	-	-
<b>PC9.</b> understand basic or plain drafting	4	4	-	-
<b>PC10.</b> carry out drafting- drawing the warp threads into heald eyelets using the hook as per the given specifications.	5	7	-	-
<b>PC11.</b> detect, analyse and rectify faults while drafting	2	4	-	-
<b>PC12.</b> gradually knot the threads after drafting a set of ends to avoid mistakes in drafting	1	2	-	-
<i>Perform denting operation to carry out weaving of Bamboo mat</i>	<b>3</b>	<b>4</b>	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> draw the warp threads in the warped beam through the reed dents as per the given specifications	2	2	-	-
<b>PC14.</b> maintain the reed hook to ensure smooth functioning	1	2	-	-
<i>Attach the warp on the loom</i>	<b>9</b>	<b>17</b>	-	-
<b>PC15.</b> attach the warp rolled beam on the loom, in order to keep the loom ready to commence weaving operations	3	5	-	-
<b>PC16.</b> knot the warp threads uniformly to the rod attached to the breast beam/fabric beam	3	4	-	-
<b>PC17.</b> maintain the correct tension of the warp threads to prepare the loom for weaving	1	3	-	-
<b>PC18.</b> analyze and maintain the tension of the warp threads uniformly by beating and inserting dummy weft	1	3	-	-
<b>PC19.</b> respond appropriately incase of any errors or faults in the warp and other pre-weaving operations and take corrective measures	1	2	-	-
<b>NOS Total</b>	<b>40</b>	<b>60</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8705
<b>NOS Name</b>	Carry out basic pre-loom operations: Denting and attaching the warp on the loom
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Bamboo Mat Weaver
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## HCS/N8706: Carry out basic weaving operations: Shedding/ Picking/ Battening to weave mats comprising of basic weaves- Plain and Twill using hand operated loom

### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Abilities required to carry out basic weaving operations: Shedding/Picking/Battening to weave Bamboo mats comprising of basic weaves- Plain and Twill on hand operated loom.

### Scope

The scope covers the following :

- Prepare for weaving Bamboo mats
- Identify and perform primary weaving operations
- Identify and perform secondary weaving operations
- Identify and perform post loom operations & finishing

### Elements and Performance Criteria

#### *Prepare for weaving Bamboo mats*

To be competent, the user/individual on the job must be able to:

- PC1.** select the appropriate coloured bamboo sticks for insertion as wefts.
- PC2.** ask questions to obtain more information on tasks when the instructions you have are unclear
- PC3.** use the correct tools and materials.
- PC4.** check that the materials to be used are free from faults, incase of any report them
- PC5.** use the pedal to check if the shed formed is appropriate.

#### *Identify and perform primary weaving operations*

To be competent, the user/individual on the job must be able to:

- PC6.** carry-out the primary weaving operation of shedding
- PC7.** carry-out the primary weaving operation of picking
- PC8.** perform the primary weaving operation of battening.
- PC9.** carry out beating uniformly

#### *Identify and perform secondary weaving operations*

To be competent, the user/individual on the job must be able to:

- PC10.** carry-out the secondary weaving operations of take-up
- PC11.** carry-out the secondary weaving operations of let-off

#### *Identify and perform post loom operations & finishing*

To be competent, the user/individual on the job must be able to:

- PC12.** trim the edges of the woven mat evenly
- PC13.** reduce wastage and maintain quality while cutting to get desired finishing
- PC14.** roll the mat, tag and store in a dry place



- PC15.** conform to organisations quality standards
- PC16.** maintain bamboo mat weaving operations to conform to organisations quality standards.
- PC17.** report any damaged work to the responsible person
- PC18.** leave work area safe and secure when work is complete free from hazards
- PC19.** inspect the woven mats as per the specifications provided.
- PC20.** perform all weaving-related operations with precision & accuracy.

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organisations policies and procedures.
- KU2.** the guidelines for storage and disposal of waste materials.
- KU3.** different potential hazards associated with the machines and the safety precautions that must be taken.
- KU4.** protocols to obtain more information on work related tasks.
- KU5.** contact person in case of queries on procedure or products and for resolving issues related to defective machines, tools and/or equipment
- KU6.** details of the job role and responsibilities.
- KU7.** work target and review mechanism with your supervisor
- KU8.** various methods for obtaining/ giving feedback related to performance.
- KU9.** importance of team work and harmonious working relationships.
- KU10.** processes for offering/ obtaining work related assistance.
- KU11.** functional know-how of the key loom parts.
- KU12.** operational knowledge for undertaking primary and secondary weaving operations using hand operated looms.
- KU13.** understanding technical requirements of the mat to be woven.
- KU14.** methods to make use of the information detailed in specifications and instructions.
- KU15.** knowledge on basic weaves- plain and their variations
- KU16.** different types of defects/quality errors/issues in hand weaving, and methods/ways to eliminate them.
- KU17.** common hazards in the work area and workplace procedures for dealing with them.

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in local language.
- GS2.** read instructions, guidelines, procedures and rules.
- GS3.** communicate orally with colleagues.
- GS4.** follow organization's rule-based decision making process.
- GS5.** take decision with systematic course of actions and/or response.
- GS6.** plan and organize your work to achieve targets and deadlines.

- GS7.** manage relationships with customers.
- GS8.** build customer relationships and use customer centric approach.
- GS9.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s).
- GS10.** identify immediate or temporary solutions to resolve delays.
- GS11.** analyze data and activities.
- GS12.** pass on relevant information to others.
- GS13.** analyze, evaluate and apply the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action.

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for weaving Bamboo mats</i>	<b>11</b>	<b>14</b>	-	-
<b>PC1.</b> select the appropriate coloured bamboo sticks for insertion as wefts.	4	4	-	-
<b>PC2.</b> ask questions to obtain more information on tasks when the instructions you have are unclear	2	3	-	-
<b>PC3.</b> use the correct tools and materials.	2	1	-	-
<b>PC4.</b> check that the materials to be used are free from faults, incase of any report them	2	3	-	-
<b>PC5.</b> use the pedal to check if the shed formed is appropriate.	1	3	-	-
<i>Identify and perform primary weaving operations</i>	<b>8</b>	<b>17</b>	-	-
<b>PC6.</b> carry-out the primary weaving operation of shedding	2	5	-	-
<b>PC7.</b> carry-out the primary weaving operation of picking	3	5	-	-
<b>PC8.</b> perform the primary weaving operation of battening.	2	5	-	-
<b>PC9.</b> carry out beating uniformly	1	2	-	-
<i>Identify and perform secondary weaving operations</i>	<b>4</b>	<b>6</b>	-	-
<b>PC10.</b> carry-out the secondary weaving operations of take-up	2	3	-	-
<b>PC11.</b> carry-out the secondary weaving operations of let-off	2	3	-	-
<i>Identify and perform post loom operations &amp; finishing</i>	<b>17</b>	<b>23</b>	-	-
<b>PC12.</b> trim the edges of the woven mat evenly	1	2	-	-
<b>PC13.</b> reduce wastage and maintain quality while cutting to get desired finishing	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> roll the mat, tag and store in a dry place	2	1	-	-
<b>PC15.</b> conform to organisations quality standards	2	2	-	-
<b>PC16.</b> maintain bamboo mat weavving operations to conform to organisations quality standards.	3	4	-	-
<b>PC17.</b> report any damaged work to the responsible person	2	3	-	-
<b>PC18.</b> leave work area safe and secure when work is complete free from hazards	2	3	-	-
<b>PC19.</b> inspect the woven mats as per the specifications provided.	2	3	-	-
<b>PC20.</b> perform all weaving-related operations with precision & accuracy.	2	3	-	-
<b>NOS Total</b>	<b>40</b>	<b>60</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8706
<b>NOS Name</b>	Carry out basic weaving operations: Shedding/ Picking/ Battening to weave mats comprising of basic weaves- Plain and Twill using hand operated loom
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Bamboo Mat Weaver
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA



## HCS/N8707: Contribute to achieve quality in bamboo mat weaving

### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Abilities required to monitor the quality while undertaking bamboo mat weaving related activities to ensure that the woven mats meet specifications.

### Scope

The scope covers the following :

- Contribute towards achieving the quality in bamboo mat weaving

### Elements and Performance Criteria

*Contribute towards achieving the quality in bamboo mat weaving.*

To be competent, the user/individual on the job must be able to:

- PC1.** identify and use raw materials as per the specifications provided
- PC2.** identify necessary actions to be taken when materials do not conform to quality standards.
- PC3.** report and replace identified faulty materials and component parts which do not meet specification
- PC4.** identify modifiable defects and rework on them.
- PC5.** carry out work safely and at a rate which maintains work flow
- PC6.** report to the responsible person when the work flow of other production areas disrupts work
- PC7.** carry out quality checks at specified intervals according to instructions.
- PC8.** apply the allowed tolerances and apply the same.
- PC9.** identify faults and take appropriate action for rectification.
- PC10.** make adjustments promptly to ensure the hand-woven mat matches the specification
- PC11.** fault-find materials and components for stained, damage and incorrectly made-up component parts
- PC12.** maintain the required productivity and quality levels.

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** safe working practices and organisational procedures
- KU2.** the organisation's procedures and guidelines
- KU3.** quality systems and processes practiced in the organization
- KU4.** equipment operating procedures / manufacturers instructions
- KU5.** types of problems with quality and how to report them to appropriate people
- KU6.** methods to present any ideas for improvement to supervisor
- KU7.** the importance of complying with written instructions
- KU8.** limits of personal responsibility

- KU9.** reporting procedure in case of faults in own/ other processes
- KU10.** different types of faults that are likely to be found and how to put them right
- KU11.** different techniques and methods used to detect fault
- KU12.** types of basic weaves- plain and twill
- KU13.** types of faults which may occur, how they are identified and methods to deal with it
- KU14.** different types of defects
- KU15.** the importance of marking and segregating rejects
- KU16.** inspect hand-woven mats against specifications
- KU17.** identify, mark and place rejects in the designated locations
- KU18.** appropriate inspection methods that can be used
- KU19.** acceptable solutions for particular faults
- KU20.** the consequences of not rectifying problems
- KU21.** the types of adjustments suitable for specific types of faults
- KU22.** own responsibilities at work

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in local language .
- GS2.** read measurement instructions.
- GS3.** listen effectively and orally communicate information accurately.
- GS4.** ask for clarification and advice from others.
- GS5.** follow organization's rule-based decision making process.
- GS6.** take decision with systematic course of actions and/or response.
- GS7.** plan and organize your work to achieve targets and deadlines.
- GS8.** manage relationships with customers.
- GS9.** build customer relationships and use customer centric approach.
- GS10.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s).
- GS11.** identify immediate or temporary solutions to resolve delays.
- GS12.** analyze data and activities.
- GS13.** pass on relevant information to others.
- GS14.** analyze, evaluate and apply the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action.

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Contribute towards achieving the quality in bamboo mat weaving.</i>	<b>40</b>	<b>60</b>	-	-
<b>PC1.</b> identify and use raw materials as per the specifications provided	3	7	-	-
<b>PC2.</b> identify necessary actions to be taken when materials do not conform to quality standards.	2	6	-	-
<b>PC3.</b> report and replace identified faulty materials and component parts which do not meet specification	2	4	-	-
<b>PC4.</b> identify modifiable defects and rework on them.	4	6	-	-
<b>PC5.</b> carry out work safely and at a rate which maintains work flow	2	4	-	-
<b>PC6.</b> report to the responsible person when the work flow of other production areas disrupts work	4	4	-	-
<b>PC7.</b> carry out quality checks at specified intervals according to instructions.	4	4	-	-
<b>PC8.</b> apply the allowed tolerances and apply the same.	4	6	-	-
<b>PC9.</b> identify faults and take appropriate action for rectification.	4	6	-	-
<b>PC10.</b> make adjustments promptly to ensure the hand-woven mat matches the specification	4	6	-	-
<b>PC11.</b> fault-find materials and components for stained, damage and incorrectly made-up component parts	4	4	-	-
<b>PC12.</b> maintain the required productivity and quality levels.	3	3	-	-
<b>NOS Total</b>	<b>40</b>	<b>60</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8707
<b>NOS Name</b>	Contribute to achieve quality in bamboo mat weaving
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Bamboo Mat Weaver
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## HCS/N8715: Carry out cutting & processing of materials as per given size & shape

### Description

This unit is about carrying out basic operations of cutting & processing of various materials including bamboo based materials.

### Scope

The scope covers the following :

- marking on the material surface as per the given size & specification
- cutting based on the given marking

### Elements and Performance Criteria

#### *Perform marking on the material surface as per the given size and specification*

To be competent, the user/individual on the job must be able to:

- PC1.** ensure conformation of the material to be marked to the desired quality & specification
- PC2.** carry out correct handling of the material surface to be marked
- PC3.** use of rulers and marking templates appropriately.
- PC4.** analyze and position the material appropriately to minimize waste.
- PC5.** carry out appropriate marking with correct positioning of marker.
- PC6.** check and prepare the markers before marking.
- PC7.** carry out operations at a rate which maintains workflow

#### *Perform cutting based on the given marking*

To be competent, the user/individual on the job must be able to:

- PC8.** handle different cutting tools
- PC9.** carry out any preprocessing (like finishing the fibrous edges by gumming) required for fineness of cutting
- PC10.** correct holding technique of the material to be cut
- PC11.** carry out cutting operation effectively based on the markings
- PC12.** carry out cutting of multiple units of material on single marking wherever possible
- PC13.** inspect and ensure that the cut pieces conform to the given quality and specification.
- PC14.** carry out operations at a rate which maintains workflow
- PC15.** respond appropriately incase of any errors or faults/closing the bamboo and other operations.
- PC16.** minimise and dispose the waste materials in the approved manner
- PC17.** identify the safety precautions to be taken cutting.
- PC18.** leave work area safe and secure when work is complete

### Knowledge and Understanding (KU)



The individual on the job needs to know and understand:

- KU1.** the organizations policies, procedures, guidelines and standards for quality.
- KU2.** safe working practices and organisational procedures.
- KU3.** quality systems and other processes practiced in the organization.
- KU4.** types of problems with quality and how to report them to appropriate people.
- KU5.** the importance of complying with written instructions.
- KU6.** reporting procedure in case of faults in own/ other's processes.
- KU7.** who to refer problems to when they are outside the limit of your authority
- KU8.** the organizations tools, templates and processes for related operations in production.
- KU9.** basic dimensions & measurement techniques.
- KU10.** different types of measuring & cutting templates & tools used.
- KU11.** sequence at which different materials to be processed.
- KU12.** the need for correct holding technique of different materials while marking & cutting
- KU13.** the need for correct holding technique of tools while marking & cutting

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in local language.
- GS2.** read measurement instructions.
- GS3.** listen effectively and orally communicate information accurately.
- GS4.** ask for clarification and advice from others.
- GS5.** follow organization rule-based decision making process.
- GS6.** take decision with systematic course of actions and/or response.
- GS7.** plan and organize your work to achieve targets and deadlines.
- GS8.** manage relationships with customers.
- GS9.** build customer relationships and use customer centric approach.
- GS10.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s).
- GS11.** identify immediate or temporary solutions to resolve delays.
- GS12.** analyze data and activities.
- GS13.** pass on relevant information to others.
- GS14.** analyze, evaluate and apply the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action.

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform marking on the material surface as per the given size and specification</i>	<b>8</b>	<b>29</b>	-	-
<b>PC1.</b> ensure conformation of the material to be marked to the desired quality & specification	2	5	-	-
<b>PC2.</b> carry out correct handling of the material surface to be marked	1	3	-	-
<b>PC3.</b> use of rulers and marking templates appropriately.	1	3	-	-
<b>PC4.</b> analyze and position the material appropriately to minimize waste.	1	5	-	-
<b>PC5.</b> carry out appropriate marking with correct positioning of marker.	1	4	-	-
<b>PC6.</b> check and prepare the markers before marking.	1	4	-	-
<b>PC7.</b> carry out operations at a rate which maintains workflow	1	5	-	-
<i>Perform cutting based on the given marking</i>	<b>15</b>	<b>48</b>	-	-
<b>PC8.</b> handle different cutting tools	2	4	-	-
<b>PC9.</b> carry out any preprocessing (like finishing the fibrous edges by gumming) required for fineness of cutting	3	7	-	-
<b>PC10.</b> correct holding technique of the material to be cut	1	3	-	-
<b>PC11.</b> carry out cutting operation effectively based on the markings	2	6	-	-
<b>PC12.</b> carry out cutting of multiple units of material on single marking wherever possible	1	5	-	-
<b>PC13.</b> inspect and ensure that the cut pieces conform to the given quality and specification.	1	4	-	-
<b>PC14.</b> carry out operations at a rate which maintains workflow	1	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15.</b> respond appropriately incase of any errors or faults/closing the bamboo and other operations.	1	3	-	-
<b>PC16.</b> minimise and dispose the waste materials in the approved manner	1	4	-	-
<b>PC17.</b> identify the safety precautions to be taken cutting.	1	4	-	-
<b>PC18.</b> leave work area safe and secure when work is complete	1	4	-	-
<b>NOS Total</b>	<b>23</b>	<b>77</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8715
<b>NOS Name</b>	Carry out cutting & processing of materials as per given size & shape
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Bamboo Utility Handicraft Assembler
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## HCS/N8716: Carry out assembling different materials

### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Abilities required to carry out assembling of cut pieces of different materials including bamboo based material to get the desired product that may be an end product or an intermediary material for other jobs.

### Scope

The scope covers the following :

- identifying & preparing the points/surfaces for joining
- positioning, placing, attaching and finishing

### Elements and Performance Criteria

#### *Identifying & Preparing the joining points/surfaces for joining*

To be competent, the user/individual on the job must be able to:

- PC1.** identify and mark the points/surface areas on the two materials pieces to be assembled.
- PC2.** clean the surfaces to be attached from any unwanted materials
- PC3.** use the correct joining technique.
- PC4.** identify and use the appropriate type of glue, while assembling.
- PC5.** apply adhesive on the marked area with minimum spill out.
- PC6.** ensure the uniformity while applying layers of adhesive on a surface
- PC7.** make sure the surface dry optimumly for better adherence

#### *Perform positioning, placing, attaching and finishing of the bamboo product*

To be competent, the user/individual on the job must be able to:

- PC8.** correctly position the two surfaces to be joined
- PC9.** justify the order of placing one surface over another.
- PC10.** use the appropriate joining bit/ nail if required.
- PC11.** place & attach the parts correctly maintaining the line of joint
- PC12.** . pressing (hammering if required) evenly throughout the joined parts
- PC13.** pressing (hammering if required) evenly throughout the joined parts pc13. clean out glue spill outs or any unwanted marks on the surface of the assembled piece
- PC14.** remove any unwanted fibres from the edges that may come out during the process
- PC15.** inspect and ensure that the assembled unit conforms to the given quality and specification.
- PC16.** minimise and dispose the waste materials in the approved manner
- PC17.** carry out operations at a rate which maintains workflow
- PC18.** . leave work area safe and secure when work is complete

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:



- KU1.** the organisations policies and procedures.
- KU2.** responsibilities under health, safety and environmental legislation.
- KU3.** guidelines for storage and disposal of waste materials.
- KU4.** potential hazards associated with the machines and the safety precautions that must be taken.
- KU5.** protocol to obtain more information on work related tasks.
- KU6.** contact person in case of queries on procedure or products and for resolving issues related to defective machines, tools and/or equipment
- KU7.** details of the job role and responsibilities.
- KU8.** work target and review mechanism with your supervisor
- KU9.** protocol and format for reporting work related risks/ problems.
- KU10.** methods for obtaining/ giving feedback related to performance.
- KU11.** importance of team work and harmonious working relationships.
- KU12.** processes for offering/ obtaining work related assistance.
- KU13.** types of glues suitable to different material placement.
- KU14.** consequences of incorrect positioning and placing of one surface over another.
- KU15.** need for cleaning the surface area before applying glue.
- KU16.** different types of defects/quality errors/issues.
- KU17.** common hazards in the work area and workplace procedures for dealing with them.

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in local language.
- GS2.** read measurement instructions.
- GS3.** communicate orally with colleagues.
- GS4.** plan and organize your work to achieve targets and deadlines.
- GS5.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s).
- GS6.** identify immediate or temporary solutions to resolve delays.
- GS7.** analyze data and activities.
- GS8.** pass on relevant information to others.
- GS9.** analyze, evaluate and apply the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action.

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identifying &amp; Preparing the joining points/surfaces for joining</i>	<b>11</b>	<b>27</b>	-	-
<b>PC1.</b> identify and mark the points/surface areas on the two materials pieces to be assembled.	2	6	-	-
<b>PC2.</b> clean the surfaces to be attached from any unwanted materials	1	4	-	-
<b>PC3.</b> use the correct joining technique.	3	5	-	-
<b>PC4.</b> identify and use the appropriate type of glue, while assembling.	1	4	-	-
<b>PC5.</b> apply adhesive on the marked area with minimum spill out.	1	2	-	-
<b>PC6.</b> ensure the uniformity while applying layers of adhesive on a surface	1	2	-	-
<b>PC7.</b> make sure the surface dry optimumly for better adherence	2	4	-	-
<i>Perform positioning, placing, attaching and finishing of the bamboo product</i>	<b>13</b>	<b>49</b>	-	-
<b>PC8.</b> correctly position the two surfaces to be joined	1	5	-	-
<b>PC9.</b> justify the order of placing one surface over another.	1	5	-	-
<b>PC10.</b> use the appropriate joining bit/ nail if required.	1	4	-	-
<b>PC11.</b> place & attach the parts correctly maintaining the line of joint	1	4	-	-
<b>PC12.</b> . pressing (hammering if required) evenly throughout the joined parts	1	4	-	-
<b>PC13.</b> pressing (hammering if required) evenly throughout the joined parts pc13. clean out glue spill outs or any unwanted marks on the surface of the assembled piece	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> remove any unwanted fibres from the edges that may come out during the process	1	4	-	-
<b>PC15.</b> inspect and ensure that the assembled unit conforms to the given quality and specification.	2	6	-	-
<b>PC16.</b> minimise and dispose the waste materials in the approved manner	1	5	-	-
<b>PC17.</b> carry out operations at a rate which maintains workflow	1	5	-	-
<b>PC18.</b> . leave work area safe and secure when work is complete	2	4	-	-
<b>NOS Total</b>	<b>24</b>	<b>76</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8716
<b>NOS Name</b>	Carry out assembling different materials
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Bamboo Utility Handicraft Assembler
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## HCS/N8717: Contribute to achieve quality bamboo utility handicraft assembling

### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Abilities required to monitor the quality while undertaking processing & assembling of different materials including bamboo based materials to ensure that the assembled product meets the desired specifications.

### Scope

The scope covers the following :

- Contribute towards achieving the quality in bamboo utility handicraft assembling related operations

### Elements and Performance Criteria

*Contribute towards achieving the quality in bamboo utility handicraft assembling related operations*

To be competent, the user/individual on the job must be able to:

- PC1.** identify and use raw materials as per the specifications provided.
- PC2.** take the necessary action when materials do not conform to quality standards
- PC3.** report and replace identified faulty materials and component parts which do not meet specification
- PC4.** ensure that the different components are assembled as per specifications
- PC5.** ensure that the suitable technique is used for assembling
- PC6.** identify modifiable defects and rework on them
- PC7.** carry out work safely and at a rate which maintains work flow
- PC8.** report to the responsible person when the work flow of other production areas disrupts work
- PC9.** carry out quality checks at specified intervals according to instructions
- PC10.** apply the allowed tolerances
- PC11.** identify faults and take appropriate action for rectification
- PC12.** maintain the required productivity and quality levels

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** safe working practices and organisational procedures
- KU2.** the organisation's procedures and guidelines
- KU3.** quality systems
- KU4.** types of problems with quality and how to report them to appropriate people
- KU5.** methods to present any ideas for improvement to supervisor
- KU6.** the importance of complying with written instructions
- KU7.** limits of personal responsibility



- KU8.** reporting procedure in case of faults in own/ other processes
- KU9.** different types of faults that are likely to be found
- KU10.** consequences of using incorrect tools
- KU11.** consequences of incorrect handling of tools
- KU12.** correct assembling methods
- KU13.** types of faults which may occur, how they are identified and methods to deal with it
- KU14.** different types of defects
- KU15.** the importance of segregating rejects
- KU16.** appropriate inspection methods that can be used
- KU17.** own responsibilities at work

### **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1.** write in local language
- GS2.** read measurement instructions
- GS3.** communicate orally with colleagues
- GS4.** follow organization rule-based decision making process
- GS5.** take decision with systematic course of actions and/or response
- GS6.** plan and organize your work to achieve targets and deadlines
- GS7.** manage relationships with customers
- GS8.** build customer relationships and use customer centric approach
- GS9.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS10.** identify immediate or temporary solutions to resolve delays
- GS11.** analyze data and activities
- GS12.** pass on relevant information to others
- GS13.** apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Contribute towards achieving the quality in bamboo utility handicraft assembling related operations</i>	<b>32</b>	<b>68</b>	-	-
<b>PC1.</b> identify and use raw materials as per the specifications provided.	3	5	-	-
<b>PC2.</b> take the necessary action when materials do not conform to quality standards	3	5	-	-
<b>PC3.</b> report and replace identified faulty materials and component parts which do not meet specification	3	5	-	-
<b>PC4.</b> ensure that the different components are assembled as per specifications	2	4	-	-
<b>PC5.</b> ensure that the suitable technique is used for assembling	2	4	-	-
<b>PC6.</b> identify modifiable defects and rework on them	3	6	-	-
<b>PC7.</b> carry out work safely and at a rate which maintains work flow	2	6	-	-
<b>PC8.</b> report to the responsible person when the work flow of other production areas disrupts work	2	6	-	-
<b>PC9.</b> carry out quality checks at specified intervals according to instructions	3	6	-	-
<b>PC10.</b> apply the allowed tolerances	4	6	-	-
<b>PC11.</b> identify faults and take appropriate action for rectification	3	7	-	-
<b>PC12.</b> maintain the required productivity and quality levels	2	8	-	-
<b>NOS Total</b>	<b>32</b>	<b>68</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HCS/N8717
<b>NOS Name</b>	Contribute to achieve quality bamboo utility handicraft assembling
<b>Sector</b>	Handicrafts and Carpet
<b>Sub-Sector</b>	Handicrafts (Bamboo Handicrafts)
<b>Occupation</b>	Bamboo Utility Handicraft Assembler
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>Deactivation Date</b>	NA
<b>NSQC Clearance Date</b>	NA

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

### Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

## Assessment Weightage

### Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
HCS/N9901.Coordinate with colleagues and work as a team	35	65	-	-	100	10
HCS/N9902.Maintain Safe and Healthy Work Environment	28	72	-	-	100	10
HCS/N9903.Maintain Personal Hygiene	27	73	-	-	100	10
<b>Total</b>	<b>90</b>	<b>210</b>	<b>-</b>	<b>-</b>	<b>300</b>	<b>30</b>

### Elective: 1 Bamboo Basket Making

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
HCS/N8711.Carry out preparation of bamboo slivers	32	68	-	-	100	20
HCS/N8712.Carry out weaving & twining of bamboo slivers to achieve the final product as per requirement	38	62	-	-	100	20
HCS/N8713.Carry out finishing, varnishing, drying & storage of bamboo basket	24	76	-	-	100	20

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
HCS/N8714. Contribute to achieve quality bamboo basket making	30	70	-	-	100	10
<b>Total</b>	<b>124</b>	<b>276</b>	<b>0</b>	<b>0</b>	<b>400</b>	<b>70</b>

Elective: 2 Bamboo Mat Weaving

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
HCS/N8705. Carry out basic pre-loom operations: Denting and attaching the warp on the loom	40	60	-	-	100	30
HCS/N8706. Carry out basic weaving operations: Shedding/ Picking/ Battening to weave mats comprising of basic weaves- Plain and Twill using hand operated loom	40	60	-	-	100	20
HCS/N8707. Contribute to achieve quality in bamboo mat weaving	40	60	-	-	100	20
<b>Total</b>	<b>120</b>	<b>180</b>	<b>0</b>	<b>0</b>	<b>300</b>	<b>70</b>

Elective: 3 Bamboo Utility Handicraft Assembling

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
HCS/N8715. Carry out cutting & processing of materials as per given size & shape	23	77	-	-	100	30
HCS/N8716. Carry out assembling different materials	24	76	-	-	100	20



National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
HCS/N8717. Contribute to achieve quality bamboo utility handicraft assembling	32	68	-	-	100	20
<b>Total</b>	<b>79</b>	<b>221</b>	<b>0</b>	<b>0</b>	<b>300</b>	<b>70</b>

## Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training
<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training

## Glossary

<b>Sector</b>	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
<b>Scope</b>	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
<b>Knowledge and Understanding (KU)</b>	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

<b>Organisational Context</b>	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
<b>Electives</b>	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
<b>Options</b>	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
<b>Sector</b>	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
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<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standard</b>	NOS are occupational standards which apply uniquely in the Indian context
<b>Qualifications Pack (QP)</b>	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.

<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an N
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
<b>Scope</b>	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required
<b>Knowledge and Understanding (K)</b>	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard
<b>Organisational Context</b>	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility
<b>Technical Knowledge Technical</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (G)</b>	Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any working environment . In the context of OS, these include communication related skills that are applicable to most job roles.
<b>Electives</b>	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
<b>Options</b>	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.





# Model Curriculum

**QP Name: Fitness Trainer**

**QP Code: SPF/Q1107**

**QP Version: 1.0**

**NSQF Level: 4**

**Model Curriculum Version: 1.0**

Sports, Physical Education, Fitness and Leisure Sector Skill Council  
207, DLF Tower, Galleria Mall, Mayur Vihar Extension, Delhi

## Table of Contents

Program Overview.....	4
Training Outcomes .....	4
Compulsory Modules .....	4
Module 1: Introduction to fitness training .....	6
Module 2: Prepare workout area and gym equipment.....	7
Module 3: Guide and monitor clients during the workout .....	8
Module 4: Maintain hygiene and sanitation .....	9
Module 5: Identify potential risks and respond to medical emergencies .....	10
Module 6: Create an environmentally sustainable workplace.....	11
Module 7: On-the-Job Training .....	12
Annexure .....	13
Trainer Requirements.....	13
Assessor Requirements .....	14
Assessment Strategy .....	15
References.....	17
Glossary .....	17
Acronyms and Abbreviations .....	18

## Training Parameters

<b>Sector</b>	Sports
<b>Sub-Sector</b>	Sports Coaching and Fitness
<b>Occupation</b>	Sports Coaching
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/3423.0101
<b>Minimum Educational Qualification and Experience</b>	10th Class/I.T.I with 1 Year of experience in the core fitness work  OR Certificate-NSQF (Level 2-Early Years Physical Activity Facilitator) with 1 Year of experience in the core fitness work
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 years
<b>Last Reviewed On</b>	16/12/2020
<b>Next Review Date</b>	16/12/2025
<b>NSQC Approval Date</b>	27/05/2021
<b>QP Version</b>	1.0
<b>Model Curriculum Creation Date</b>	16/12/2020
<b>Model Curriculum Valid Up to Date</b>	16/12/2025
<b>Model Curriculum Version</b>	1.0
<b>Minimum Duration of the Course</b>	264 Hours
<b>Maximum Duration of the Course</b>	308 Hours

## Program Overview

This section summarizes the end objectives of the program along with its duration.

### Training Outcomes

At the end of the program, the learner will be able to:

- Prepare workout stations for use.
- Conduct regular checks to identify malfunctioning equipment and report the same.
- Guide clients to choose the correct equipment and machines required for their specific workout.
- Demonstrate correct forms, posture, and techniques to make exercise effective and injury free.
- Promote a co-operative environment amongst the gym user to avoid any conflicts.
- Follow safety protocols for injury prevention and medical emergency.
- Maintain hygiene and sanitation at the gym.

### Compulsory Modules

The table lists the modules, their duration and mode of delivery.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>Bridge Module</b>	<b>04:00</b>	<b>4:00</b>			<b>08:00</b>
Module 1: Introduction to fitness training	04:00	04:00			08:00
<b>SPF/N1120 - Prepare gym area for workout NOS Version No. 1.0 NSQF Level 4</b>	<b>24:00</b>	<b>44:00</b>	<b>8:00</b>	<b>8:00</b>	<b>84:00</b>
Module 2: Prepare workout area and gym equipment	24:00	44:00	8:00	8:00	84:00
<b>SPF/N1121 - Guide clients NOS Version No. 1.0 NSQF Level 4</b>	<b>40:00</b>	<b>84:00</b>	<b>20:00</b>	<b>20:00</b>	<b>164:00</b>
Module 3: Guide and monitor clients during workout	40:00	84:00	20:00	20:00	164:00
<b>SPF/N1122 - Maintain health and safety NOS Version No. 1.0 NSQF Level 4</b>	<b>16:00</b>	<b>32:00</b>	<b>8:00</b>	<b>8:00</b>	<b>64:00</b>
Module 4: Maintain hygiene and sanitation	8:00	16:00	4:00	4:00	32:00
Module 5: Identify potential risks and respond to medical emergencies	08:00	16:00	4:00	04:00	32:00

<b>SGJ/Q1702 - Optimize resource utilization at workplace NOS Version No. 1.0 NSQF Level 5</b>	<b>8:00</b>	<b>8:00</b>	<b>8:00</b>	<b>8:00</b>	<b>32:00</b>
Module 6: Create an environmentally sustainable workplace	8:00	8:00	8:00	8:00	32:00
<b>Total Duration</b>	<b>92:00</b>	<b>172:00</b>	<b>44:00</b>	<b>44:00</b>	<b>352:00</b>



# Module Details

## Module 1: Introduction to fitness training

### Bridge Module

#### Terminal Outcomes:

- Distinguish between the concept of health and fitness.
- Identify the career opportunities of a fitness trainer.

<b>Duration:</b> 04:00	<b>Duration:</b> 04:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain general and specific fitness.</li> <li>• State the role and responsibilities of a fitness trainer.</li> <li>• List the career opportunities of a fitness trainer.</li> </ul>	<ul style="list-style-type: none"> <li>• Classify general fitness and specific fitness.</li> <li>• Create a career progression chart of a fitness trainer.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, whiteboard, marker, projector, chart paper, clipboards	
<b>Tools, Equipment and Other Requirements</b>	
NA	

## Module 2: Prepare workout area and gym equipment

*Mapped to SPF/N1120, v1.0*

### Terminal Outcomes:

- Inspect workout equipment and their readiness for use.

<i>Duration: 24:00</i>	<i>Duration: 44:00</i>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Recall the factors to be considered while preparing the gym for a safe and effective workout.</li> <li>Explain the labels on the weights and other fitness equipment.</li> <li>Discuss the ways to maintain personal hygiene before the workout and its significance.</li> </ul>	<ul style="list-style-type: none"> <li>Classify equipment as per their usage – cardio training, strength training, etc.</li> <li>Prepare a gym facility readiness checklist.</li> <li>Examine gym equipment, both mechanical and electrical, for any kind of malfunction.</li> <li>Prepare a sample report on maintenance of gym equipment.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, whiteboard, marker, projector, chart paper, clipboards, posters of human muscular and skeletal system	
<b>Tools, Equipment and Other Requirements</b>	
Gym mats, treadmill, stationary bikes, free weights, machine assisted weights, medicine ball, swiss ball, weights rack, first aid kit	

## Module 3: Guide and monitor clients during workout

*Mapped to SPF/N1121, v1.0*

### Terminal Outcomes:

- Guide clients on the correct technique to get better results from the workout session.
- Monitor workout sessions to ensure clients comply to the best practices of fitness training.

<i>Duration: 40:00</i>	<i>Duration: 84:00</i>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the types of workout and their benefits</li> <li>• Identify machines and equipment for the workout to develop specific fitness need – endurance, strength, etc.</li> <li>• Recall the specifics such as, number of repetitions, intensity for different exercises (cardiovascular capacity, strength, etc.)</li> <li>• Discuss inappropriate behaviour and sexual harassment at workplace.</li> <li>• Explain the significance and the process of reporting appropriate behaviour and sexual harassment at workplace.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate workout to develop endurance, strength, and flexibility.</li> <li>• Demonstrate correct forms, posture, and techniques to make workout effective and injury free.</li> <li>• Demonstrate proper warm up and cool down exercises.</li> <li>• Apply gender-sensitive, non-discriminatory language.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, whiteboard, marker, projector, chart paper, clipboards, posters of human muscular and skeletal system	
<b>Tools, Equipment and Other Requirements</b>	
Gym mats, treadmill, stationary bikes, free weights, machine assisted weights, medicine ball, swiss ball, weights rack, first aid kit	

## Module 4: Maintain hygiene and sanitation

*Mapped to SPF/N1122, v1.0*

### Terminal Outcomes:

- Create healthy and hygienic environment for clients.

<b>Duration:</b> 8:00	<b>Duration:</b> 16:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Recall the importance of hygiene and sanitation regulatory at workplace.</li> <li>• Discuss the ways to maintain personal hygiene before and after the workout.</li> <li>• Identify the sanitizing agents which are safe for both machinery and equipment.</li> <li>• Identify the sanitizing agents safe for the clients.</li> <li>• Discuss ways to promote a safe and interactive environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate hygiene and sanitation checks of work area and equipment.</li> <li>• Prepare a sample report on maintenance of hygiene and sanitation at workplace.</li> <li>• Demonstrate ways to sanitize equipment and machinery before and after the usage.</li> <li>• Draft a sample report for advanced hygiene and sanitation issues to appropriate authority.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, whiteboard, marker, projector, chart paper, clipboards, copy of POCSO (Protection of Children against Sexual Offences) and POSH (Prevention of Sexual Harassment) Acts, IPC book	
<b>Tools, Equipment and Other Requirements</b>	
Alcohol-based sanitizer, surface disinfectant	

## Module 5: Identify potential risks and respond to medical emergencies

*Mapped to SPF/N1122, v1.0*

### Terminal Outcomes:

- Apply first aid to minor injuries.
- Identify medical emergencies.

<b>Duration: 8:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the common types of injuries that might occur during a workout.</li> <li>• Explain the steps to be followed during medical emergencies.</li> <li>• Explain the factors that lead to injuries during the workout.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate ways to find if the injury is major or minor.</li> <li>• Demonstrate the process of administering first aid for common injuries.</li> <li>• Perform CPR (Cardio-Pulmonary Resuscitation)</li> <li>• Demonstrate emergency evacuation procedure and protocol in case of fire or natural disaster.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, whiteboard, marker, projector, chart paper, clipboards, sample performance report	
<b>Tools, Equipment and Other Requirements</b>	
First aid kit, stretcher, arm-sling, crutches	



## Module 6: Create an environmentally sustainable workplace

*Mapped to SGJ/N1702, v1.0*

### Terminal Outcomes:

- Identify effective waste management techniques at the workplace.
- Ways to make the workplace environmentally sustainable.

<b>Duration: 8:00</b>	<b>Duration: 8:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Recognize the environment-friendly materials available to replace conventional materials.</li> <li>• Discuss ways of disposing non-recyclable waste appropriately.</li> <li>• Explain common sources of pollution and ways to minimize it.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare statutory documents relevant to safety and hygiene.</li> <li>• Demonstrate the methods of disposing non-recyclable waste.</li> <li>• Report malfunctioning. (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, whiteboard, marker, projector, chart paper, clipboards	
<b>Tools, Equipment and Other Requirements</b>	
Gloves, safety goggles, ladder	

## Module 7: On-the-Job Training

### *Mapped to Fitness Trainer*

Mandatory Duration: 44:00	Recommended Duration: 44:00
<b>Location: On Site</b>	
<b>Terminal Outcomes</b> <ul style="list-style-type: none"> <li>• Identify equipment, training area and other resources required for fitness training.</li> <li>• Identify types of gym equipment.</li> <li>• Conduct workouts to develop specific fitness.</li> <li>• Prepare a plan for equipment inspection.</li> <li>• Prepare a sample gym facility audit report.</li> <li>• Demonstrate ways of communicating with participants using gender-sensitive, non-discriminatory language.</li> <li>• Practice effective waste management techniques at the workplace.</li> </ul>	

# Annexure

## Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Class 12 <sup>th</sup> pass	Fitness and conditioning	Minimum of 1 year	Must have worked in a fitness industry	Minimum of 1 year	Fitness trainer in a fitness center and/or gym	The fitness trainer must be physically fit with good communication skills. The individual must be detail-oriented and attentive.

Trainer Certification	
Domain Certification	Platform Certification
"Fitness Trainer" "SPF/Q1107, v1.0" Minimum accepted score is 80%	MEP/Q2601, V1.0 Minimum accepted score is 80%

## Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Class 12 <sup>th</sup> pass	Fitness and conditioning	Minimum of 2 years	Must have worked in a fitness industry	Minimum of 1 years	Fitness trainer in a fitness center, gym and or have worked independently as a personal/group fitness trainer fitness	All empaneled Assessors would have to undergo “Train the Assessor” Program conducted by SPEFL SC for each job role time to time.

Assessor Certification	
Domain Certification	Platform Certification
“Fitness Trainer” “SPF/Q1107, v1.0” Minimum accepted score is 80%	MEP/Q2701, v1.0 Assessor Minimum accepted score is 80%

## Assessment Strategy

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the SPEFL - Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center as per assessment criteria below.
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

### Recommended Pass % aggregate for QP: 70

Each NOS in the Qualification Pack (QP) will be assigned a relative weightage for assessment based on the criticality of the NOS. Therein each Performance Criteria in the NOS will be assigned marks for or practical based on relative importance, criticality of function and training infrastructure.

The following tools are proposed to be used for final assessment:

1. **Practical Assessment:** This will comprise of a creation of mock environment in the skill lab which is equipped with all equipment's required for the qualification pack. Candidate's soft skills, communication, aptitude, safety consciousness, quality consciousness etc. will be ascertained by observation and will be marked in observation checklist. The product will be measured against the specified dimensions and standards to gauge the level of his skill achievements.
2. **Viva/Structured Interview:** This tool will be used to assess the conceptual understanding and the behavioral aspects as regards the job role and the specific task at hand. It will also include questions on safety, quality, environment, and equipment, etc.
3. **Written Test:** Under this test few key items which cannot be assessed practically will be assessed. The written assessment will comprise of:
  - i. True / False Statements
  - ii Multiple Choice Questions
  - iii Matching Type Questions.
  - iv Fill in the blanks

### Accreditation of Assessing Body:

The SPEFL SC's Accreditation process is divided into two steps:

1. **Pre-accreditation process:**

- Apply for Accreditation: Application form with desired documents in prescribed format to be sent.
- Document Compliance: to be done for ensuring the compliance and adherence of applied assessing body according to criteria laid down by SPEFL SC.
- Presentation on Quality Assurance: to be given by Assessing body highlighting the quality assurance process laid down by Assessing body at the process points.
- Once the assessing body clears the due diligence process, the accreditation is given along with terms and conditions.

2. **Post-accreditation process:** Post accreditation, the accredited assessing bodies needs to fulfil following minimum eligibility criteria or requisites for implementation:

- All Empanelled Assessors would have to undergo **“Train the Assessor”** Program conducted by SPEFL SC for each job role time to time.
- Accredited Assessing Body would have to abide with requisite timelines, policies and regulations declared by SPEFL sector skill council.
- Accredited Assessing Body with times would have to contribute to expansion of the questionnaire.



## References

## Glossary

Term	Description
<b>Key Learning Outcome</b>	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
<b>Terminal Outcome</b>	Terminal outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of a module</b> . A set of terminal outcomes help to achieve the training outcome.

## Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards

## QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR Beauty & Wellness

### Contents

1. Introduction and Contacts.....[1]
2. Qualifications Pack.....[2]
3. Glossary of Key Terms .....[3]
4. OS Units..... [4]
5. Annexure: Nomenclature for QP & OS [78]
6. Assessment Criteria.....[81]



### Introduction

#### Qualifications Pack- Personal Trainer

**SECTOR:** BEAUTY & WELLNESS

**SUB-SECTOR:** FITNESS & SLIMMING

**OCCUPATION:** FITNESS SERVICES

**REFERENCE ID:** BWS/Q3003

**ALIGNED TO:** NCO-2015/3423.9900

**Brief Job Description:** The Personal Trainer is responsible to plan, demonstrate, and monitor exercises performed by the members. The trainer collects information, plans gym programmes, monitors client progress and focuses on individual assigned clients in meeting their fitness goals through effective motivation and continuous adaptation.

**Personal Attributes:** This job requires the individual to be well versed with the rules and regulations applicable, such as the Membership Rules, membership types (Full Access/limited access). He needs to be tactful, service oriented and a stickler for rules

### What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function

- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

#### Contact Us:

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Job Details	Qualifications Pack Code	BWS/Q3003		
	Job Role	Personal Trainer [The job role is applicable for national/international scenarios]		
	Credits	TBD	Version number	1.0
	Sector	Beauty & Wellness	Drafted on	01/08/2015
	Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
	Occupation	Fitness Services	Next review date	10/02/2019
	NSQC Clearance on	03/08/2018		

Job Role	Personal Trainer
Role Description	The Personal Trainer is responsible to plan, demonstrate and monitor exercises performed by the members.
NSQF level	4
Minimum Educational Qualifications	Class X preferably
Maximum Educational Qualifications	N.A.
Training (Suggested but not mandatory)	1.Level 3 Gym Assistant OR 1.Course in personal training 2.CPR/ AED
Minimum Job Entry Age	19 years
Experience	0-12 months experience as a Gym Assistant

<p><b>Applicable National Occupational Standards (NOS)</b></p>	<p><b>Compulsory:</b></p> <ol style="list-style-type: none"> <li>1. BWS/N9001 <a href="#">Prepare and maintain the work area</a></li> <li>2. BWS/N3003 <a href="#">Carry out health screening and fitness assessment of the client</a></li> <li>3. BWS/N3004 <a href="#">Plan and conduct personal training</a></li> <li>4. BWS/N3134 <a href="#">Collect, integrate and analyze nutritional, health and lifestyle data of physically active clients</a></li> <li>5. BWS/N3135 <a href="#">Develop and implement personalised nutrition and lifestyle programme for physically active clients</a></li> <li>6. BWS/N3005 <a href="#">Motivate the clients</a></li> <li>7. BWS/N9002 <a href="#">Maintain health and safety of workplace</a></li> <li>8. BWS/N9003 <a href="#">Create a positive impression at workplace</a></li> </ol> <p><b>Optional:</b></p> <p><b>Personal Trainer- Special population expert</b></p> <ol style="list-style-type: none"> <li>1. BWS/N3021 <a href="#">Plan and conduct session for improving Athletic performance of client</a></li> <li>2. BWS/N3022 <a href="#">Enable minimization of Athletic Injuries &amp; Conduct Fitness Assessment for Sports related activities of the client</a></li> </ol> <p><b>Sports Conditioning Expert</b></p> <ol style="list-style-type: none"> <li>1. BWS/N3014 <a href="#">Plan and conduct personal training for clients from different population groups</a></li> </ol>
<p><b>Performance Criteria</b></p>	<p>As described in the relevant OS units</p>

## Definitions

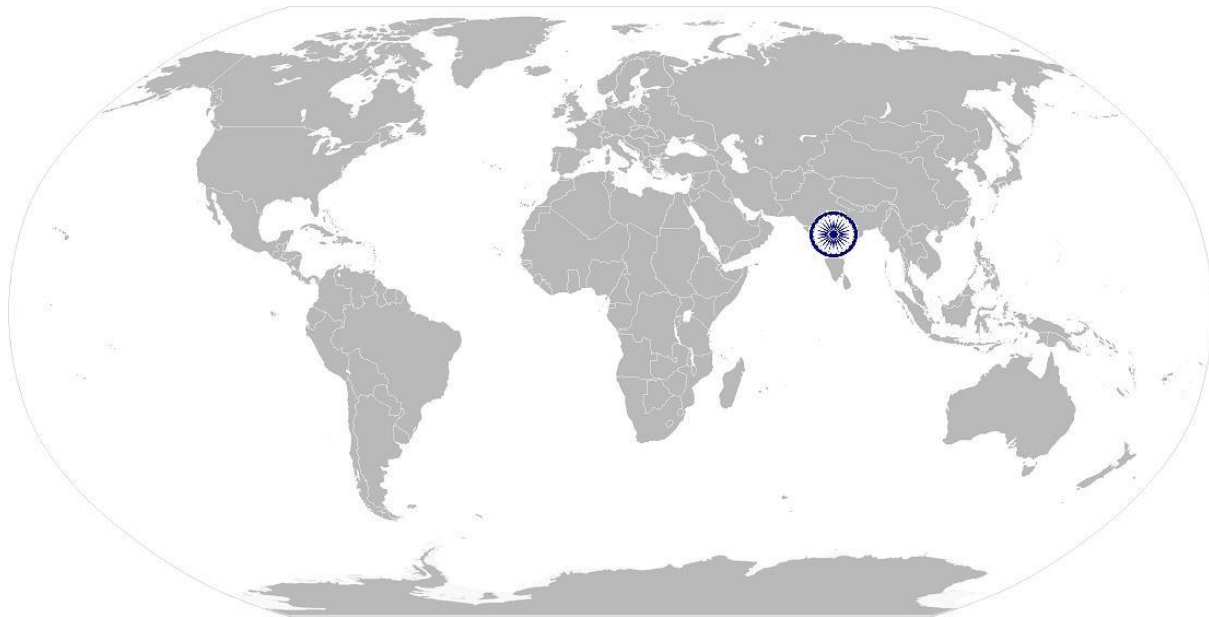
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interest. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/related set of In an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique Employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard , which is denoted by an 'N'
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.



Acronyms

Keywords /Terms	Description
B&WSSC	Beauty & Wellness Sector Skill Council
NOS	National Occupational Standards
NSQF	National Skills Qualification Framework
NVEQF	National Vocational Educational Qualification Framework
NVQF	National Vocational Qualification Framework
OS	Occupational Standards
PC	Performance Criteria
QP	Qualification Pack
SSC	Sector Skills Council

# National Occupational Standard



## Overview

This OS unit is about preparing the equipment, products and work area ahead of service delivery

BWS/N9001

Prepare and maintain work area

National Occupational Standard

<b>Unit Code</b>	<b>BWS/N9001</b>
<b>Unit Title (Task)</b>	<b>Prepare and maintain work area</b>
<b>Description</b>	Prepare the equipment, products and work area ahead of service delivery to ensure the efficiently and effectiveness of conducting treatments considering the standards of operation of the organization
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>Prepare and maintain work area</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Prepare and maintain work area</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure that environmental conditions are suitable for the client and the treatment to be carried out in a hygiene and safe environment</p> <p>PC2. select suitable equipment and products required for the treatment</p> <p>PC3. set up of equipment and prepare the products for treatments in adherence to the organization procedures and product/ equipment guidelines</p> <p>PC4. place the products in the trolley for the treatment</p> <p>PC5. sterilize, disinfect and place the tools on the tray</p> <p>PC6. dispose waste materials in adherence to the organization's and industry requirements</p> <p>PC7. store records, materials and equipment securely in line with the organization's policies</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b>  (Knowledge of the organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. organization's standards of performance and sequence of services</p> <p>KA2. range of services and products offered by the organization</p> <p>KA3. health and safety requirements in the organization</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. types of products, materials and equipment required for the treatment</p> <p>KB2. process and products to sterilize and disinfect equipment/ tools</p> <p>KB3. manufacturer's instructions related to equipment and product use and cleaning</p> <p>KB4. applicable legislation relating to the workplace (for example health and safety, workplace regulations, use of work equipment, control of substances hazardous to health, handling/storage/ disposal/ cautions in the use of products, fire precautions, occurrences, hygiene practice, disposal of waste, environmental protection)</p>

BWS/N9001

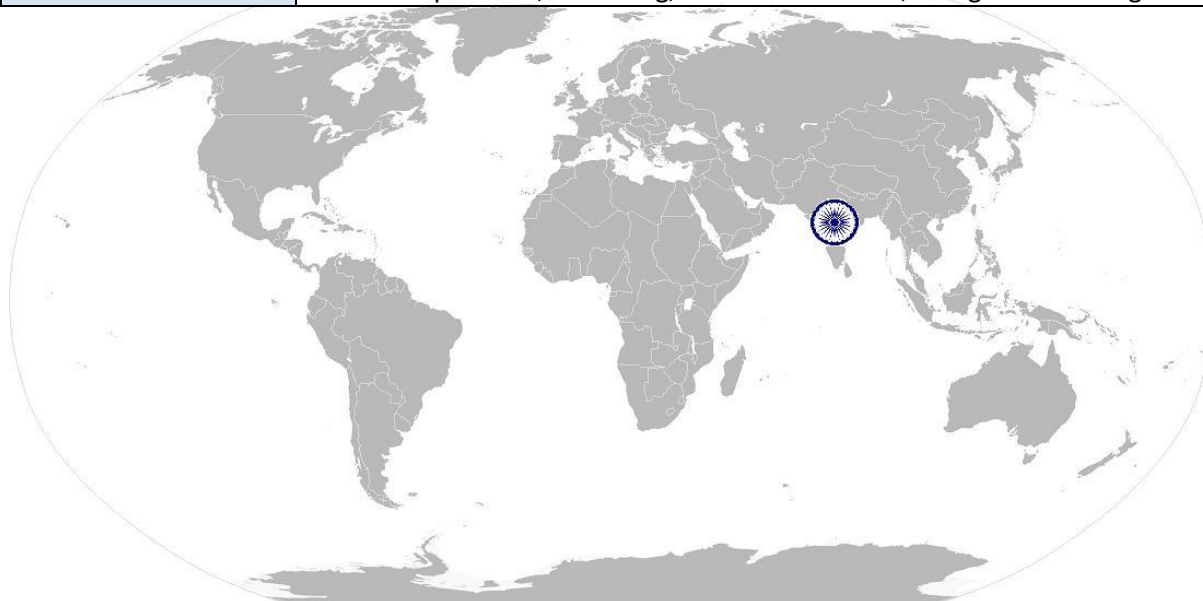
Prepare and maintain work area

Skills (S)	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
<b>B. Professional Skills</b>	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB2. plan and organize service feedback files/documents</p>
	<b>Customer Centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry</p> <p>SB4. build customer relationships and use customer centric approach</p>
	<b>Problem Solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p>

**BWS/N9001**

**Prepare and maintain work area**

	SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
	SB6. deal with clients lacking the technical background to solve the problem on their own
	SB7. identify immediate or temporary solutions to resolve delays
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. use the existing data to arrive at specific data points</p> <p>SB9. use the existing data points for improving the call resolution time</p> <p>SB10. use the existing data points to generate required reports for business</p>
	<b>Critical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action</p>

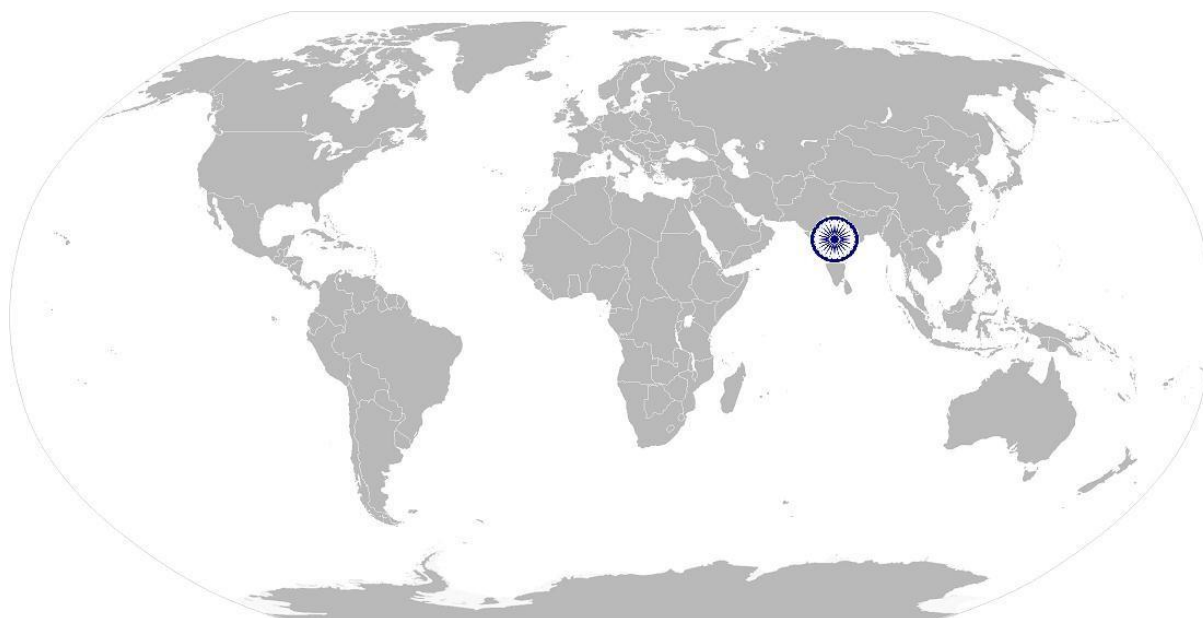


BWS/N9001

Prepare and maintain work area

## NOS Version Control

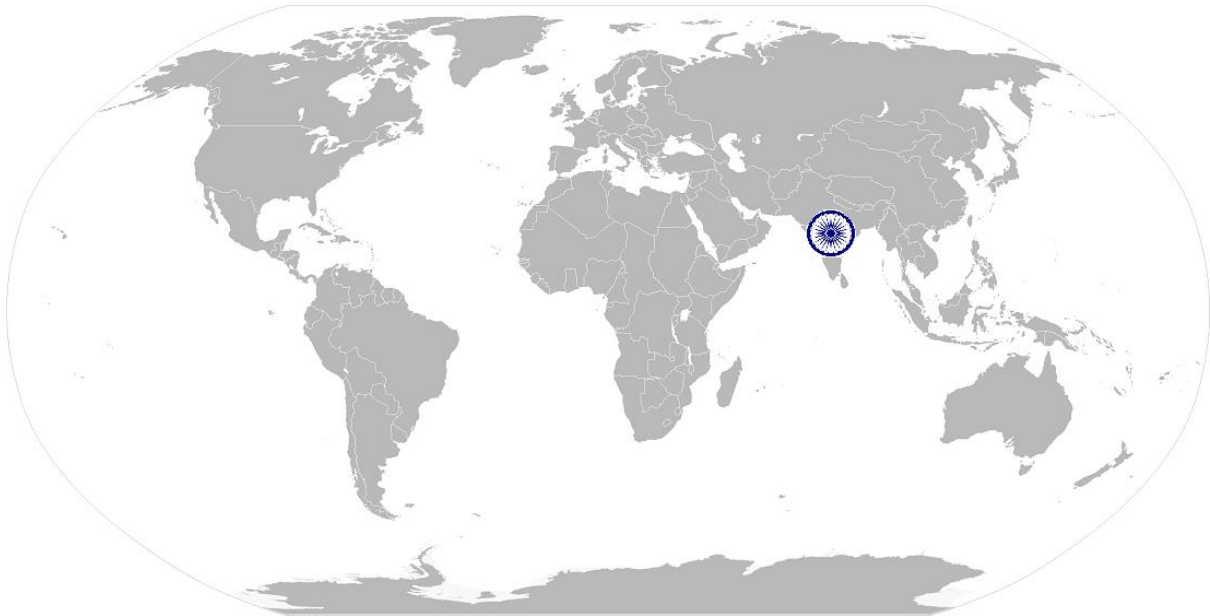
NOS Code	BWS/N9001		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)



# National Occupational Standard



## Overview

This OS unit is about assessing the health and fitness level of the client

BWS/N3003		Carry out health screening and fitness assessment of the client	
Unit Code		BWS/N3003	
Unit Title (Task)		Carry out health screening and fitness assessment of the client	
Description		Deploy right methodology and equipment to assess the health and fitness level of the client and identify his/ her preliminary fitness needs	
Scope		This unit/task covers the following: <ul style="list-style-type: none"><li>Conduct health screening of the clients and their fitness assessments</li></ul>	
Performance Criteria(PC) w.r.t. the Scope			
Element		Performance Criteria	
Conduct health screening of the clients and their fitness assessments		<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. build strong rapport with the clients</p> <p>PC2. collect data like lifestyle, time investment, medical background, exercise history etc.</p> <p>PC3. ensure adequate communication to the clients in terms of maintaining confidentiality of their personal data collected</p> <p>PC4. discuss in various lifestyle preferences and their impact on client's health &amp; fitness status as well as the benefits from an exercise programme</p> <p>PC5. basis client's exercise preferences and lifestyle, identify the barriers to clients achieving their exercise goals</p> <p>PC6. finalize the short and long-term fitness goals of the client</p> <p>PC7. basis the client's fitness requirements, suggest the appropriate exercises</p> <p>PC8. identify the strategies to prevent drop out or relapse</p> <p>PC9. discuss in detail with clients, the relationship of fitness assessment outcomes with exercise plan; also discuss the kind of information about a person's anatomy will be collected to perform fitness assessment</p> <p>PC10. ensure the working and availability of equipment to carry out the planned assessments</p> <p>PC11. conduct fitness assessments which primarily include anthropometrics (i.e. BMI, waist to hip ratio etc.), body composition, cardiovascular fitness and capacity, muscular strength, etc.)</p> <p>PC12. understand the various person specific concerns/ problems and related safety considerations while conducting fitness assessments</p> <p>PC13. analyze the fitness assessment outcomes to provide recommendations for the exercise plan</p> <p>PC14. refer to the superior in case there are any concerns or requirements of the clients which require expert advice</p>	
Knowledge and Understanding (K)			
A. Organizational Context  (Knowledge of the organization and its processes)		<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization's standards of performance and sequence of services</p> <p>KA2. the range of services and products offered by the organization</p> <p>KA3. the product and service costs for the services and products offered in the organization</p> <p>KA4. the health and safety requirements in the organization</p>	

BWS/N3003 Carry out health screening and fitness assessment of the client	
<b>B. Technical</b>  <b>Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. various health screening procedures, metrics, equipment and relationship with exercise programmes</p> <p>KB2. fitness industry standards and practices for health assessments</p> <p>KB3. various outcomes of health assessments and their interpretation</p> <p>KB4. various contraindications to physical activity and the possible response to the same</p> <p>KB5. various techniques for gathering, storing and disposing of client information</p> <p>KB6. typical barriers which clients quote as impediments to their exercise goals and how to support them with the solutions</p> <p>KB7. benefits of different fitness programmes</p> <p>KB8. the pros and cons of various methods of fitness assessments and their suitability for various types of clients</p> <p>KB9. the protocols of various exercise tests and their associated procedure</p> <p>KB10. methods to analyse the results of fitness assessments according to protocol and calculation requirements</p> <p>KB11. policies and procedures to enable ethical and compliant collection, use and storage of client information</p> <p>KB12. methods to improve the validity and reliability of testing for exercise clients</p>
	<b>Skills (S)</b>
	<b>A. Core Skills/ Generic Skills</b>
	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>

**BWS/N3003**

**Carry out health screening and fitness assessment of the client**

<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/individual on the job needs to know and understand how to: SB1. make decisions pertaining to the concerned area of work
	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand: SB2. plan and organize service feedback files/documents
	<b>Customer Centricity</b>
	The user/individual on the job needs to know and understand how to: SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry SB4. build customer relationships and use customer centric approach
	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to: SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB6. deal with clients lacking the technical background to solve the problem on their own SB7. identify immediate or temporary solutions to resolve delays
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB8. use the existing data to arrive at specific data points SB9. use the existing data points for improving the call resolution time SB10. use the existing data points to generate required reports for business
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

BWS/N3003

Carry out health screening and fitness assessment of the client

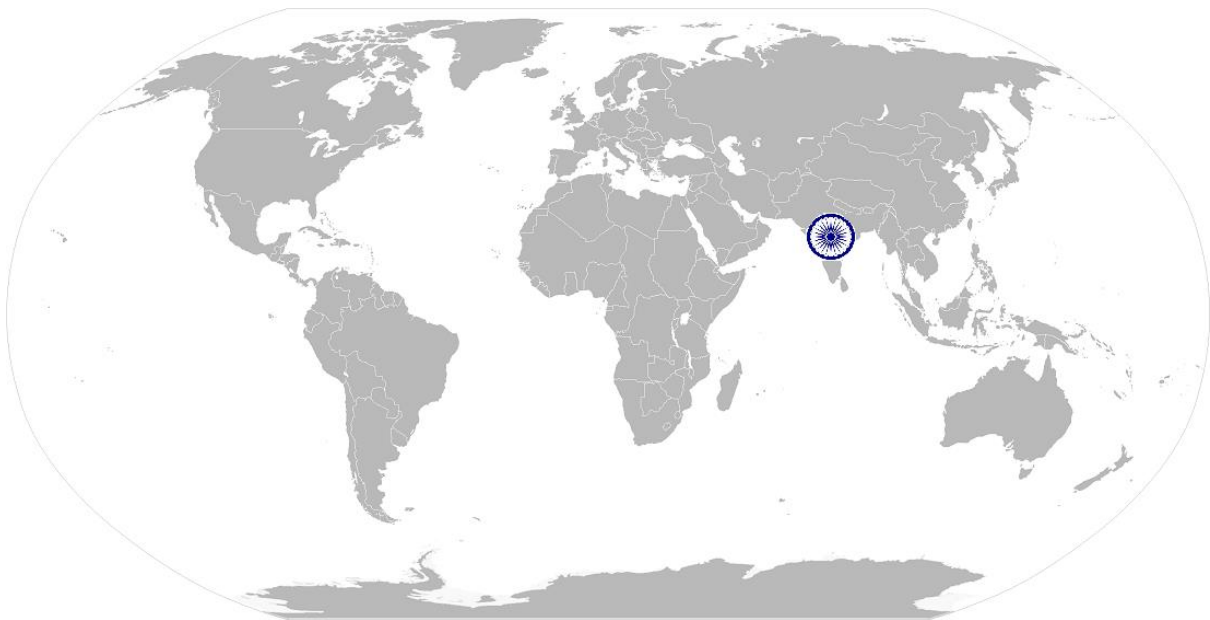
## NOS Version Control

NOS Code	BWS/N3003		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

# National Occupational Standards



## Overview

This unit is about planning & conducting personal training session for client keeping in view the fitness assessment



BWS/N3004

Plan and Conduct personal training

National Occupational Standard

Unit Code	BWS/N3004
Unit Title (Task)	Plan and Conduct Personal Training
Description	Taking fitness sessions of the client's basis the results of their fitness assessments and finalization of their fitness goals. This unit also describes monitoring of client's progress against the defined actions, identifying corrective actions (if any) and ensuring achievement of fitness goals
Scope	This unit/task covers the following: <ul style="list-style-type: none"> <li>Plan and Conduct personal Training</li> </ul>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
<b>Plan and Conduct personal Training</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. deploy the knowledge and understanding of various aspects of human anatomy and physiology while providing fitness related recommendations</p> <p>PC2. understand in detail various human body systems like circulatory system, musculoskeletal system, joints and bones, muscles, respiratory system etc. and impact of fitness programmes on their functioning</p> <p>PC3. identify the potential sources of injury and keep the same under consideration while devising fitness programme to a client</p> <p>PC4. evaluate the impact of exercise and its intensity on the energy levels of a client and provide requisite recommendations in terms of exercise plan</p> <p>PC5. basis the health assessment and detailed understanding of anatomy &amp; physiology of the client's body, plan a range of exercises for client to achieve his/ her fitness goals considering aspects like muscular fitness, cardiovascular fitness, agility &amp; flexibility, etc.</p> <p>PC6. as per the client's needs , identify the appropriate training recommendations</p> <p>PC7. identify and plan for availability of equipment needed for suitable exercises</p> <p>PC8. explain in detail the fitness goals and planned exercise schedule to client</p> <p>PC9. communicate the physical demands of the planned exercises to clients</p> <p>PC10. discuss with client on any observed concerns/ changes/ modifications required in the plan</p> <p>PC11. provide information and demonstration of various warm up activities to the client and their importance</p> <p>PC12. observe the client carrying out the exercises and ensure right usage of the fitness equipment to prevent any injuries</p> <p>PC13. develop phase wise detailed activity chart in consultation with the client which is challenging as well as achievable and duly agreed by the client</p> <p>PC14. provide clear instructions and demonstrations that are technically correct, safe and effective and ensure client is following them accurately without hurting himself/ herself or damaging the equipment</p> <p>PC15. plan outcomes and stages of achievement during personal training and agree on a progressive timetable of sessions</p> <p>PC16. discuss the methods of monitoring and evaluation of the performance of the client</p>

**BWS/N3004**

**Plan and Conduct personal training**

	<p>PC17. ensure that all the exercises are integrated in a single plan and being deployed by the client to achieve his/ her fitness goals; in case, there are any concerns faced by client to perform any of the exercises, provide alternate options</p> <p>PC18. monitor the client's exercises and adherence to the planned schedule as well as analyse the performance of client on a daily basis</p> <p>PC19. progress or regress exercises according to clients' performance</p> <p>PC20. motivate the clients for increasing their performance and ensuring adherence to exercise; provide any related support to the clients in this regard</p> <p>PC21. explain the function of various joints and muscles during exercises to the client and impact of exercises on them</p> <p>PC22. communicate the expected changes in the body of client due to training programme</p> <p>PC23. record the performance and progress of the client through personal training sessions</p> <p>PC24. provide information and demonstration of various cool down activities to the client and their importance as per the intensity and type of physical exercises of the client</p> <p>PC25. observe the client carrying out the exercises and ensure right usage of the fitness equipment to prevent any injuries</p> <p>PC26. explain in detail the linkage of progress of the client with the achievement of fitness goals</p> <p>PC27. identify the signs of strain/ over work outs and recommend the strategies for prevention of the same</p> <p>PC28. adapt the training programme as per the client body's response, lifestyle changes, preferences etc.; discuss and agree of changes with the client</p> <p>PC29. update the fitness goals in line with the adaptations introduced</p> <p>PC30. in collaboration with personal training manager, discuss specific issues like cultural or social barriers to exercise and personal training</p> <p>PC31. provide the data to personal training manager in order to improvise/ addition in the existing portfolio of services</p> <p>PC32. obtain regular feedback from the client and analyse effectiveness of the personal training programme basis the feedback and goals achievement</p>
<b>Knowledge and Understanding (K)</b>	
<p><b>A. Organizational Context</b> (Knowledge of the organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization's standards of performance and sequence of services</p> <p>KA2. the range of services and products offered by the organization</p> <p>KA3. the product and service costs for the services and products offered in the organization</p> <p>KA4. the health and safety requirements in the organization</p>
<p><b>B. Technical Knowledge</b></p>	<p>the user/individual on the job needs to know and understand:</p> <p>KB1. various aspects of human anatomy and physiology</p> <p>KB2. human psychology</p> <p>KB3. basic knowledge of special population groups/ special requirements of clients to be dealt by other professionals</p>

**BWS/N3004**

**Plan and Conduct personal training**

	<p>KB4. ability to be able to take pulse rate, measure blood pressure etc.</p> <p>KB5. various human body systems and their organization and structure i.e. circulatory system (like blood pressure, blood circulation etc.), respiratory system (like muscles for breathing, breathing patterns, etc.), the skeleton system (like bones, stages of bones growth, postures, spine curves, motion range of spine etc.), the muscular system (like muscle tissues, characteristics of muscle tissues, various motions supported by muscular tissues, muscle contractions etc.), nervous system (like motor unit recruitment, neuromuscular connections, etc.) and energy systems (like usage or burning of carbohydrates, fats, proteins etc., aerobic and anaerobic exercises etc.) and their relation to exercise.</p> <p>KB6. various types of clients like active, inactive, aware, new etc.</p> <p>KB7. hydration and energy requirements guidelines</p> <p>KB8. various types of fitness equipment like cardio machines, exercise balls, bars, steps, weights, abdominal assisters, pin loaded, free weight, hydraulic, electronic and air-braked equipment</p> <p>KB9. various physical demands of different exercises</p> <p>KB10. different types of learning styles</p> <p>KB11. health and safety standards associated with the fitness equipment and exercises</p> <p>KB12. various instructional techniques used in personal training</p> <p>KB13. impact and requirement of warm up and cool down activities</p> <p>KB14. methodology for periodic evaluation to chart progress in terms of performance and body composition</p> <p>KB15. intensity of exercise as per the current fitness status ascertained through periodic evaluations</p> <p>KB16. various legal and ethical implications of collecting and storing client information</p> <p>KB17. formats and methods for recording and analyzing information</p> <p>KB18. general physical preparedness</p> <p>KB19. techniques to analyse the collected the client's information</p> <p>KB20. various guidelines on personal training programme design</p> <p>KB21. the resources required to deliver a personal training programme, like environment for the session, equipment, etc.</p> <p>KB22. range of exercise equipment like cardiovascular, free weights etc.</p> <p>KB23. various signs and symptoms of strain/ over training</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<p><b>Writing Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>

**BWS/N3004**

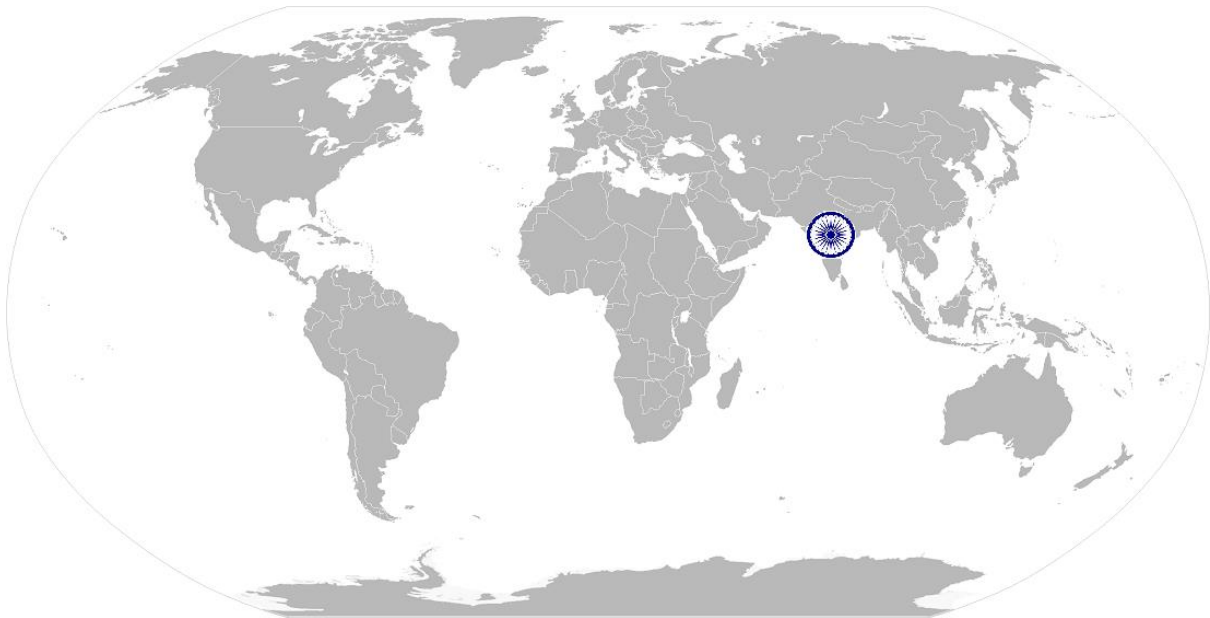
**Plan and Conduct personal training**

	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB2. plan and organize service feedback files/documents</p>
	<b>Customer Centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry</p> <p>SB4. build customer relationships and use customer centric approach</p>
	<b>Problem Solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB6. deal with clients lacking the technical background to solve the problem on their own</p> <p>SB7. identify immediate or temporary solutions to resolve delays</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. use the existing data to arrive at specific data points</p> <p>SB9. use the existing data points for improving the call resolution time</p> <p>SB10. use the existing data points to generate required reports for business</p>
	<b>Critical Thinking</b>

**BWS/N3004**

**Plan and Conduct personal training**

	The user/individual on the job needs to know and understand how to: SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
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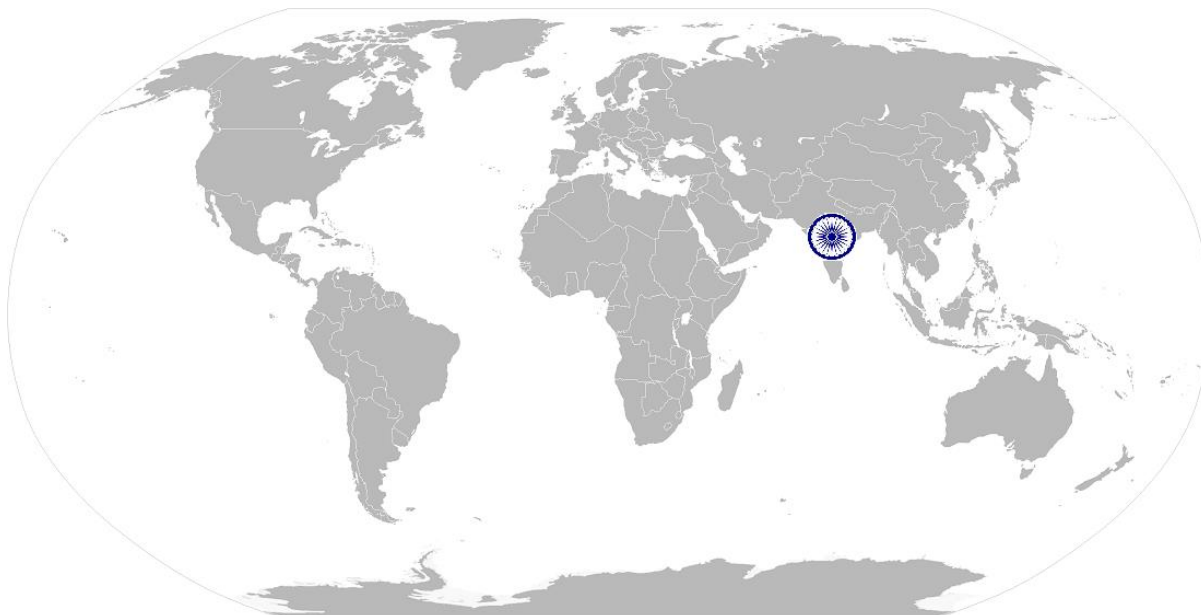


BWS/N3004

Plan and Conduct personal training

## NOS Version Control

NOS Code	BWS/N3004		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

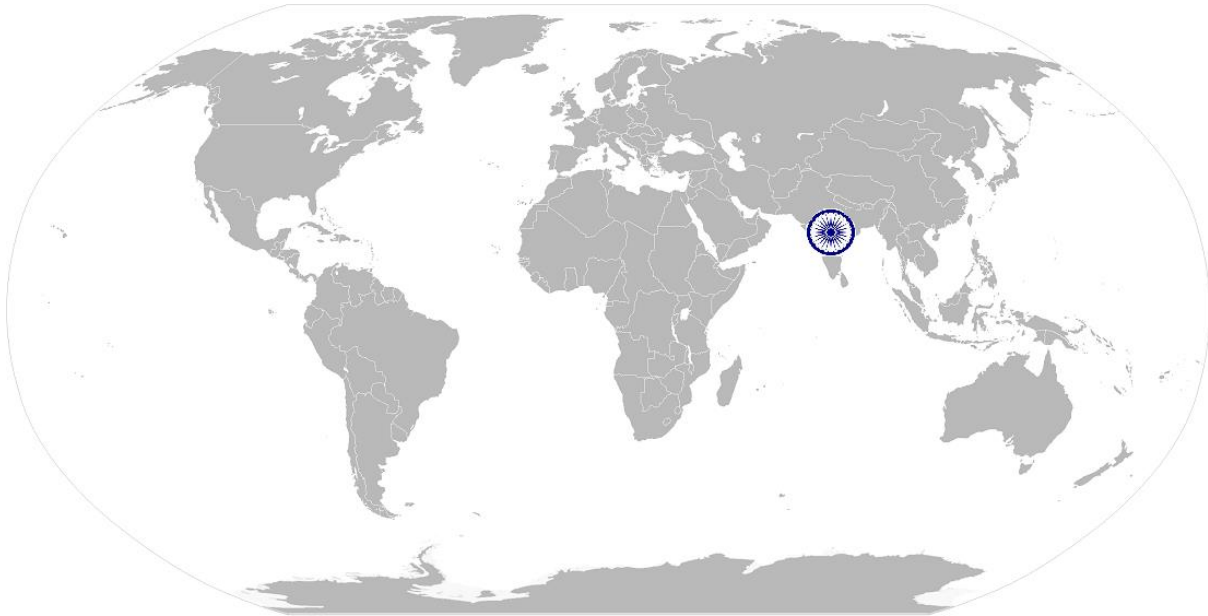


BWS/N3134

Collect, integrate and analyze nutritional, health and  
Lifestyle data of physically active clients

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# National Occupational Standard



## Overview

This OS unit is about using a wide range of tools to collect accurate and relevant data of physically active clients

**BWS/N3134**

**Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

National Occupational Standard

<b>Unit Code</b>	<b>BWS/N3134</b>
<b>Unit Title (Task)</b>	<b>Collect, integrate and analyze nutritional, health and lifestyle data of physically active clients</b>
<b>Description</b>	Collection, integration and analysis of adequate data and information to identify nutrition-related problems that affect health, fitness and exercise, and physical performance of physically active clients
<b>Scope</b>	<p>This unit/task covers the following:-</p> <ul style="list-style-type: none"> <li>• Assessment of nutritional status using the ABCDE approach</li> <li>• Anthropometry</li> <li>• Biochemical/ Lab determinations</li> <li>• Client history</li> <li>• Dietary history</li> <li>• Exercise and Physical activity status</li> <li>• Comparison with standards</li> <li>• Documentation and communication</li> <li>• Assess and assign priority to data</li> <li>• Draw justifiable conclusions from data</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Assessment of nutritional status using the ABCDE approach</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC1. screening activities- nutrition tools like sga etc.</p> <p>PC2. select suitable methods for assessment</p> <p>PC3. identify standards by which data will be compared</p> <p>PC4. be able to interpret the same</p> <p>PC5. identify possible problem areas for making nutrition diagnoses</p>
<b>Anthropometry</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC6. obtain current anthropometric measurements including height, weight and weight changes, body mass index(BMI), body measurements, body composition analysis</p> <p>PC7. height - measure height using standard procedure and equipment (stadio meter) / individual enquiry</p> <p>PC8. weight perform weight measurement using calibrated weighing machine under standardized conditions as outlined by the organization (empty stomach, shoes removed, minimal or standard clothing, and fluid status). collect information regarding weight history / recent weight changes</p> <p>PC9. BMI calculate body mass index</p>

**BWS/N3134 Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

	<p>PC10. compare BMI with standards as per nationality and interpret weight status and consequent risk of co-morbidities</p> <p>PC11. body measurements use specialized techniques and / or equipment and trained personnel to obtain body measurements of different body parts including (waist circumference, hip circumference and other measures)</p> <p>PC12. calculate waist hip ratio and / or waist height ratio to ascertain central obesity</p> <p>PC13. body composition analysis (BCA) perform BCA to measure the amount and distribution of body fat, fat free mass and water in the body of an individual using standard procedure and under standardized conditions as per equipment available ( bio-electrical impedance – 2 electrodes or 4 electrodes / DEXA)</p>
<b>Biochemical / Lab Determinations</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC14. review individual's recent and past biochemical reports to ascertain nutritional and health status</p>
<b>Client history</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC15. assess current and past information related to personal, medical, family and social history: assess the following:</p> <ul style="list-style-type: none"> <li>personal history relative to age, sex, race/ethnicity, language, education, role in the family or organization</li> <li>client or family disease states, conditions, and illnesses that may have nutritional impact:- <ul style="list-style-type: none"> <li>family history of and risk factors for medical conditions and chronic diseases (e.g., diabetes, cardiovascular disease, hypertension, osteoporosis, dyslipidaemia, obesity, disordered eating, behavioural/mental health issues)</li> <li>client history of metabolic and hormonal conditions (e.g., diabetes, metabolic syndrome, polycystic ovary syndrome, thyroid abnormalities, exercise-induced asthma) or chronic diseases</li> <li>client menstrual history and status</li> </ul> </li> </ul> <p>PC16. medication and dietary and herbal supplement use, including prescription and over-the-counter medications, herbal preparations and complementary medicine products</p> <p>PC17. appropriateness of dietary and supplement intake (e.g., macro- and micro nutrients, fiber, bioactive substances, alcohol, caffeine, herbals) and supplements for health and exercise/task-specific physical performance</p> <p>PC18. assess sport/dietary supplements for the risk of adverse events associated with sport/dietary supplement intake</p> <p>PC19. evaluate sport/dietary supplements (safety, legality, efficacy, quality, application to sport)</p> <p>PC20. consider recommendations that may include adding, maintaining, changing, or discontinuing sport/dietary supplements</p> <p>PC21. consider dose and timing of medication/supplements relative to health and issues such as meals, training, competition, travel schedules, and time-zone changes</p>

BWS/N3134

**Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

	<p>PC22. identify actual or potential drug/sport/dietary supplement/food interactions</p> <p>PC23. knowledge, beliefs, and attitudes including understanding of nutrition-related concepts, body image and preoccupation with food and weight, and readiness to change nutrition-related behaviours:</p> <ul style="list-style-type: none"> <li>• general food and nutrition knowledge/skills/strategies</li> <li>• sport-specific food and nutrition knowledge, skills, and/or strategies</li> <li>• misinformation regarding health and nutrition for exercise/physical performance, weight management, and culture of sport or organization)</li> </ul> <p>PC24. behaviour: including client activities and actions which influence achievement of nutrition-related goals</p> <ul style="list-style-type: none"> <li>• various influences (e.g., language, sport/organizational culture, ethnicity, religion) that relate to the potential for behaviour change</li> <li>• assess social history (socioeconomic status, social and medical support, cultural and religious beliefs, and social isolation/connection.)</li> </ul>
<b>Dietary History</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC25. evaluate composition, adequacy and appropriateness of food, beverages and nutrient intake, meal and snack patterns, and food allergies and intolerances</p> <p>PC26. adequacy of nutrition intake to maintain energy balance under various conditions (e.g., rest, physical activity, exercise/ task-specific physical performance)</p> <p>PC27. total food and beverage intake (type, amount, and pattern of intake of foods and food groups, intake of fluids), including intakes before, during, and after exercise and special dietary and beverage patterns associated with exercise/task-specific physical performance</p> <p>PC28. client history of food allergies/intolerances (e.g., gluten sensitivity or intolerance, lactose intolerance)</p> <p>PC29. current and past use of alcohol, specialized diets, sport foods/drinks, energy drinks, functional foods, liquid meal replacements, sport/dietary supplements and/or ergogenic aids</p> <p>PC30. energy balance assessment using measures of energy intake/expenditure (e.g., intake via calorie counts), including changes in body weight or composition, medication use, health status, or attempts at weight gain or loss.</p> <p>PC31. measure of energy availability for adequacy of energy intake</p> <p>PC32. special energy and nutrient needs (e.g., energy shakes, vitamin/mineral supplements) for health, weight management, exercise/task-specific physical performance</p> <p>PC33. daily fluid needs for health, fitness, exercise/task-specific physical performance based on sweat rate, environmental conditions, fluid balance assessments (e.g., urine-specific gravity), and patterns of fluid replacement (e.g., during and after exercise/task-specific physical performance</p> <p>PC34. changes in appetite or usual intake (e.g., as a result of weight control, alteration in body composition/physique, change in training volume/intensity, travel, unfamiliar environments, phase of sport/competition or task-specific physical training, medical conditions,</p>

BWS/N3134

**Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

	<p>illnesses and injuries, treatment and rehabilitation), and psychological issues (e.g., stress, trauma, depression)</p> <p>PC35. changes in usual intake as a result of dietary manipulation to optimize exercise/task-specific physical performance (e.g., tapers, carbohydrate loading, glycogen restoration, rehydration, recovery nutrition following pre competition weigh-in)</p> <p>PC36. food and nutrient administration including current and previous diets and diet modifications, eating environment</p> <ul style="list-style-type: none"> <li>• diet experience (e.g., previously prescribed diets, previous diet/nutrition duration/ counselling, self-selected diets followed, dieting attempts, food allergies, food intolerances)</li> <li>• eating environment (e.g., location, atmosphere, companion, eats alone)</li> <li>• more complex nutrition issues (e.g., controlled type 1 diabetes, managed gastrointestinal diseases and conditions) related to food intake and clinical complications in individuals exposed to variable exercise/task-specific physical performance situations</li> <li>• most complex issues (e.g., newly diagnosed type 1 diabetes, uncontrolled diabetes, recovery from injury/illness) related to food intake and clinical complications</li> </ul> <p>PC37. assess any barriers or conflicts (e.g., communication, transportation, financial) that interfere with food access, selection and preparation</p>
<b>Exercise and Physical activity status</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC38. evaluate physical activity and function, including physical activity, history of physical activity and exercise/task-specific physical performance, cognitive and physical ability to engage in specific tasks:-</p> <ul style="list-style-type: none"> <li>• physical activity/exercise: history, consistency, frequency, duration, intensity, type (e.g., exercise training, competitive sport, training)</li> <li>• physical inactivity: television/screen time and other sedentary activity time</li> <li>• environmental conditions (e.g., cold, heat, humidity, altitude) and nutrition-related complications (e.g., hydration status, nutrient deficiencies)</li> <li>• training state/fitness level, competitive status, performance goals and results</li> <li>• effect of current and past dietary interventions on exercise/ physical performance in training and competition</li> </ul> <p>PC39. exercise, training, or competition issues that alter appetite, ingestion, digestion, absorption, metabolism, utilization of nutrients, and/or eating behaviours and patterns</p>
<b>Comparison with Standards</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC40. identify standards by which data will be compared</p>
<b>Documentation and Communication</b>	<p>to be competent, the user/individual on the job must be able to:-</p> <p>PC41. document the entire relevant data accurately and timely as per the organisation's policy</p> <p>PC42. include the following information for quality documentation:</p> <ul style="list-style-type: none"> <li>• date and time of assessment;</li> </ul>



**BWS/N3134 Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

	<ul style="list-style-type: none"> <li>•pertinent data collected and compared with standards</li> <li>•name / signature of staff member collecting the data</li> <li>•individual /client's perceptions, values, and motivation related to presenting problems</li> <li>•changes in client's level of understanding, food-related behaviours, and other outcomes for appropriate follow-up</li> <li>•discussion with individual and /or interdisciplinary team throughout assessment process</li> <li>•reason for discontinuation or referral, if appropriate</li> </ul>
<b>Assess and assign priority to data</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC43.accurately interpret anthropometric data ,body composition analysis , dietary, health and medical data and biomedical profile against relevant standards</p> <p>PC44.evaluate diet and exercise / physical activity</p> <p>PC45.make judgement about potential impact of health and medical, social, psychological, economic and personal factors on nutrition and fitness</p> <p>PC46.organize and cluster nutrition risk factors, complications, and assessment data to identify possible problem areas for determining nutrition and activity diagnoses</p> <p>PC47.integrate assessed data in order to assign priorities for nutrition planning and lifestyle modification</p>
<b>Draw justifiable conclusions from data</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC48. define nutritional and activity problems / diagnosis as a prelude to planning management</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational</b>  Context (Knowledge of the organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. organization's standards of performance and sequence of services</p> <p>KA2. range of services and products offered by the organization</p> <p>KA3. health and safety requirements in the organization</p>
<b>B. Technical</b>  Knowledge	<p>The user/individual on the job needs to know and understand:-</p> <p>KB1. the structure and function of the human body, together with knowledge of health, disease, disorder and dysfunction relevant to nutrition and lifestyle</p> <p>KB2. appropriate assessment tools and procedures (matching the assessment method to the situation)</p> <p>KB3. methods for obtaining and recording anthropometric measurements along with standards and reference range</p> <p>KB4. calculation and interpretation of bmi, whr, whtr</p> <p>KB5. body weight and composition for health and sports: ideal body weight,</p>



BWS/N3134

**Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

	<p>values and limitations of the bmi, composition of the body,</p> <p>KB6. different methods for conducting ,recording and analysing body composition</p> <p>KB7. effect of hydration state on bca</p> <p>KB8. contraindications for conducting bca</p> <p>KB9. interpretation of body composition for optimal health, fitness, and exercise/task-specific physical performance</p> <p>KB10. the clinical signs and symptoms generated by the body's response to stress, poor nutrition, disease, emotional and psychosocial factors</p> <p>KB11. the aetiology and pathology of common diseases and their clinical features</p> <p>KB12. knowledge and interpretation of biochemical tests, their standards and reference range</p> <p>KB13. methods for conducting and recording observations of health status</p> <p>KB14. methods available for conducting quantitative and qualitative analysis of food intake</p> <p>KB15. appropriate methods for collecting personal, socio- cultural, psychological, environmental and economic data which may influence food habits, diet and lifestyle</p> <p>KB16. use of appropriate questions to optimize gathering of information</p> <p>KB17. use of effective interviewing methods</p> <p>KB18. interpretation and evaluation of data from observations and laboratory tests</p> <p>KB19. nutrient composition of foods</p> <p>KB20. be able to keep accurate, comprehensive and comprehensible records in accordance with applicable protocols and guidelines</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>

**BWS/N3134**

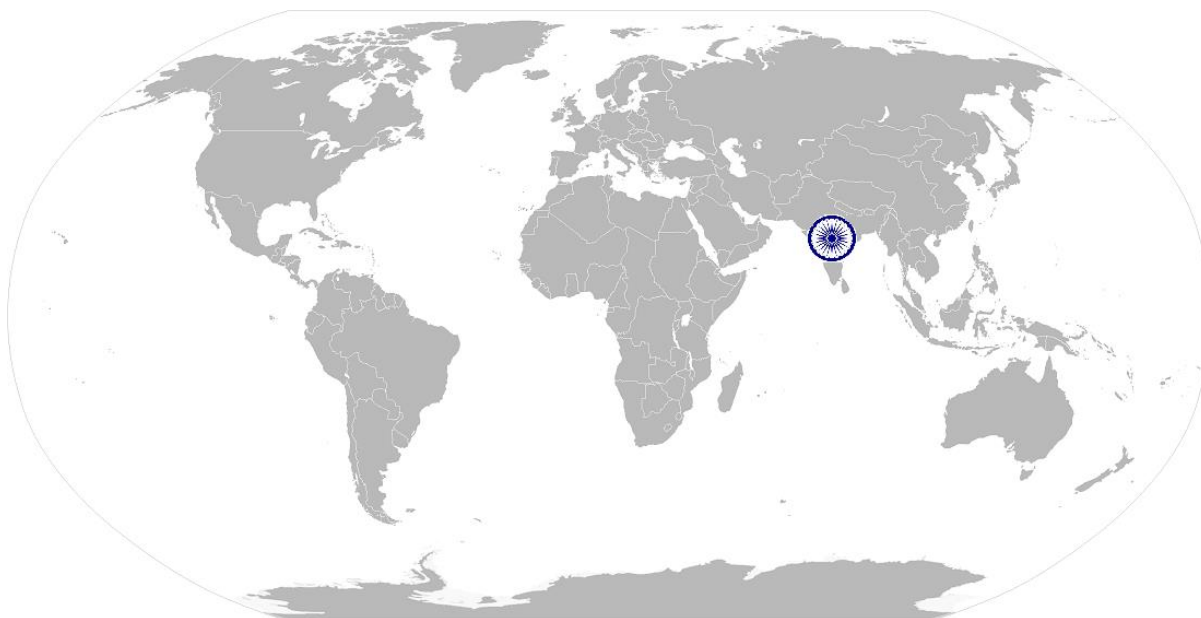
**Collect, integrate and analyze nutritional, health and  
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	<p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
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	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB6. deal with clients lacking the technical background to solve the problem on their own</p> <p>SB7. identify immediate or temporary solutions to resolve delays</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. use the existing data to arrive at specific data points</p> <p>SB9. use the existing data points for improving the call resolution time</p> <p>SB10. use the existing data points to generate required reports for business</p>
	<b>Critical Thinking</b>

BWS/N3134

**Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

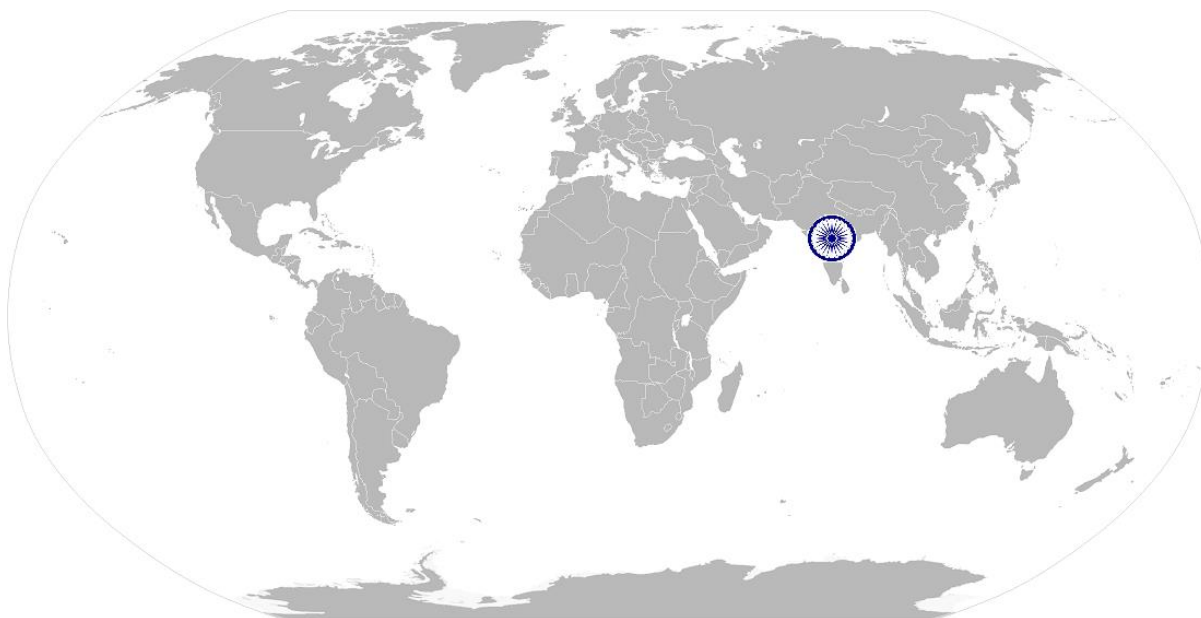
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**BWS/N3134**      **Collect, integrate and analyze nutritional, health and Lifestyle data of physically active clients**

## NOS Version Control

NOS Code	BWS/N3134		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



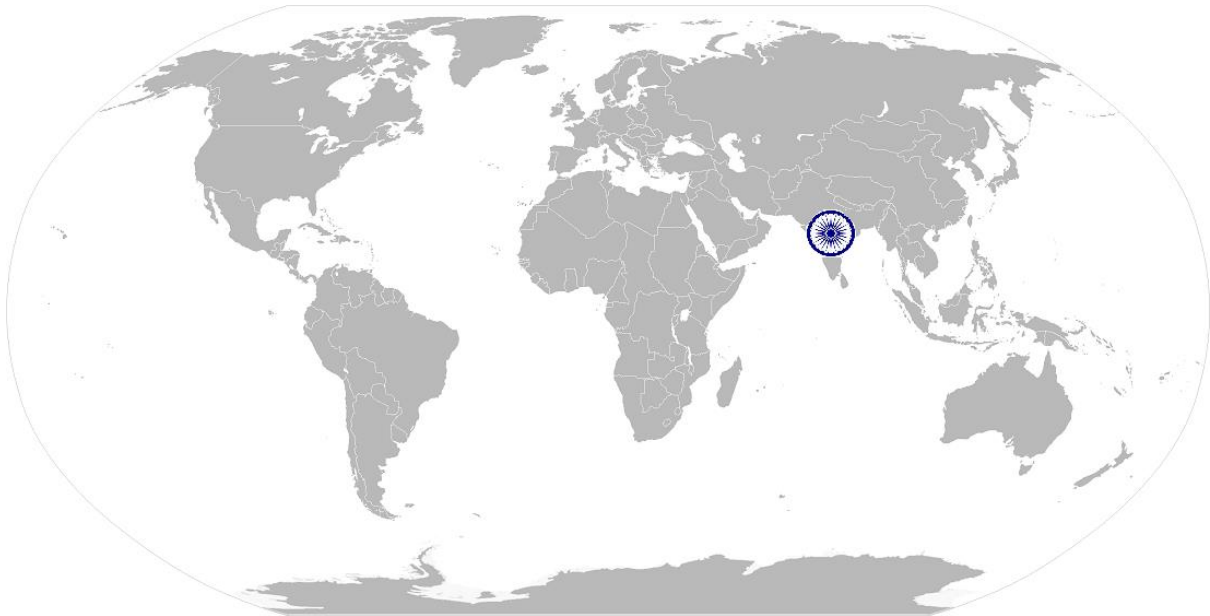
[Back to Top](#)

BWS/N3135

Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients

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# National Occupational Standard



## Overview

This OS unit deals with the designing and implementation of nutrition and lifestyle plan for physically active clients

**BWS/N3135**

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

National Occupational Standard

<b>Unit Code</b>	<b>BWS/N3135</b>
<b>Unit Title(Task)</b>	<b>Develop and implement personalised nutrition and lifestyle programme for physically active clients</b>
<b>Description</b>	Develop and implement personalised nutrition and lifestyle programme for physically active clients keeping in all relevant context along with its proper documentation
<b>Scope</b>	<p>This unit/task covers the following:-</p> <ul style="list-style-type: none"> <li>• Evaluation of diet and physical activity / exercise</li> <li>• Estimation of nutrient requirements</li> <li>• Comparison of Current nutrient intake with recommended intake</li> <li>• Nutrition diagnosis</li> <li>• Documentation of nutrition diagnosis</li> <li>• Nutrition intervention- planning</li> <li>• Nutrition intervention – implementation</li> <li>• Documentation</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Evaluation of diet and physical activity / exercise</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC1. estimate the energy, macro nutrient and relevant micro-nutrient intake s from food intake collected during comprehensive nutritional assessment , using food composition tables</p> <p>PC2. evaluate physical activity / Exercise Levels</p>
<b>Estimation of nutrient requirements</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC3. estimate nutrient and fluid needs based on age, sex, medical condition, activity level, current nutritional state, medications, and goals of nutrition therapy</p> <p>PC4. use predictive equation for energy needs based on age, height, weight and activity level / determine energy needs from bmr values obtained by bca taking into account activity level</p> <p>PC5. determine protein requirement</p> <p>PC6. determine the split of energy from other macro-nutrients</p> <p>PC7. determine any specific micro-nutrient consideration</p>
<b>Comparison of Current nutrient intake with recommended intake</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC8. compare the current nutrient intake with estimated requirements for age, sex, activity level and/ or health status</p>



**BWS/N3135**

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

<b>Nutrition diagnosis</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC9. identify and describe an actual occurrence of, risk of or potential for developing a nutrition problem that can be resolved or improved through nutrition intervention</p> <p>PC10. derive the nutrition diagnosis from the assessment data:-</p> <ul style="list-style-type: none"> <li>• identify and label the problem</li> <li>• determine etiology (cause, contributing risk factors)</li> <li>• cluster signs and symptoms (defining characteristics)</li> </ul> <p>PC11. use clinical judgment (e.g., selects from a range of possibilities with consideration to health, fitness, exercise, task-specific physical performance, medical condition) when ranking activity diagnoses in order of importance and urgency for the client</p> <p>PC12. use clinical judgment and experience that reflects the significant differences between active individuals (e.g., beginner, competitive, or elite), others (e.g., , military service member, air hostess) and/or clinical conditions (e.g., newly diagnosed type 1 diabetes, uncontrolled type 1 diabetes, extreme environmental conditions, clinical complications) when ranking activity diagnoses in order of importance and urgency for the patient/client</p>
<b>Documentation of nutrition diagnosis</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC13. document the nutrition diagnosis in the pes format : problem (p), etiology (e), and signs and symptoms (s)</p> <p>PC14. re-evaluate and revise nutrition diagnosis when additional assessment data become available</p>
<b>Nutrition intervention-planning</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC15. identify appropriate, purposefully planned actions designed with the intent of changing a nutrition-related behaviour, risk factor, environmental condition, or aspect of health status for a client with the goal to promote health and increase the capacity to exercise, train, improve recovery, promote training adaptation, and enhance exercise, and physical performance</p> <p>PC16. prioritizing the nutrition diagnoses based on the severity of the problem, safety, client needs, likelihood that nutrition intervention/plan of care will influence problem, and client perception of importance. prioritization consideration may include:-</p> <ul style="list-style-type: none"> <li>• immediacy of the problem</li> <li>• client's available resources and support</li> <li>• readiness of patient/client to receive selected nutrition interventions</li> <li>• presence of medical conditions (e.g., diabetes, dyslipidaemia, depression, eating disorders, low bone mass, anaemia)</li> <li>• timing of the problem relative to training /competition plan, or duty schedule</li> </ul> <p>PC17. determining client-centered plan, goals, and expected outcomes in observable and measurable terms</p> <p>PC18. setting smart (specific, measurable, achievable, realistic and time bound) short term and long term goals in collaboration with client and other members of health care team</p> <p>PC19. selecting appropriate intervention considerations for the intervention plan may include:-</p> <ul style="list-style-type: none"> <li>• intervention to address current issues (e.g., fatigue, dehydration, muscle</li> </ul>

BWS/N3135

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

	<p>cramping, inadequate recovery, exercise, task-specific physical performance improvement, diarrhoea and other gastrointestinal issues; illness; injury; disordered eating; dietary and sports/dietary supplement use; or other clinical issues)</p> <ul style="list-style-type: none"> <li>• identification of barriers to successful implementation (e.g., client compliance, food availability and preparation issues, financial issues, regulations of sport governing bodies and associations, organization policies, situations in occupational settings, influence of team-athlete-coach-family dynamics)</li> <li>• address issues related to off-season/transition weight change, detraining, and scheduled and unscheduled breaks in training, such as holiday, and extended travel</li> </ul> <p>PC20. develop the nutrition prescription based on scientific evidence, best practices, and professional experience considering the educational needs of the client, constraints such as time (e.g., exercise training, competition, recovery, traveling), finances, ability to store and prepare food</p> <p>PC21. define time and frequency of care including intensity, duration, and follow-up</p>
<b>Nutrition intervention implementation</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC22. initiate and individualize the nutrition intervention/plan of care</p> <p>PC23. implement, initiate or modify orders for diet, nutrition supplements, dietary supplements or individual preferences, nutrition-related laboratory tests and medications, and nutrition education consistent with organization policy</p> <p>PC24. advise the use of dietary supplements, sports and functional foods (e.g., portion or dosage adjustments based on energy needs or laboratory results, addition of new dietary supplements, sports foods functional foods or modifications for fluid intake) consistent with organization policy</p> <p>PC25. use appropriate goal setting and behaviour change strategies and techniques to facilitate self-management and care</p> <p>PC26. follow up and verify that nutrition intervention/plan of care is occurring</p> <p>PC27. communicate with the interdisciplinary or multidisciplinary team to verify progress and adjust strategies</p> <p>PC28. adjust nutrition intervention/plan of care strategies, if needed, as response occurs</p> <p>PC29. use a variety of educational approaches, tools, and materials as appropriate</p> <p>PC30. adapt nutrition educational tools to individualized learning styles and method of communication and to the culture of the organization</p> <p>PC31. adjust nutrition intervention (e.g., energy balance, macro- and micronutrient needs, hydrations guidelines) according to training/competition plan</p>
<b>Documentation</b>	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC32. maintain clear and concise records, in accordance with the organization's policy</p> <ul style="list-style-type: none"> <li>• date and time of consultation</li> <li>• specific treatment goals and expected outcomes</li> <li>• recommended interventions</li> <li>• adjustments to the plan and justification</li> <li>• client receptivity and comprehension</li> <li>• barriers to change</li> <li>• other information relevant to providing care and monitoring progress over time</li> </ul>

**BWS/N3135**

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

	<ul style="list-style-type: none"> <li>plans for follow-up and frequency of care</li> <li>rationale for discontinuation or referral if applicable</li> <li>timely update the records</li> <li>maintain statistics and other reports required of the organization</li> </ul>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b>  (Knowledge of the organization and its processes)	The user/individual on the job needs to know and understand:- KA1. organization's standards of performance and sequence of services KA2. range of services and products offered by the organization KA3. health and safety requirements in the organization
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand:- KB1. structure, biochemical and metabolic functions of nutrients and other dietary constituents KB2. physiological and biochemical basis for nutrient requirements KB3. chemical structure and biochemical and metabolic functions of essential and nonessential nutrients KB4. absorption and transport of nutrients KB5. integration, coordination, and regulation of macro-and micro nutrient metabolism KB6. regulation of nutrient metabolism and nutritional needs by hormones and growth factors KB7. cellular basis of chronic diseases and degeneration KB8. dietary bioactive components (functional foods); non-traditional roles of nutrients KB9. food, diets and supplements KB10. food sources of nutrients and factors affecting nutrient bioavailability KB11. effects of food processing and handling on nutrient content and bioavailability from farm till fork KB12. factors related to nutritional toxicology including upper limits of intake; nutrient-nutrient and drug-nutrient interactions KB13. methods of diet evaluation as well as methods of in depth nutrient analysis KB14. role of nutrient supplements including risk/benefit ratios; life stage issues; component bioavailability KB15. gastric emptying, digestion, and absorption KB16. anatomy of the gastrointestinal tract ,regulation of the gastrointestinal tract, digestion, absorption, transport and metabolism, function of bacteria in the colon, regulation of gastric emptying, gastrointestinal problems during and after exercise KB17. nutrient requirement and reference intakes through the life stages, factors affecting individual's requirements: bioavailability, absorption, transport, metabolism and excretion, impact of genetics and disease KB18. nutritional considerations for different age groups , physiological status KB19. use of food composition tables, dietary guides and nutritional databases and food guides to identify food options, which meet nutrition needs

BWS/N3135

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

	<p>KB20. nutrition and disease</p> <p>KB21. biochemical and physiological principles of nutrients as they pertain to clinical nutrition</p> <p>KB22. impact of disease and genetics on nutrient function and requirements</p> <p>KB23. interactions of etiologies of chronic diseases with nutrition and exercise</p> <p>KB24. genetic basis of inherited metabolic diseases</p> <p>KB25. nutritional considerations in various health conditions</p> <p>KB26. energetic efficiency, measuring the energy content of food ,measuring energy expenditure, components of energy expenditure ,energy balance</p> <p>KB27. exercise physiology</p> <p>KB28. physiologic responses and adaptations of the various body systems and structures to acute and chronic physical activity and to environmental stress, cellular mechanisms that underlie these responses ,metabolic and environmental aspects of exercise</p> <p>KB29. exercise performance: energy expenditure during physical activity, carbohydrate</p> <p>KB30. metabolism and performance, fat metabolism and performance, effect of exercise on protein requirements, physique and sports performance</p> <p>KB31. functional neuro anatomy and neurology. neuron cytology, central nervous system development and organization, motor structures, pathways, and control of movement</p> <p>KB32. biomechanical dimensions</p> <p>KB33. mechanical, neuromuscular, and anatomical bases of human movement quantitative and qualitative biomechanical analyses of multi segment motion from the perspective of joint and muscle mechanics, kinematics, and kinetics.</p> <p>KB34. fuel sources for muscle and exercise metabolism</p> <p>KB35. subcellular skeletal muscle structure, force generation in skeletal muscle , fibre types</p> <p>KB36. energy for muscle force generation ,fuel stores in skeletal muscle, regulation of energy</p> <p>KB37. metabolism ,metabolic responses to exercise, metabolic adaptations to exercise training</p> <p>KB38. historical approaches to exercise and nutrition, role of macronutrients in sport nutrition</p> <p>KB39. carbohydrate; role of carbohydrate in exercise, carbohydrate intake days before competition, carbohydrate intake hours before exercise, carbohydrate intake 30 to 60 minutes before exercise ,carbohydrate during exercise, carbohydrate after exercise</p> <p>KB40. fat metabolism during exercise, limits to fat oxidation, fat as a fuel during exercise, regulation of carbohydrate and fat metabolism ,fat supplementation and exercise, ,effect of diet on fat metabolism and performance</p> <p>KB41. protein and amino acids; ,protein requirements for exercise, training and protein metabolism ,effect of protein intake on protein synthesis, amino acids as ergogenic aids , protein intake and health risks</p> <p>KB42. water requirements and fluid balance ;thermoregulation and exercise in the heat ,effects of dehydration on exercise performance ,mechanisms of heat illness, effects of fluid intake on exercise performance ,daily water balance,</p>
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**BWS/N3135**

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

	<p>fluid requirements for athletes</p> <p>KB43. vitamins and minerals ; exercise and micronutrient requirements, ergogenic effect of micronutrient</p> <p>KB44. nutritional requirement and menu planning for different exercises, sports and athletes</p> <p>KB45. supplementation, recommendations for micronutrient intake in athletes</p> <p>KB46. nutrition supplements and ergogenic aids</p> <p>KB47. non regulation of nutrition supplements, critical evaluation of nutrition supplements studies</p> <p>KB48. nutrition recommendation in different environments</p> <p>KB49. facts vs fads in labelling claims and advertisements</p> <p>KB50. wada- list of supplements banned for athletes</p> <p>KB51. dietary development for weight management, body composition changes and performance</p> <p>KB52. body weight and composition in different sports ,genetics, energy and macronutrient intake, regulation of appetite, effect of exercise on appetite, physical activity and energy expenditure, dietary weight-loss methods, exercise for weight loss, decreased resting metabolic rate with weight loss ,weight cycling</p> <p>KB53. gender differences in weight loss, practicalities of weight loss for athletes</p> <p>KB54. ability to design dietary plans for meeting the needs of physically active individuals based on knowledge of food composition, nutrient requirements of individuals in various environments and stages of the life cycle, exploring use of transitional, alternative and functional foods, recipes and menu plans to increase compliance, ability to adapt normal and therapeutic diets to the individual's activity levels, cultural, religious, economic needs and preferences</p> <p>KB55. nutrition and training adaptations</p> <p>KB56. training adaptations, signal transduction pathways, starting a signalling cascade</p> <p>KB57. secondary signals, nutrition effects on training adaptations, overtraining</p> <p>KB58. eating disorders in athletes :-</p> <ul style="list-style-type: none"> <li>• types of eating disorders, prevalence of eating disorders in athletes, risk factors, effects of eating disorders on sports performance , effects of eating disorders on the athlete's health ,treatment and prevention of eating disorders</li> </ul> <p>KB59. nutrition and immune function in athletes</p> <ul style="list-style-type: none"> <li>• functions of the immune system and its cellular components ,general mechanism of the immune response, effects of exercise on the immune system, nutritional manipulations to decrease immune depression in athletes , mechanisms of nutritional influences on immune function in athletes</li> </ul> <p>KB60. physical activity for special cases</p> <p>KB61. exercise responses, testing and prescription, and adaptation to chronic physical activity in special cases</p> <p>KB62. nutritional counselling and education</p> <p>KB63. facilitate behaviour change and negotiate dietary and lifestyle changes with individuals, enabling them to achieve agreed dietary and medical targets even</p>
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BWS/N3135

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

	<p>where there are significant psychological, social or cultural hurdles to overcome</p> <p>KB64. use of appropriate educational strategies, communication, and models of empowerment, behaviour change and health promotion</p> <p>KB65. effective communication skills</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
	<b>B. Professional Skills</b>
	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB2. plan and organize service feedback files/documents</p>
	<b>Customer Centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry</p>



BWS/N3135

**Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients**

	SB4. build customer relationships and use customer centric approach
	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to:
	SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
	SB6. deal with clients lacking the technical background to solve the problem on their own
	SB7. identify immediate or temporary solutions to resolve delays
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to:
	SB8. use the existing data to arrive at specific data points
	SB9. use the existing data points for improving the call resolution time
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to:
	SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

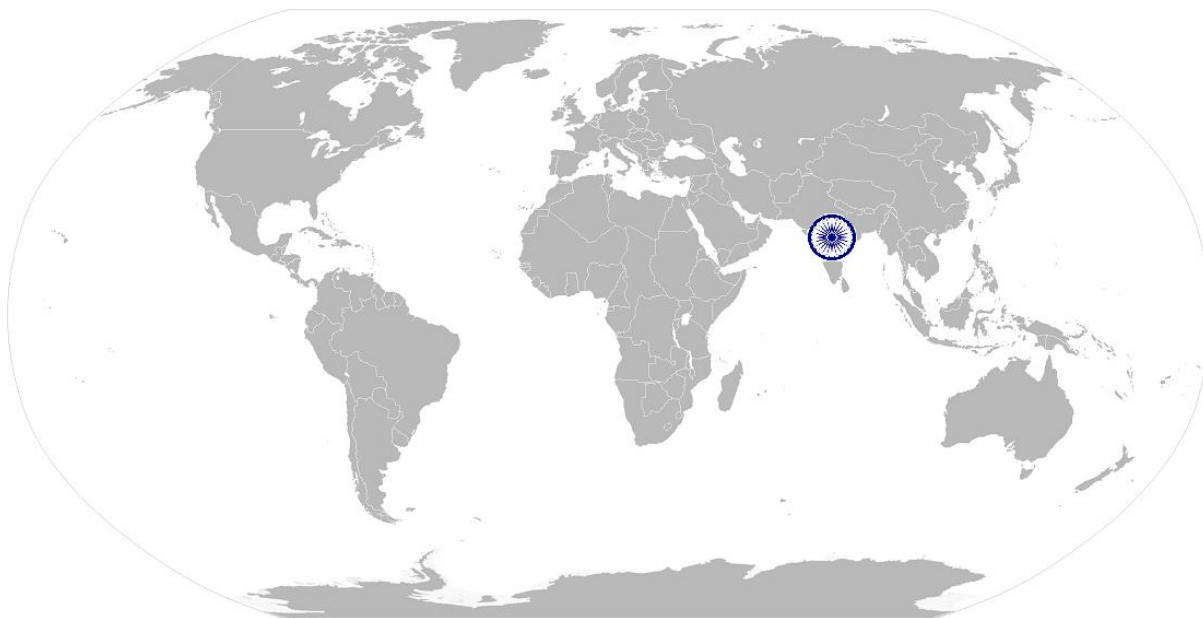


BWS/N3135

Develop and implement personalised nutrition and lifestyle  
Programme for physically active clients

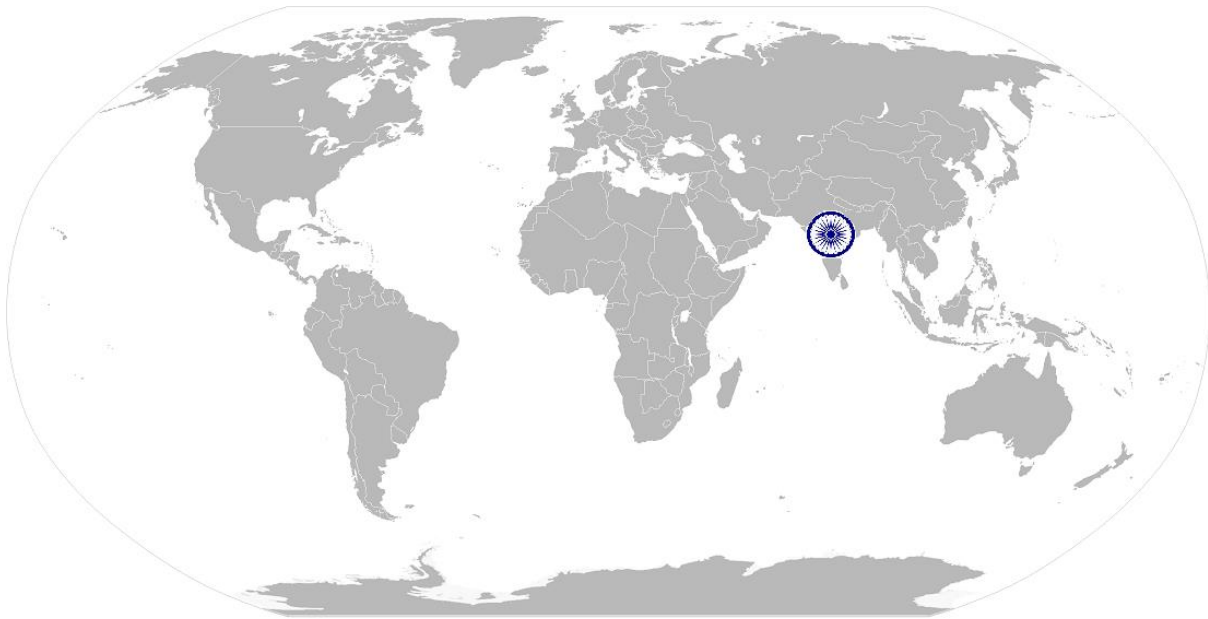
## NOS Version Control

NOS Code	BWS/N3135		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

# National Occupational Standards



## Overview

This unit is about applying various motivational techniques to ensure that clients adhere to their goals and do not discontinue the same.

BWS/N3005

Motivate the clients

National Occupational Standard

<b>Unit Code</b>	<b>BWS/N3005</b>
<b>Unit Title (Task)</b>	<b>Motivate the clients</b>
<b>Description</b>	Applying various motivational techniques to ensure that clients adhere to their fitness goals. If required even modify plan to bring it in line with client preference to meet the desired result
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>Motivate the clients</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Motivate the clients</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. observe the clients' exercise pattern and his/ her attitude towards exercise to determine the level of readiness towards following the plan</p> <p>PC2. identify and articulate the client's needs and preferences for a fitness programme</p> <p>PC3. communicate in detail the benefits to be reaped by client through this programme</p> <p>PC4. identify various options of incentives and rewards available for the clients to follow their exercise plan</p> <p>PC5. ensure on a regular basis that the programme is in line with the client's liking and preferences as well as giving results to the client; modify the plan, in case, client is not getting the desired results</p> <p>PC6. identify perceived barriers to clients for following the exercise plan and discuss the way forward with clients to reduce these</p> <p>PC7. in collaboration with clients, devise a long term strategy to adhere to exercise plan; collaborate to develop mutual trust, openness and a willingness to take responsibility for their own fitness and related lifestyle changes</p> <p>PC8. support the clients to develop their own motivational strategies for adhering to the exercise plan</p> <p>PC9. use influencing skills and personal attitudes to positively influence clients for adhering to the plan</p> <p>PC10. apply a variety of motivational techniques when training the clients</p> <p>PC11. deploy effective verbal and nonverbal communication skills when instructing clients</p> <p>PC12. take care of the client by monitoring his/ her performance regularly and provide feedback on a regular basis</p> <p>PC13. identify on-going barriers to continuation of long term exercise and provide tips/ recommendations as and when required</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization's standards of performance and sequence of services</p> <p>KA2. the range of services and products offered by the organization</p> <p>KA3. the product and service costs for the services and products offered in the</p>

**BWS/N3005**

**Motivate the clients**

organization and its processes)	organization KA4. the health and safety requirements in the organization
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. various types of behaviour change approaches / coaching styles/ theories/ models like health belief model, trans-theoretical model, motivational change model, social cognitive model, etc. to encourage adherence to exercise/physical activity</p> <p>KB2. the typical barriers to exercise that clients talk about like time, energy, motivation, cost, illness or injury, fears related to injuries etc. and ways to address them</p> <p>KB3. various options available in terms of incentives and rewards to motivate the clients</p> <p>KB4. the types of exercise preferences that different clients may have</p> <p>KB5. techniques to interpret the body language, non-verbal cues and other gestures of the client</p> <p>KB6. various anatomical and physiological aspects of human body and the impact of exercise plan of them</p> <p>KB7. personal, environmental and cognitive factors and their potential effect on exercise adherence</p> <p>KB8. types of motivation, theory of achievement motivation and specific techniques to enhance motivation</p> <p>KB9. role of intrinsic and extrinsic motivation in exercise behaviour</p> <p>KB10. signs and symptoms of conditions/ areas when client needs to be referred to another professional</p> <p>KB11. arousal and anxiety theory, and its relationship to exercise</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>

**BWS/N3005**

**Motivate the clients**

	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB2. plan and organize service feedback files/documents</p>
	<b>Customer Centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry</p> <p>SB4. build customer relationships and use customer centric approach</p>
	<b>Problem Solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB6. deal with clients lacking the technical background to solve the problem on their own</p> <p>SB7. identify immediate or temporary solutions to resolve delays</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. use the existing data to arrive at specific data points</p> <p>SB9. use the existing data points for improving the call resolution time</p> <p>SB10. use the existing data points to generate required reports for business</p>
	<b>Critical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action</p>

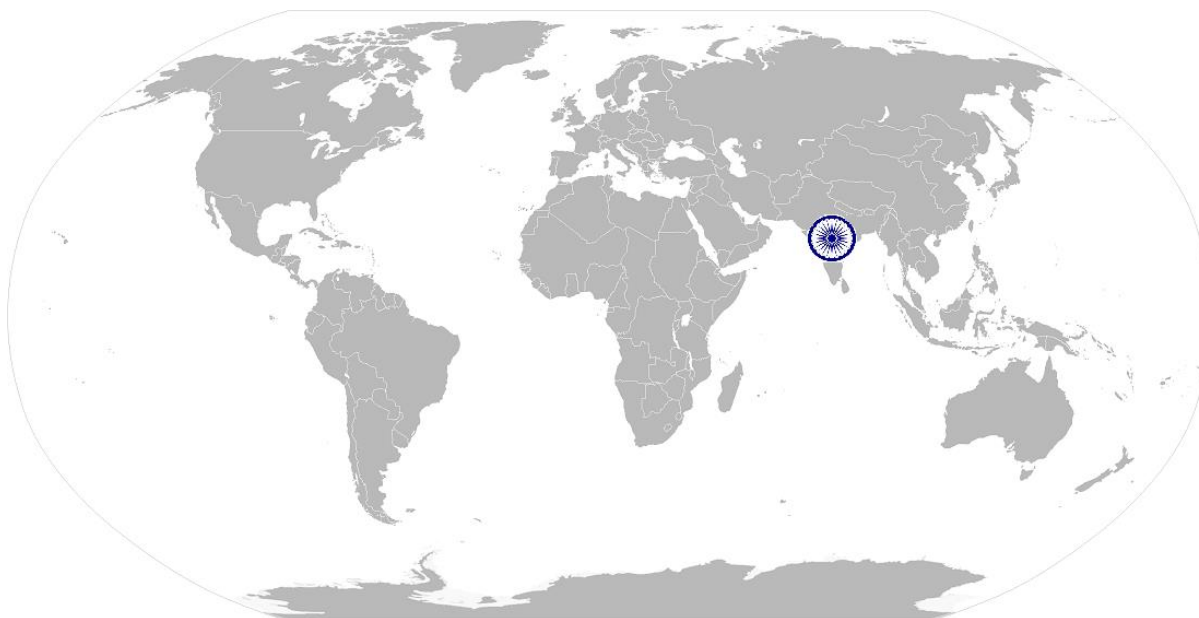


BWS/N3005

Motivate the clients

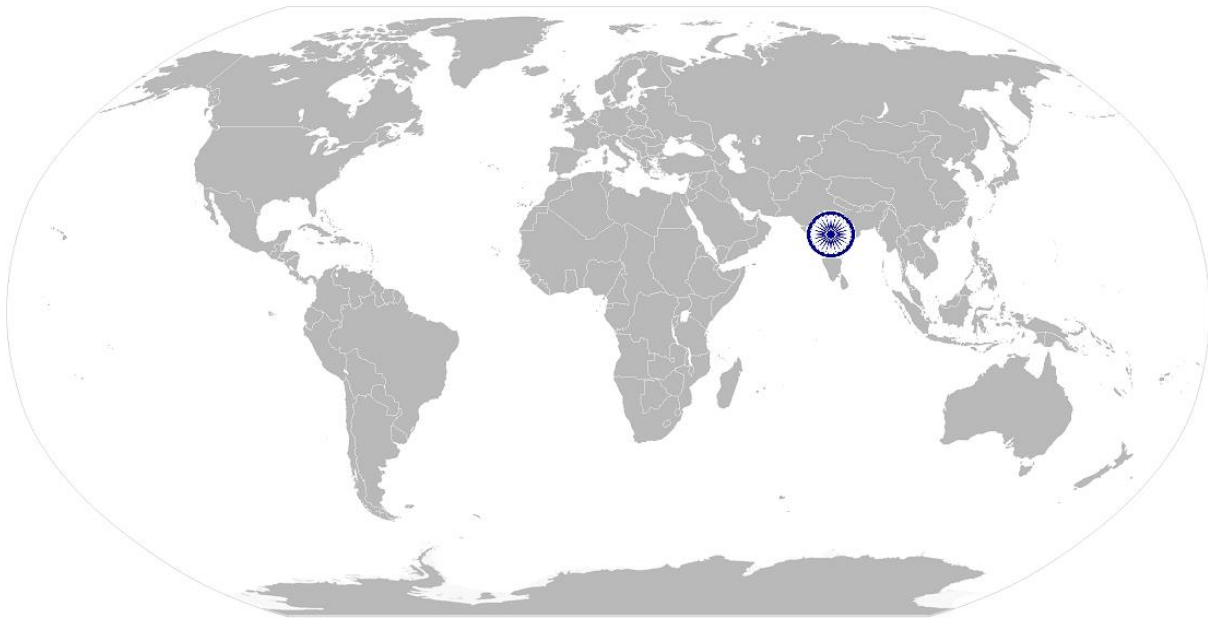
## NOS Version Control

NOS Code	BWS/N3005		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Slimming & Fitness	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

# National Occupational Standard



## Overview

This OS unit is about maintaining a safe and hygienic environment at the workplace

BWS/N9002

Maintain health and safety at the workplace

National Occupational Standard

<b>Unit Code</b>	<b>BWS/N9002</b>
<b>Unit Title (Task)</b>	<b>Maintain health and safety at the workplace</b>
<b>Description</b>	Maintain a safe and hygienic environment at the workplace to reduce potential risks to self and others.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>Maintain health and safety at the workplace</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Maintain health and safety at the workplace</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. set up and position the equipment, chemicals, products and tools in the work area to meet legal, hygiene and safety requirements</p> <p>PC2. clean and sterilize all tools and equipment before use</p> <p>PC3. maintain one's posture and position to minimize fatigue and the risk of injury</p> <p>PC4. dispose waste materials in accordance to the industry accepted standards</p> <p>PC5. maintain first aid kit and keep oneself updated on the first aid procedures</p> <p>PC6. identify and document potential risks and hazards in the workplace</p> <p>PC7. accurately maintain accident reports</p> <p>PC8. report health and safety risks/ hazards to concerned personnel</p> <p>PC9. use tools, equipment, chemicals and products in accordance with the organization's guidelines and manufacturers' instructions</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. organization's policies and procedures to address risks and hazards</p> <p>KA2. health and safety requirements in the organization</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. contra-indications related to various treatments</p> <p>KB2. process and products to sterilize and disinfect equipment/ tools</p> <p>KB3. manufacturer's instructions related to equipment and product use and cleaning</p> <p>KB4. knowledge of applicable legislation relating to the workplace (for example health and safety, workplace regulations, use of work equipment, control of substances hazardous to health, handling/storage/ disposal/ cautions in the use of products, fire precautions, occurrences, hygiene practice, disposal of waste, environmental protection)</p>
<b>Skills (S)</b>	

**BWS/N9002**

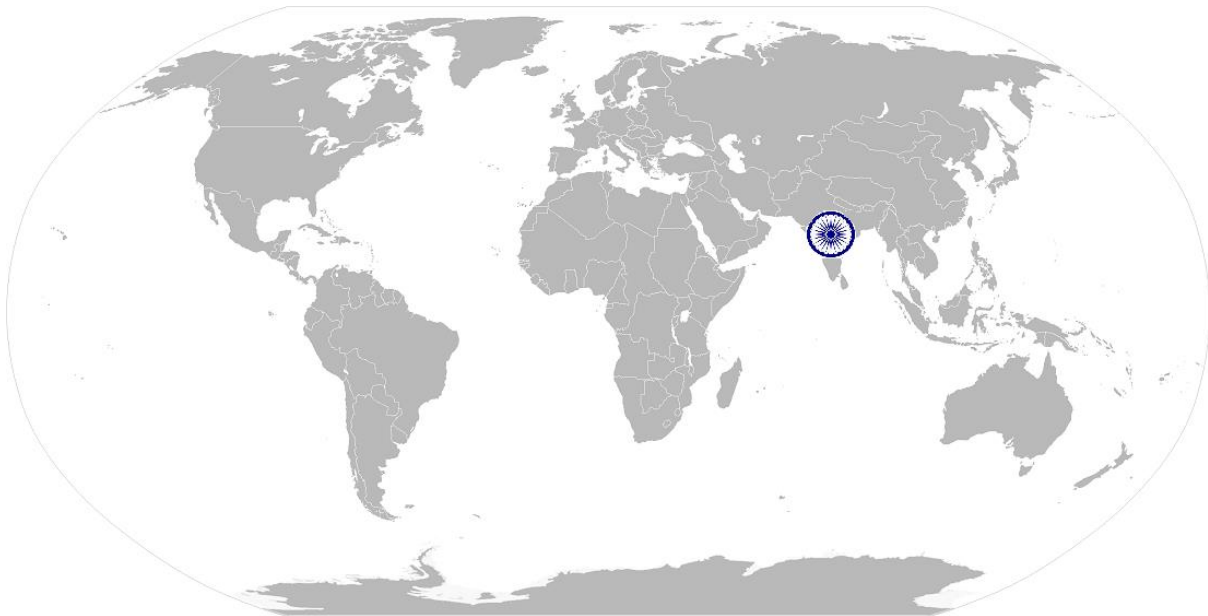
**Maintain health and safety at the workplace**

<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
<b>B. Professional Skills</b>	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB2. plan and organize service feedback files/documents</p>
	<b>Customer Centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry</p> <p>SB4. build customer relationships and use customer centric approach</p>
	<b>Problem Solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB6. deal with clients lacking the technical background to solve the problem on their own</p>

**BWS/N9002**

**Maintain health and safety at the workplace**

	SB7. identify immediate or temporary solutions to resolve delays
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB8. use the existing data to arrive at specific data points SB9. use the existing data points for improving the call resolution time SB10. use the existing data points to generate required reports for business
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

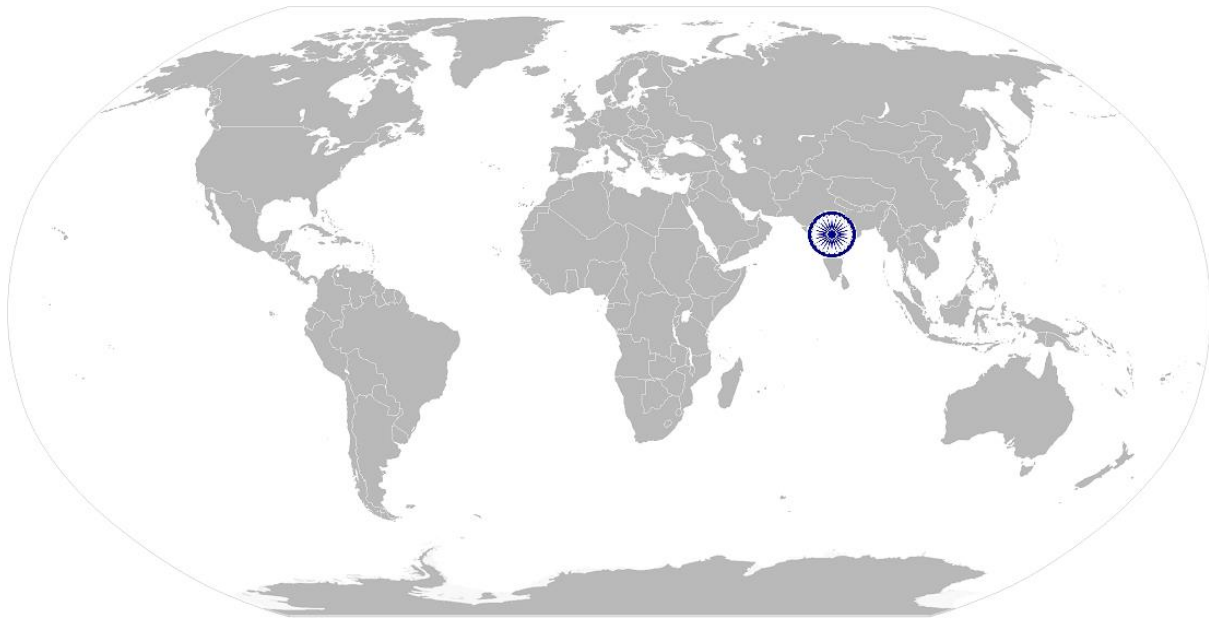


**NOS Version Control**

BWS/N9002

Maintain health and safety at the workplace

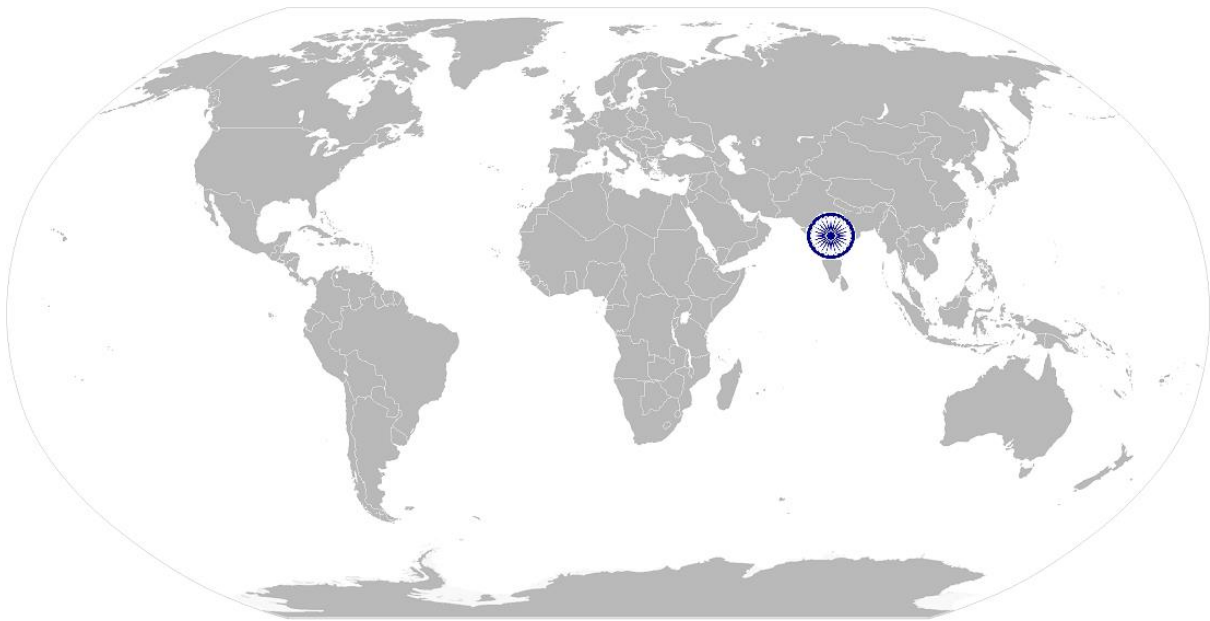
NOS Code	BWS/N9002		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Slimming & Fitness	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)



# National Occupational Standard



## Overview

This OS unit is about personal grooming and behaviour expected at the workplace.

BWS/N9003

Create a positive impression at the workplace

National Occupational Standard

<b>Unit Code</b>	<b>BWS/N9003</b>
<b>Unit Title (Task)</b>	<b>Create a positive impression at the workplace</b>
<b>Description</b>	Personal grooming and behaviour to execute tasks as per the organization's standards and create a positive impression at the workplace
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Appearance and Behavior</li> <li>• Task execution as per organization's standards</li> <li>• Communication and Information record</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Appearance and Behavior</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. maintain good health and personal hygiene</p> <p>PC2. comply with organisation's standards of grooming and personal behavior</p> <p>PC3. meet the organisation's standards of courtesy, behavior and efficiency</p> <p>PC4. stay free from intoxicants while on duty</p> <p>PC5. wear and carry organisation's uniform and accessories correctly and smartly</p>
<b>Task execution as per organization's standards</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC6. take appropriate and approved actions in line with instructions and guidelines</p> <p>PC7. record details related to tasks, as per procedure</p> <p>PC8. participate in workplace activities as a part of the larger team</p> <p>PC9. report to supervisor immediately in case there are any work issues</p> <p>PC10. use appropriate language, tone and gestures while interacting with clients from different cultural and religious backgrounds, age, disabilities and gender</p>
<b>Communication and Information record</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC11. communicate procedure related information to clients based on the sector's code of practices and organisation's procedures/ guidelines</p> <p>PC12. communicate role related information to stakeholders in a polite manner and resolve queries, if any</p> <p>PC13. assist and guide clients to services or products based on their needs</p> <p>PC14. report and record instances of aggressive/ unruly behavior and seek assistance</p> <p>PC15. use communication equipment (phone, email etc.) as mandated by your organization</p> <p>PC16. carry out routine documentation legibly and accurately in the desired format</p> <p>PC17. file routine reports and feedback</p> <p>PC18. maintain confidentiality of information, as required, in the role</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the organization and	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. importance of personal health and hygiene</p> <p>KA2. organization's standards of grooming and personal behavior</p> <p>KA3. organization's standards related to courtesy, behavior and efficiency</p> <p>KA4. ill-effects of intoxicants and potential actions at workplace</p> <p>KA5. items of uniform &amp; accessories and correct method of wearing/ carrying them</p> <p>KA6. reporting/ recording formats and protocol for documentation</p>

**BWS/N9003**

**Create a positive impression at the workplace**

its processes)	<p>KA7. kinds of work issues that may arise and reporting structure</p> <p>KA8. code of practices and guidelines relating to communication with people</p> <p>KA9. organization's requirements for recording and retaining information</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. ability to speak, read and write in the local vernacular language and english</p> <p>KB2. appropriate verbal and non-verbal cues while dealing with clients from different cultural, religious backgrounds, age, disabilities and gender</p> <p>KB3. different formats on which information is to be recorded</p> <p>KB4. importance to maintain security and confidentiality of information</p> <p>KB5. kinds of communication equipment (email, phone etc.) available and their effective use</p> <p>KB6. selling/ influencing techniques to provide additional services/ products to clients</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>

**BWS/N9003**

**Create a positive impression at the workplace**

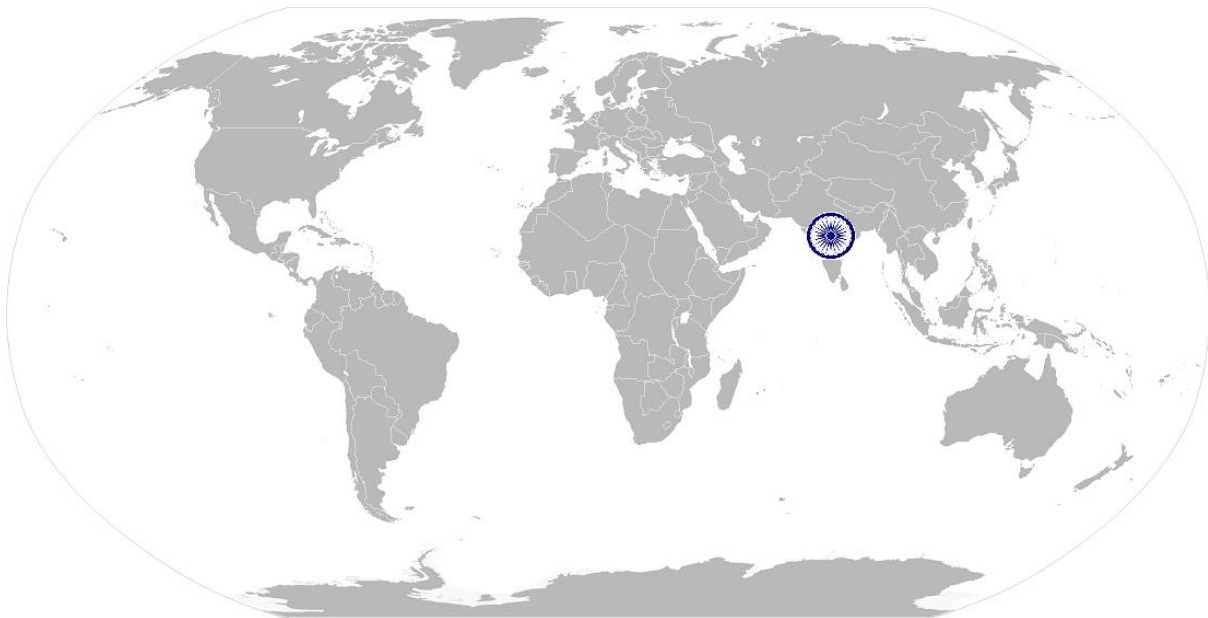
	The user/individual on the job needs to know and understand: SB2. plan and organize service feedback files/documents
	<b>Customer Centricity</b>
	The user/individual on the job needs to know and understand how to: SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry SB4. build customer relationships and use customer centric approach
	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to: SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB6. deal with clients lacking the technical background to solve the problem on their own SB7. identify immediate or temporary solutions to resolve delays
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB8. use the existing data to arrive at specific data points SB9. use the existing data points for improving the call resolution time SB10. use the existing data points to generate required reports for business
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

BWS/N9003

Create a positive impression at the workplace

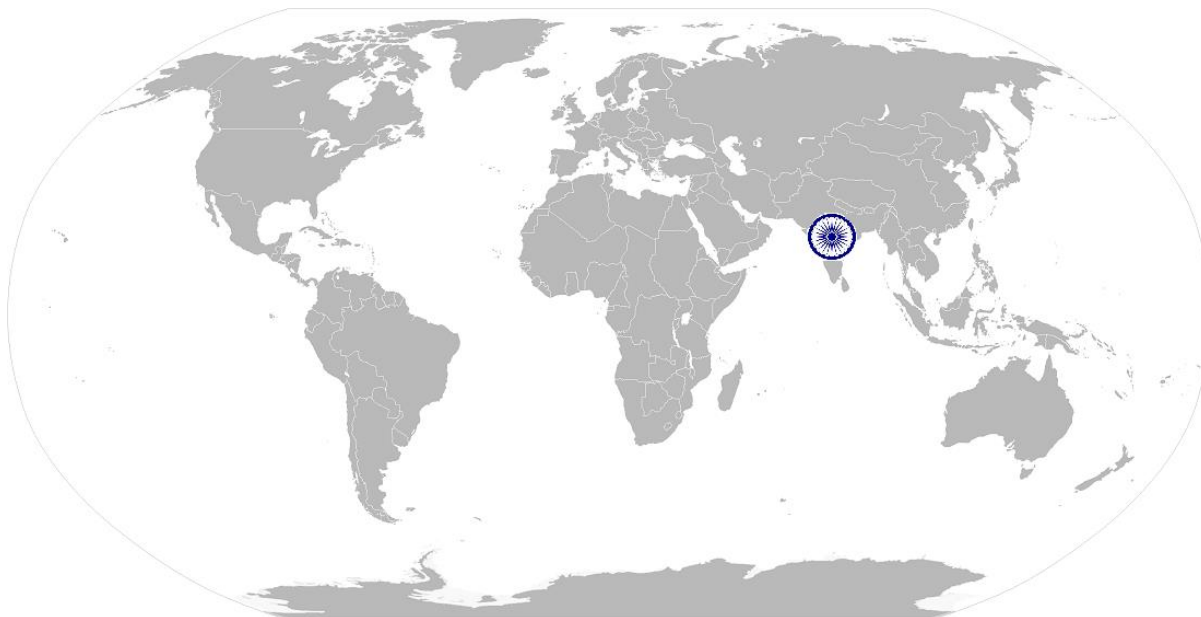
## NOS Version Control

NOS Code	BWS/N9003		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

# National Occupational Standard



## Overview

This OS unit is about planning & conducting session that would result in client's improved athletic performance



**BWS/N3021 Plan and conduct session for improving Athletic performance of client**

National Occupational Standard

Unit Code	BWS/N3021
Unit Title (Task)	Plan and conduct session for improving athletic performance of the client
Description	Ensuring to improve athletic performance of the client which usually means improving athletes' speed, strength and power (although specifics vary according to athlete and sport).
Scope	This unit/task covers the following: <ul style="list-style-type: none"> <li>improve athletic performance</li> </ul>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
<b>Improve athletic performance</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. study in depth and apply various principles of human anatomy, control of skeletal muscles by nervous system and various muscle groups with their motion patterns and motion ranges</p> <p>PC2. coach athlete to increase speed</p> <ul style="list-style-type: none"> <li>during the off-season, athletes should perform speed training on tuesdays and thursdays and lift on mondays, wednesdays, and fridays. speed technique workouts should also be performed twice per week during the in-season</li> <li>athletes should be tested for speed twice per month on either a 40-yard (37-meter) or a 20-yard (18-meter) sprint</li> <li>record the times so that the progress can be tracked</li> <li>video analysis is a great way to learn precisely what needs work, it heightens the athlete's awareness of proper sprinting technique</li> <li>athletes should have about 30 seconds of rest between sprints so that they are breathing easily before their next sprint</li> <li>perform flexibility training six times per week to improve speed, one must stretch correctly</li> <li>perform plyometric twice per week, minimum</li> <li>perform parallel squat</li> <li>perform the straight-leg deadlift to strengthen and stretch the gluteus and hamstrings at the same time</li> </ul> <p>PC3. coach athlete to increase strength</p> <ul style="list-style-type: none"> <li>start the workouts with barbell exercises</li> <li>the squat, deadlift, bench press, and shoulder press are the best strength-building exercises, they can be assistance lifts to complement the bench and shoulder press, keeping athlete's pulling muscles in balance with the pressing ones.</li> <li>focus on raising and lowering the weights in a controlled manner, pausing for a one-second count at the top of the lift, using an arbitrary tempo can lessen tension on muscles or force to use varying amounts of weight, slowing the progress, the only way to be sure that one is getting stronger is if the loads consistently increase.</li> <li>write down the exercises, sets, reps, and the fate of each workout. Keep</li> </ul>

**BWS/N3021 Plan and conduct session for improving Athletic performance of client**

	<p>track of the best lifts and the most reps done with a certain weight on an exercise. constantly strive to improve those numbers</p> <ul style="list-style-type: none"> <li>• try to stick to three or four lifts per workout. Keeping your workouts short helps you take advantage of hormonal surges. When too many exercises are done in a session, at least some of them get done half. All that is needed is one main lift per workout (one of the big four), one or two assistance lifts (for keeping the body in balance and further strengthening the muscles that perform the main lift), and then core or specialty work at the end (ab exercises or some forearm or calf moves, depending on your goals). Doing any more lessens your results.</li> <li>• the athlete should rotate many different rep ranges in the workouts, but sets of five seem to offer the best blend of muscle size and strength gains</li> <li>• the main reason athlete's plateau and stop gaining strength is that they go too heavy for too long, one should do main lifts using 10% less than the most weight one can lift for the given rep range. Increase the weight each session — but by no more than 10 pounds</li> <li>• cardio is a must if one wants to be lean and healthy, but long-distance running or cycling increases levels of hormones that break down the muscle tissues, to get stronger while getting leaner, one must do cardio in short, intense bursts &amp; go to a moderately steep hill and sprint to the top, then walk back down.</li> </ul> <p>PC4. the two of the most important factors that combine to create an athlete's endurance profile are :-</p> <ul style="list-style-type: none"> <li>• vo2 max, or the maximum rate at which an athlete's body can consume oxygen during exercise, is the most popular measurement of aerobic capacity</li> <li>• lactate threshold, or the level of exertion at which lactate accumulates in the muscles. to improve lactate threshold—and therefore the ability to workout harder for longer periods of time</li> </ul> <p>PC5. coach athlete to increase stamina</p> <ul style="list-style-type: none"> <li>• rest up-to go long and hard, athletes need fresh muscles</li> <li>• eat right-when it comes to exercise nutrition, carbs is the key, since the body uses glycogen for fuel, once glycogen runs out, the body turns to energy from other sources, and begins to burn fat. For extended cardio sessions, one should consume 30-60 grams of carbs every hour, depending on body weight. studies have also found a mix of carbs and protein can enhance endurance performance and reduce muscle damage</li> <li>• hiit- high intensity interval training—aka quick bouts of intense exercise—can help improve endurance in conjunction with traditional training. Running for some stairs or trying a track workout for some speed. one should not ignore to get plenty of recovery after these workouts as they're very intense</li> <li>• add some strength-when it comes to endurance training, variation is important. Resistance training can strengthen the bones, ligaments,</li> </ul>
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**BWS/N3021 Plan and conduct session for improving Athletic performance of client**

	<p>tendons, and muscles—helping improve overall fitness and helping with that final sprint to the finish. mix up aerobic exercise with kettle bells, dumbbell, and bodyweight exercises to help improve stamina</p> <ul style="list-style-type: none"> <li>• turn on the tunes- listening to music has been shown to boost endurance performance while walking and because of this the mind-body connection is especially strong among endurance athletes</li> <li>• work on what's weak- people often find their fitness niche and stick to it, instead, athletes should mix it up in order to build endurance</li> <li>• drink beet juice- one study found nitrate-rich beets may help increase stamina up to 16 percent by reducing oxygen intake in athletes</li> <li>• train smart- using the gradual adaption principle—that is, slowly and steadily increasing mileage and speed—is a great way to build endurance, there are ways to do this safely to avoid injury, from running on soft surfaces, to getting enough sleep and drinking tons of water.</li> </ul> <p>PC6. analyse various principles of group dynamics and group management</p> <p>PC7. conduct an exhaustive planning of exercises suitable for groups in a cycling set up</p> <p>PC8. conduct benchmarking study to identify various interesting options for making the training sessions more engaging</p> <p>PC9. identify common reasons for which athletes don't attend the training sessions and design interventions to address these reasons</p> <p>PC10. select exercises that will help athletes to achieve goals like muscular fitness, improve lung capacity, boost energy levels and increase metabolism</p> <p>PC11. select appropriate equipment's</p> <p>PC12. anticipate the potential risks relevant to the programme and identify various mechanisms to minimize the same</p> <p>PC13. identify and finalize the fitness objectives to be achieved through the session</p> <p>PC14. plan intensity and resistance assessment techniques</p> <p>PC15. ensure catering to the requirements of different set of clients i.e. the beginners, experts etc.</p> <p>PC16. obtain the information of group members in terms of their fitness profiles, training history, exercise preferences etc. in order to identify the needs and potential of the clients so as to encourage them for the participation in the group session</p> <p>PC17. change teaching positions during the session to improve observation and ask questions</p> <p>PC18. deploy effective verbal and visual communication while delivering the sessions</p> <p>PC19. identify the risks associated and plans accordingly in order to overcome them by describing the correct demonstrations of the body movement and positions and also the expected outcome from it</p> <p>PC20. the training sessions to be observed very carefully so that the proper feedback and instructing points can be provided in a timely manner in order to enhance the confidence and motivation of the clients</p>
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**BWS/N3021 Plan and conduct session for improving Athletic performance of client**

	PC21. identify and address the issues/ concerns related to inappropriate behaviours of certain athlete/s
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization's standards of performance and sequence of services</p> <p>KA2. the range of services and products offered by the organization</p> <p>KA3. the product and service costs for the services and products offered in the organization</p> <p>KA4. the health and safety requirements in the organization</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. basic bio mechanics of all the sports</p> <p>KB2. various exercises and how to break exercise/movements down to their component parts</p> <p>KB3. several equipment's used and its operation</p> <p>KB4. different training methods contraindications</p> <p>KB5. methods of combining movements and sequencing the exercises</p> <p>KB6. various aspects of fitness with respect to the group exercises</p> <p>KB7. various teaching and motivational techniques applied for a group setting</p> <p>KB8. various physical, psychological and social reasons for clients participating in group indoor cycling</p> <p>KB9. various elements of group dynamics</p> <p>KB10. human anatomy and its relevance for planning exercises</p> <p>KB11. physiological responses to physical activity</p> <p>KB12. principles of benchmarking</p> <p>KB13. techniques to collect the required information, including using interviews and questionnaires, making observations and taking physical measurements</p> <p>KB14. teaching methods, appropriate communication skills in order to enhance the client motivation and performances while delivering and instructing the drills</p> <p>KB15. principles of planning and scheduling</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and</p>



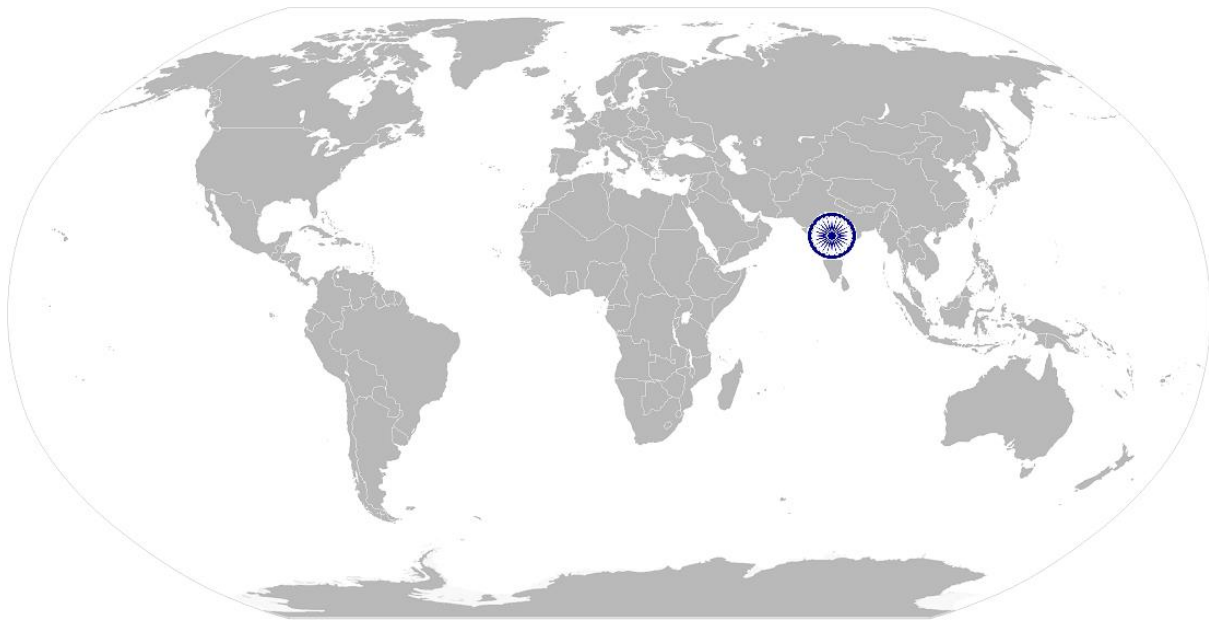
**BWS/N3021 Plan and conduct session for improving Athletic performance of client**

	<p>product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
	<p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB2. plan and organize service feedback files/documents</p>
	<b>Customer Centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry</p> <p>SB4. build customer relationships and use customer centric approach</p>
	<b>Problem Solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB6. deal with clients lacking the technical background to solve the problem on their own</p> <p>SB7. identify immediate or temporary solutions to resolve delays</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. use the existing data to arrive at specific data points</p> <p>SB9. use the existing data points for improving the call resolution time</p> <p>SB10. use the existing data points to generate required reports for business</p>
	<b>Critical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action</p>

**BWS/N3021 Plan and conduct session for improving Athletic performance of client**

## NOS Version Control

NOS Code	BWS/N3021		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

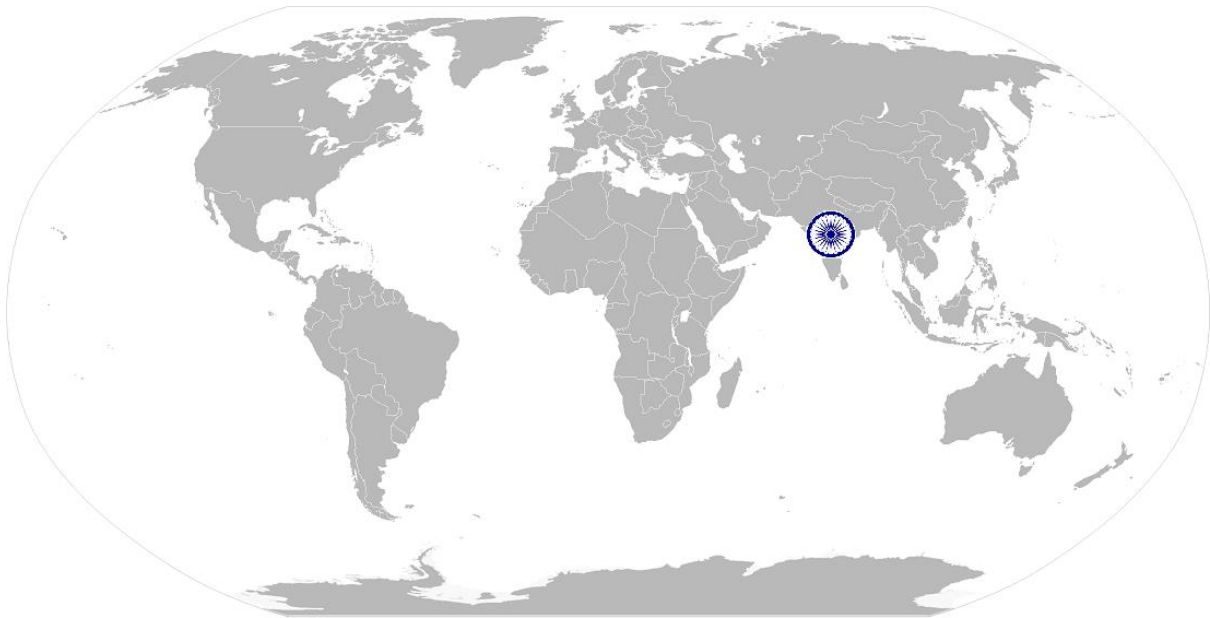


BWS/N3022

Enable minimization of Athletic Injuries & Conduct Fitness Assessment for  
Sports related activities of the client

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# National Occupational Standards



## Overview

This unit is about reducing athletic injuries and conducting fitness assessment of the client

BWS/N3022

**Enable minimization of Athletic Injuries & Conduct Fitness Assessment for Sports related activities of the client**

National Occupational Standard

Unit Code	BWS/N3022
Unit Title (Task)	Enable minimization of Athletic Injuries & Conduct Fitness Assessment for Sports related activities of the client
Description	Applying various techniques to reduce athletic injuries and conducting fitness assessment for sports related activities
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Reduce Athletic Injuries</li> <li>Conduct fitness assessment for sports related activities</li> </ul>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
<b>Reduce Athletic Injuries</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. to reduce athletic injuries , following can be of great help:-</p> <ul style="list-style-type: none"> <li>take time off plan to have at least 1 day off per week from a particular sport to allow the body to recover</li> <li>wear the right gear, players should wear appropriate and properly fitting protective equipment such as pads (neck, shoulder, elbow, chest, knee, and chin), helmets, mouthpieces, face guards, protective cups, and/or eyewear</li> <li>strengthen muscles, conditioning exercises during practice strengthen muscles used in play</li> <li>increase flexibility, stretching exercises before and after games or practice can increase flexibility. Stretching should also be incorporated into a daily fitness plan</li> <li>use the proper technique, this should be reinforced during the playing season</li> <li>take breaks, rest periods during practice and games can reduce injuries and prevent heat illness</li> <li>play safe, strict rules against headfirst sliding (baseball and softball), and spearing (football) etc. should be enforced</li> <li>stop the activity if there is pain</li> <li>avoid heat injury by drinking plenty of fluids before, during and after exercise or play, decrease or stop practices or competitions during high heat/humidity periods, wear light clothing.</li> </ul>
<b>Conduct fitness assessment for sports related activities</b>	<p>to be competent, the user/individual on the job must be able to:</p> <p>PC2. educating the client about the benefit of fitness assessment</p> <ul style="list-style-type: none"> <li>obtain scientific baseline measurements of your fitness levels</li> <li>discover your movement style and how that affects your exercise programming</li> <li>develop a personal awareness of your physical health</li> <li>establish attainable goals and maintain accountability to them</li> <li>recognize your potential risks of injury</li> <li>increase your self-confidence in any workout environment</li> </ul>

BWS/N3022

**Enable minimization of Athletic Injuries & Conduct Fitness Assessment for Sports related activities of the client**

PC3. fitness tests for specific fitness components, physical fitness is a complex & multifaceted phenomenon composed of:-

- aerobic power- when developing a series of fitness tests, the SCE should first refer to other coaching and sport science information. There they may find established tests which are proven for their own sport or at least suitable tests designed for similar sports that can be used with or without minor modifications. This will obviously greatly reduce the time required to deliver an effective series of tests, while providing the coach with reassurance that the tests they are using are appropriate.
- anaerobic power and anaerobic capacity- tests for aerobic fitness must use the same type of exercise as the sport in which the individual participates and should generally last in the region of 8-15 minutes, any shorter and the increased anaerobic energy contribution may make the test less valid.
- muscular endurance- these tests may assess either dynamic muscular endurance (the capacity to repeat contractions) or static muscular endurance (the capacity to sustain a muscular contraction). To be specific to a sport it is important to ensure that the test uses the appropriate muscle groups, through relevant ranges of movement and at suitable speeds. Often this may not be entirely feasible and therefore standard endurance exercises such as the sit-up and press-up may be used.
- muscular strength- tests for muscular strength should ensure that the muscles being assessed are appropriate and are used through a relevant range of movement, or in the case of static strength at a specific joint angle. In a laboratory setting, equipment such as dynamometers are often used but selecting and using fitness tests. Such as cricket the test may be conducted over the distance between the wickets. In order to ensure the test is even more specific, the test should be conducted in full clothing and kit.
- flexibility and joint mobility- field tests for flexibility/joint mobility range from simple "yes / no" assessments of whether the individual can perform a specific task, to the measurement of joint angles and ranges of movement (e.g. sit and reach test). By breaking down a movement into its component parts, the coach will be able to determine which joint movements are essential to performance and need to be assessed. For example, in hurdling good hip mobility and hamstring flexibility are necessary for good technique, whereas in team sports (e.g. football) an appropriate level of flexibility is required to reduce injury risk. When standardizing tests of flexibility/joint mobility the coach must pay close attention to, and note the position of all limbs, not just those being assessed. For example, if measuring hamstring flexibility in one leg the position of the other leg will influence the results. Similarly, if measuring hip flexibility, movement in the back or pelvis may cause the measurement to be overestimated.
- speed and acceleration tests- in many sports the performers must change direction rapidly. This may be assessed using tests such as star runs, where the performer runs from a central marker to other markers (usually 6-12) situated around the central marker while being timed. Alternatively a zigzag setup can be used to assess dodging/dribbling skills. The coach may wish to incorporate

**BWS/N3022**

**Enable minimization of Athletic Injuries & Conduct Fitness Assessment for Sports related activities of the client**

	an assessment of turning ability and/or running forwards, backwards and sideways, as deemed applicable to the participants sport (e.g. football, hockey, tennis, etc.)
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization's standards of performance and sequence of services</p> <p>KA2. the range of services and products offered by the organization</p> <p>KA3. the product and service costs for the services and products offered in the organization</p> <p>KA4. the health and safety requirements in the organization</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. basic bio mechanics of all the sports</p> <p>KB2. various exercises and how to break exercise/movements down to their component parts</p> <p>KB3. several equipment's used and its operation.</p> <p>KB4. different training methods contraindications.</p> <p>KB5. methods of combining movements and sequencing the exercises</p> <p>KB6. various aspects of fitness with respect to the group exercises</p> <p>KB7. various teaching and motivational techniques applied for a group setting</p> <p>KB8. various physical, psychological and social reasons for clients participating in group indoor cycling</p> <p>KB9. various elements of group dynamics</p> <p>KB10. human anatomy and its relevance for planning exercises</p> <p>KB11. physiological responses to physical activity</p> <p>KB12. principles of benchmarking</p> <p>KB13. techniques to collect the required information, including using interviews and questionnaires, making observations and taking physical measurements</p> <p>KB14. teaching methods, appropriate communication skills in order to enhance the client motivation and performances while delivering and instructing the drills.</p> <p>KB15. principles of planning and scheduling</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>

**BWS/N3022**

**Enable minimization of Athletic Injuries & Conduct Fitness Assessment for Sports related activities of the client**

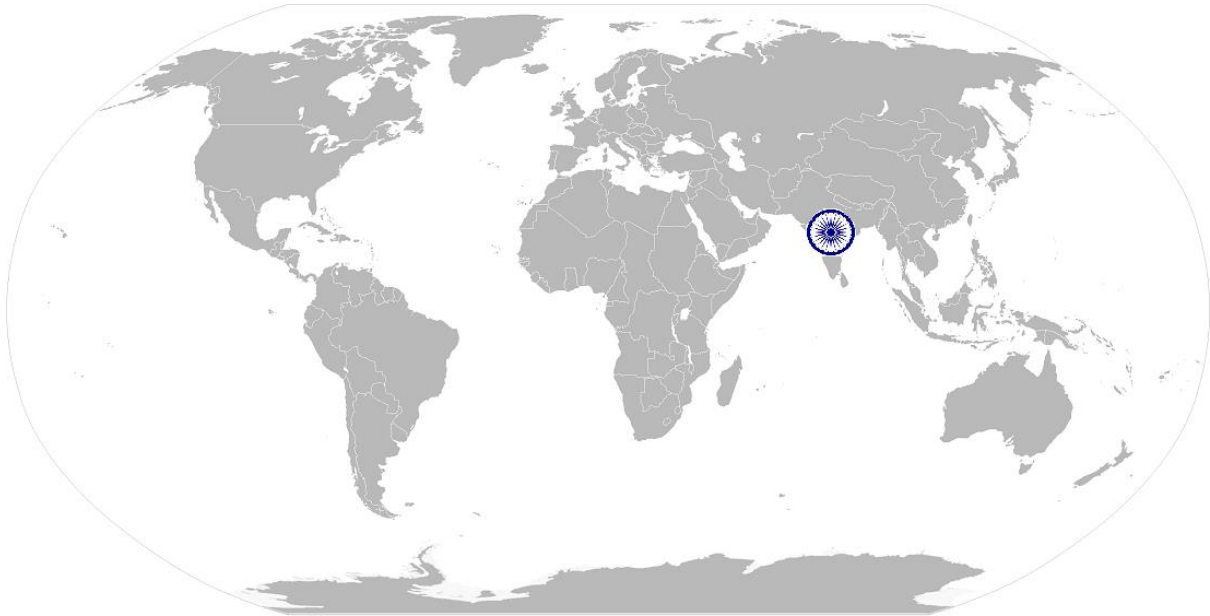
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p> <p>SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal</p>
	<p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. discuss task lists, schedules, and work-loads with co-workers</p> <p>SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis</p> <p>SA10. give clear instructions to customers</p> <p>SA11. keep customers informed about progress</p> <p>SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work</p>
	<b>Plan and Organize</b>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB2. plan and organize service feedback files/documents</p>
	<b>Customer Centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry</p> <p>SB4. build customer relationships and use customer centric approach</p>
	<b>Problem Solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB6. deal with clients lacking the technical background to solve the problem on their own</p> <p>SB7. identify immediate or temporary solutions to resolve delays</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. use the existing data to arrive at specific data points</p> <p>SB9. use the existing data points for improving the call resolution time</p> <p>SB10. use the existing data points to generate required reports for business</p>
	<b>Critical Thinking</b>



BWS/N3022

**Enable minimization of Athletic Injuries & Conduct Fitness Assessment for  
Sports related activities of the client**

	The user/individual on the job needs to know and understand how to: SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
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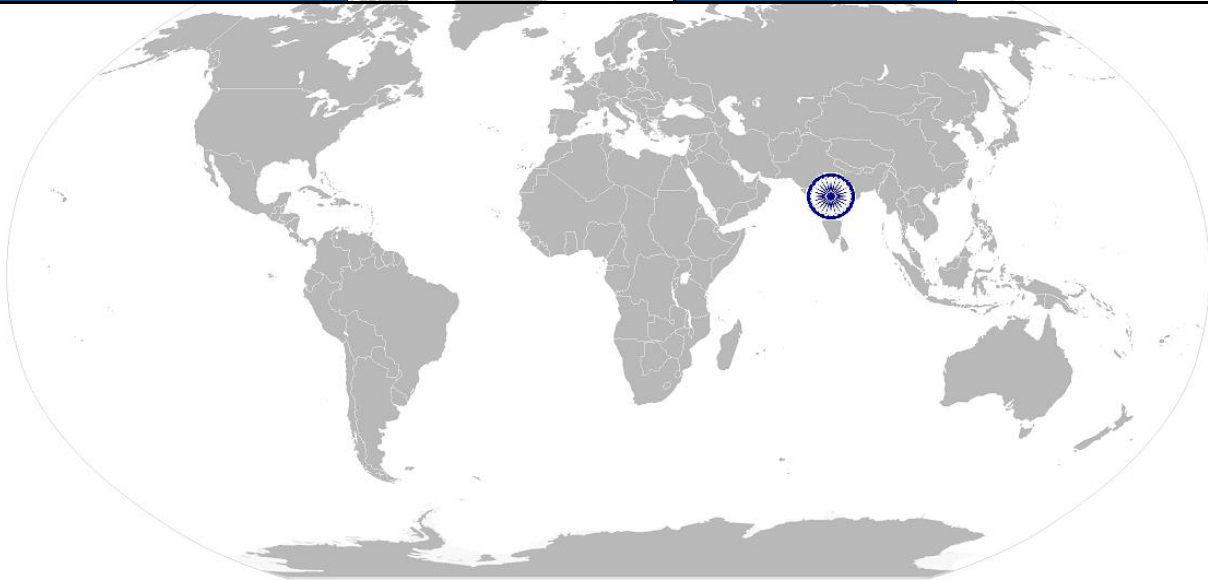


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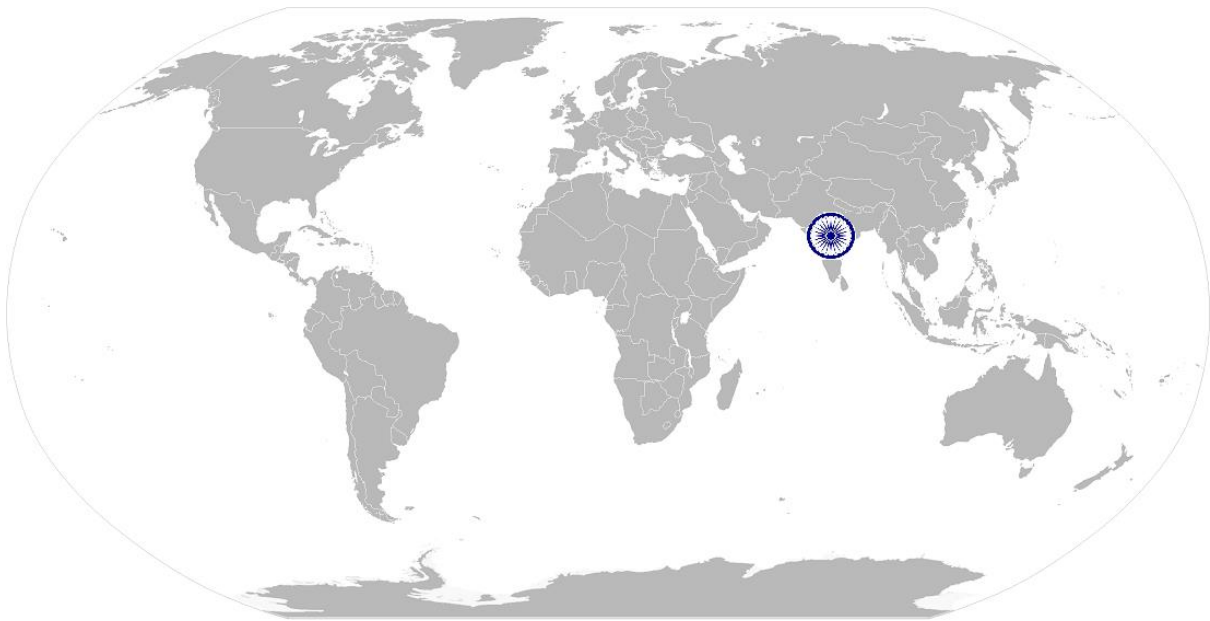
## NOS Version Control

NOS Code	BWS/N3022		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

# National Occupational Standards



## Overview

This unit is about planning and conducting personal training for clients with different fitness needs

**BWS/N3014 Plan and conduct personal training for clients from different Population groups**

Unit Code	BWS/N3014
Unit Title (Task)	Plan and conduct personal training for clients from different population groups
Description	Planning and conducting personal training for clients from various backgrounds and have different types of needs related to fitness
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Plan and conduct personal training for clients from different population groups</li> </ul>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
<b>Plan and conduct personal training for clients from different population groups</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. deploy the knowledge and understanding of various aspects of human anatomy and physiology while providing fitness related recommendations</p> <p>PC2. understand in detail various human body systems like circulatory system, musculoskeletal system, joints and bones, muscles, respiratory system etc. and impact of fitness programmes on their functioning</p> <p>PC3. identify the potential sources of injury and risks as per the needs and case of the client and keep the same under consideration while devising fitness programme</p> <p>PC4. understand in detail the medical history of the client and ask for a doctor's recommendation before planning for a fitness plan</p> <p>PC5. evaluate the impact of exercise and its intensity on the energy levels of a client and consider the capacity of the client to perform the devised exercises basis his/ her background i.e., pre/ postnatal woman, disabled client etc.</p> <p>PC6. basis the health assessment and detailed understanding of anatomy &amp; physiology of the client's body, plan a range of exercises for client to achieve his/ her goals</p> <p>PC7. as per the client's needs, identify the appropriate training techniques</p> <p>PC8. identify and plan for availability of equipment needed for suitable exercises</p> <p>PC9. display sensitivity and empathy to the special set of clients which are emotionally vulnerable</p> <p>PC10. ensure proper communication and support to the attendants of special category clients (if applicable)</p> <p>PC11. explain in detail the planned exercise schedule to client</p> <p>PC12. communicate the physical demands of the planned exercises to clients</p> <p>PC13. discuss with client on any observed concerns/ changes/ modifications required in the plan</p> <p>PC14. observe the client carrying out the exercises and ensure right usage of the fitness equipment to prevent any injuries</p> <p>PC15. develop phase wise detailed activity chart in consultation with the client</p> <p>PC16. provide clear instructions and demonstrations that are technically correct, safe and effective and ensure client is following them accurately without hurting himself/ herself or damaging the equipment</p> <p>PC17. plan outcomes and stages of achievement during personal training and</p>

**BWS/N3014 Plan and conduct personal training for clients from different Population groups**

	<p>agree on a progressive timetable of sessions</p> <p>PC18. discuss the methods of monitoring and evaluation of the performance of the client</p> <p>PC19. ensure that all the exercises are integrated in a single plan and being deployed by the client to achieve his/ her goals; in case, there are any concerns faced by client to perform any of the exercises, provide alternate options</p> <p>PC20. monitor the client's exercises and adherence to the planned schedule as well as analyse the performance of client on a daily basis</p> <p>PC21. progress or regress exercises according to clients' performance</p> <p>PC22. motivate the clients for ensuring adherence to plan; provide any related support to the clients in this regard</p> <p>PC23. communicate the anatomical changes in the body of client due to training programme</p> <p>PC24. identify the signs of strain/ over work outs and recommend the strategies for prevention of the same</p> <p>PC25. adapt the training programme as per the client body's response, lifestyle changes, preferences etc.; discuss and agree of changes with the client</p> <p>PC26. discuss specific issues like cultural or social barriers to exercise and personal training</p> <p>PC27. provide the data to fitness manager in order to improvise/ addition in the existing portfolio of services</p> <p>PC28. obtain regular feedback from the client and analyse effectiveness of the personal training programme basis the feedback and goals achievement</p> <p>PC29. obtain feedback from technical standpoint</p>
<b>Knowledge and Understanding (K)</b>	
<p><b>A. Organizational Context</b> (Knowledge of the organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization's standards of performance and sequence of services</p> <p>KA2. the range of services and products offered by the organization</p> <p>KA3. the product and service costs for the services and products offered in the organization</p> <p>KA4. the health and safety requirements in the organization</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. various aspects of human anatomy and physiology</p> <p>KB2. various human body systems and their organization and structure i.e. circulatory system (like blood pressure, blood circulation etc.), respiratory system (like muscles for breathing, breathing patterns, etc.), the skeleton system (like bones, stages of bones growth, postures, spine curves, motion range of spine etc.), the muscular system (like muscle tissues, characteristics of muscle tissues, various motions supported by muscular tissues, muscle contractions etc.), nervous system (like motor unit recruitment, neuromuscular connections, etc.) and energy systems (like usage or burning of carbohydrates, fats, proteins etc., aerobic and anaerobic exercises etc.) and their relation to exercise.</p> <p>KB3. various types of clients like active, inactive, aware, new etc.</p> <p>KB4. various types of fitness equipment like cardio machines, exercise balls, bars, steps, weights, abdominal assisters, pin loaded, free weight, hydraulic,</p>

**BWS/N3014 Plan and conduct personal training for clients from different Population groups**

	<p>electronic and air-braked equipment</p> <p>KB5. various physical demands of different exercises</p> <p>KB6. different types of learning styles</p> <p>KB7. health and safety standards associated with the fitness equipment and exercises</p> <p>KB8. various instructional techniques used in personal training</p> <p>KB9. impact and requirement of warm up and cool down activities</p> <p>KB10. various metrics and techniques to evaluate client's performance and changes in the body</p> <p>KB11. methods for modification of the intensity of exercise according to the client's needs</p> <p>KB12. various cardiovascular approaches like interval, fartlek, continuous etc.</p> <p>KB13. various legal and ethical implications of collecting and storing client information</p> <p>KB14. formats for recording information</p> <p>KB15. techniques to analyse the collected the client's information</p> <p>KB16. various guidelines on personal training programme design</p> <p>KB17. various exercises and activities which will help clients to achieve their goals</p> <p>KB18. the resources required to deliver a personal training programme, like environment for the session, equipment, etc.</p> <p>KB19. range of cardiovascular equipment like bikes, treadmills, elliptical trainers, steppers, rowing machines etc.</p> <p>KB20. range of free weight equipment like bars, dumbbells, collars, barbells, benches etc.</p> <p>KB21. methods of collecting, analysing and recording information</p> <p>KB22. various signs and symptoms of strain/ over workouts</p> <p>KB23. methods which can be used to get structured feedback from clients</p> <p>KB24. sources of information, advice and best practice on how to improve programme components</p> <p>KB25. requirements and risks associated with the special population groups like pre/ postnatal women, disabled individuals etc.</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document call logs, reports, task lists, and schedules with co-workers</p> <p>SA2. prepare status and progress reports</p> <p>SA3. record customers' discussions in the call logs</p> <p>SA4. write memos and e-mail to customers, co-workers, and vendors to provide them with work updates and to request appropriate information without English language errors regarding grammar or sentence construct</p>
	<b>Reading Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read about new products and services with reference to the organization and also from external forums such as websites and blogs</p> <p>SA6. keep abreast with the latest knowledge by reading brochures, pamphlets, and product information sheets</p>



**BWS/N3014 Plan and conduct personal training for clients from different Population groups**

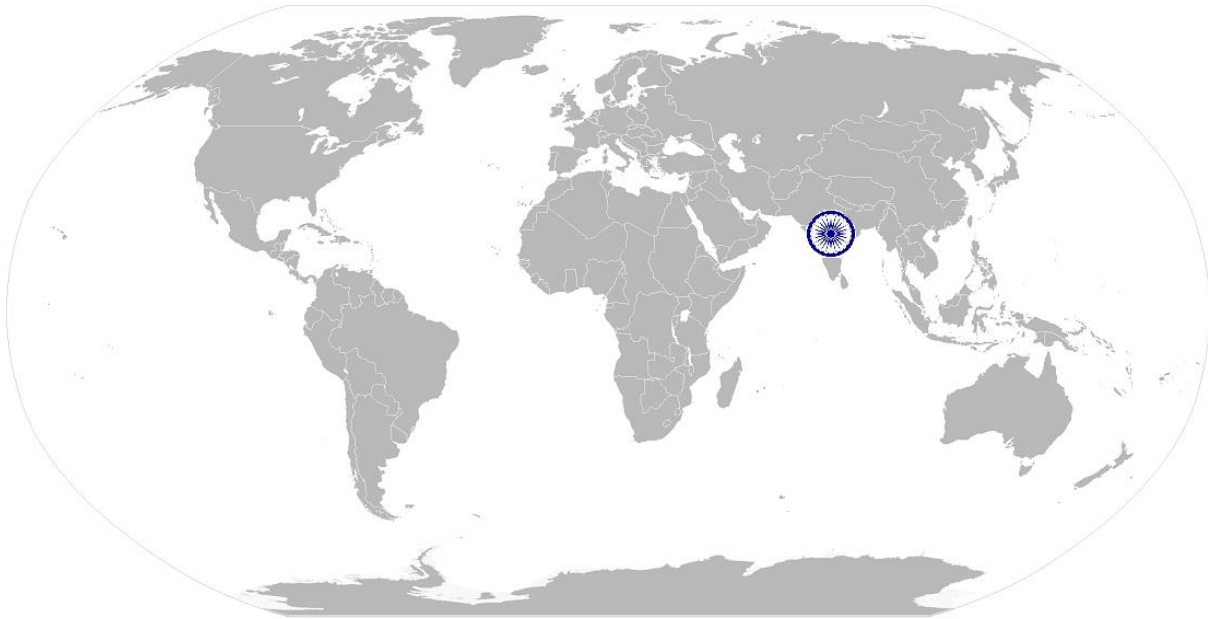
	SA7. read comments, suggestions, and responses to Frequently Asked Questions (FAQs) posted on the helpdesk portal
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/individual on the job needs to know and understand how to: SA8. discuss task lists, schedules, and work-loads with co-workers SA9. question customers appropriately in order to understand the nature of the problem and make a diagnosis SA10. give clear instructions to customers SA11. keep customers informed about progress SA12. avoid using jargon, slang or acronyms when communicating with a customer, unless it is required
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/individual on the job needs to know and understand how to: SB1. make decisions pertaining to the concerned area of work
	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand: SB2. plan and organize service feedback files/documents
	<b>Customer Centricity</b>
	The user/individual on the job needs to know and understand how to: SB3. manage relationships with customers who may be stressed, frustrated, confused, or angry SB4. build customer relationships and use customer centric approach
	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to: SB5. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB6. deal with clients lacking the technical background to solve the problem on their own SB7. identify immediate or temporary solutions to resolve delays
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB8. use the existing data to arrive at specific data points SB9. use the existing data points for improving the call resolution time SB10. use the existing data points to generate required reports for business
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB11. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action



**BWS/N3014 Plan and conduct personal training for clients from different Population groups**

## NOS Version Control

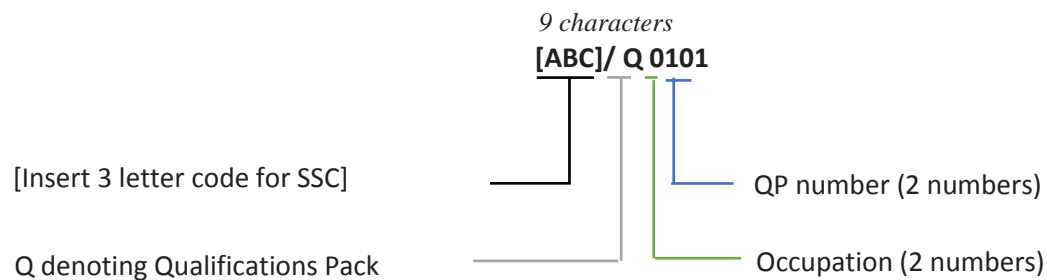
NOS Code	BWS/N3014		
Credits (NSQF)	TBD	Version number	1.0
Industry	Beauty & Wellness	Drafted on	01/08/2015
Industry Sub-sector	Fitness & Slimming	Last reviewed on	10/02/2016
Occupation	Fitness Services	Next review date	10/02/2019



[Back to Top](#)

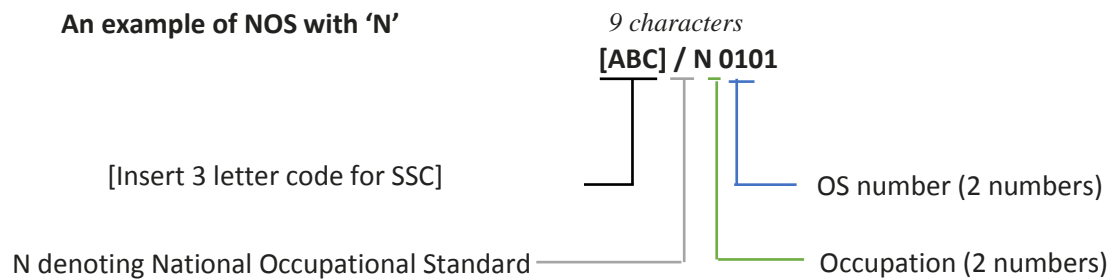
## Annexure

### Qualifications Pack



### Occupational Standard

#### An example of NOS with 'N'



[Back to top...](#)

*Qualifications Pack For Personal Trainer*

The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
<b>1. BEAUTY &amp; SALONS</b>	
Skincare services	0101-0109
Haircare services	0201-0212
Makeup services	0301-0306
Nailcare services	0401-0406
Aesthetic Dermatology services	0501-0504
Training Academy services	0601-0606
Tattoo services	0701-0705
Assessment services	0801-0802
<b>2. REJUVENATION</b>	
Spa Therapy	1001-1006
<b>3. ALTERNATE THERAPY</b>	
Ayurveda Therapy	2001-2006
Naturopathy Therapy	2101-2106
Yoga Therapy	2201-2206
Neurotherapy	2301-2303
Aromatherapy & Reflexology therapy	2401-2407
<b>4. FITNESS &amp; SLIMMING</b>	
Fitness services	3001-3010
Nutrition services	3101-3108
Slimming services	3201-3204
<b>5. PRODUCT &amp; SALES</b>	
Product & Sales	4001-4005

*Qualifications Pack For Personal Trainer*

Sequence	Description	Example
Three letters	Industry name	BWS
Slash	/	/
Next letter	Whether QP or NOS	Q or N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

Note:

- The range of occupation numbers have been decided based on the number of existing and future occupations in a segment

## **CRITERIA FOR ASSESSMENT OF TRAINEES**

**Job Role** Personal Trainer

**Qualification Pack** BWS/Q3003

**Sector Skill Council** Beauty & Wellness

### **Guidelines for Assessment**

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 60% in aggregate
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessment outcomes	Assessment Criteria for outcomes	Marks Allocation			
		Total Marks	Out Of	Theory	Skills Practical
<b>1. BWS/N9001 (Prepare work area)</b>	PC1. ensure that environmental conditions are suitable for the client and the treatment to be carried out in a hygiene and safe environment	<b>100</b>	15	3	12
	PC2. select suitable equipment and products required for the treatment		19	5	14
	PC3. set up the equipment and prepare the products for treatments in adherence to the organization procedures and product/equipment guidelines		20	4	16
	PC4. familiarize members with the safe workings of machines		12	1	11

	PC5. explain contraindicated exercises/postures with the members		14	4	10
	PC6. evaluate trainers involvement with the members		10	2	8
	PC7. store records, materials and equipment securely in line with the organization's policies		10	2	8
			<b>100</b>	<b>21</b>	<b>79</b>
<b>2.BWS/N3003 (Carry out health screening and fitness assessment of the clients)</b>	PC1. build strong rapport with the clients	<b>100</b>	4	1	3
	PC2. collect data like lifestyle, time investment, medical background, exercise history, etc.		6	1	5
	PC3. ensure adequate communication to the clients in terms of maintaining confidentiality of their personal data collected		4	1	3
	PC4. discuss in various lifestyle and eating preferences and their impact on client's body as well as the benefits from an exercise programme		10	2	8
	PC5. basis client's exercise preferences and lifestyle, identify the barriers to clients achieving their exercise goals		4	1	3
	PC6. finalize the short and long-term fitness goals of the client		10	2	8
	PC7. basis the client's fitness requirements, suggest the appropriate exercises		10	2	8
	PC8. identify the strategies to prevent drop out or relapse		4	1	3
	PC9. discuss in detail with clients, the relationship of fitness assessment outcomes with exercise plan; also discuss the kind of information about a person's anatomy will be collected to perform fitness		10	2	8



	assessment				
	PC10. ensure the working and availability of equipment to carry out the planned assessments		10	2	8
	PC11. conduct fitness assessments which primarily include anthropometrics (i.e. bmi, waist to hip ratio etc.), body composition, cardiovascular fitness and capacity, muscular strength, etc.)		10	2	8
	PC12. understand the various person specific concerns/problems and related safety considerations while conducting fitness assessments		4	1	3
	PC13. analyze the fitness assessment outcomes to provide recommendations for the exercise plan		10	2	8
	PC14. refer to the superior in case there are any concerns or requirements of the clients which require expert advice		4	1	3
			<b>100</b>	<b>21</b>	<b>79</b>
<b>3.BWS/N3004 (Plan and conduct personal training)</b>	PC1. deploy the knowledge and understanding of various aspects of human anatomy and physiology while providing fitness related recommendations	<b>100</b>	3	0.5	2.5
	PC2. understand in detail various human body systems like circulatory system, musculoskeletal system, joints and bones, muscles, respiratory system etc. and impact of fitness programmes on their functioning		3	0.5	2.5
	PC3. identify the potential sources of injury and keep the same under consideration while devising fitness programme to a client		3	0.5	2.5
	PC4. evaluate the impact of exercise and its intensity on the energy levels of a client and provide requisite		3	0.5	2.5

recommendations in terms of exercise plan				
PC5. basis the health assessment and detailed understanding of anatomy & physiology of the client's body, plan a range of exercises for client to achieve his/ her fitness goals considering aspects like muscular fitness, cardiovascular fitness, agility & flexibility, etc.		4	0.5	3.5
PC6. as per the client's preferences, identify the appropriate training techniques		3	0.5	2.5
PC7. identify and plan for availability of equipment needed for suitable exercises		3	0.5	2.5
PC8. explain in detail the fitness goals and planned exercise schedule to client		3	0.5	2.5
PC9. communicate the physical demands of the planned exercises to clients		3	0.5	2.5
PC10. discuss with client on any observed concerns/ changes/ modifications required in the plan		3	0.5	2.5
PC11. provide information and demonstration of various warm up activities to the client and their importance		3	0.5	2.5
PC12. observe the client carrying out the exercises and ensure right usage of the fitness equipment to prevent any injuries		3	0.5	2.5
PC13. develop phase wise detailed activity chart in consultation with the client which is challenging as well as achievable and duly agreed by the client		3	0.5	2.5
PC14. provide clear instructions and demonstrations that are technically correct, safe and effective and ensure client is following them accurately without hurting himself/ herself or damaging the		4	0.5	3.5

	equipment			
	PC15. plan outcomes and stages of achievement during personal training and agree on a progressive timetable of sessions	3	0.5	2.5
	PC16. discuss the methods of monitoring and evaluation of the performance of the client	3	0.5	2.5
	PC17. ensure that all the exercises are integrated in a single plan and being deployed by the client to achieve his/ her fitness goals; in case, there are any concerns faced by client to perform any of the exercises, provide alternate options	5	1	4
	PC18. monitor the client's exercises and adherence to the planned schedule as well as analyse the performance of client on a daily basis	3	0.5	2.5
	PC19. progress or regress exercises according to clients' performance	3	0.5	2.5
	PC20. motivate the clients for increasing their performance and ensuring adherence to exercise; provide any related support to the clients in this regard	3	0.5	2.5
	PC21. explain the function of various joints and muscles during exercises to the client and impact of exercises on them	3	0.5	2.5
	PC22. communicate the anatomical changes in the body of client due to training programme	3	0.5	2.5
	PC23. record the performance and progress of the client through personal training sessions	3	0.5	2.5
	PC24. provide information and demonstration of various cool down activities to the client and their importance as per the intensity and type of	3	0.5	2.5

	physical exercises of the client				
	PC25. observe the client carrying out the exercises and ensure right usage of the fitness equipment to prevent any injuries		3	0.5	2.5
	PC26. explain in detail the linkage of progress of the client with the achievement of fitness goals		3	0.5	2.5
	PC27. identify the signs of strain/ over work outs and recommend the strategies for prevention of the same		3	0.5	2.5
	PC28. adapt the training programme as per the client body's response, lifestyle changes, preferences etc.; discuss and agree of changes with the client		3	0.5	2.5
	PC29. update the fitness goals in line with the adaptations introduced		3	0.5	2.5
	PC30. in collaboration with personal training manager, discuss specific issues like cultural or social barriers to exercise and personal training		3	0.5	2.5
	PC31. provide the data to personal training manager in order to improvise/ addition in the existing portfolio of services		3	0.5	2.5
	PC32. obtain regular feedback from the client and analyse effectiveness of the personal training programme basis the feedback and goals achievement		3	0.5	2.5
			<b>100</b>	<b>16.5</b>	<b>83.5</b>
<b>4. BWS/N3134 (Collect, integrate and analyze nutritional, health and lifestyle data of physically active clients)</b>	PC1. screening activities- nutrition tools like sga etc.	<b>100</b>	1	0.25	0.75
	PC2. select suitable methods for assessment		1	0.25	0.75
	PC3. identify standards by which data will be compared		1	0.25	0.75
	PC4. be able to interpret the same		1	0.25	0.75
	PC5. identify possible problem		1	0.25	0.75

	areas for making nutrition diagnoses			
	PC6. obtain current anthropometric measurements including height, weight and weight changes, body mass index(bmi), body measurements, body composition analysis	1	0.25	0.75
	PC7. height - measure height using standard procedure and equipment (stadio meter) / individual enquiry	1	0.25	0.75
	PC8. weight, perform weight measurement using calibrated weighing machine under standardized conditions as outlined by the organization (empty stomach, shoes removed, minimal or standard clothing, and fluid status). collect information regarding weight history / recent weight changes	1	0.25	0.75
	PC9. bmi calculate body mass index	1	0.25	0.75
	PC10. compare bmi with standards as per nationality and interpret weight status and consequent risk of co-morbidities	1	0.25	0.75
	PC11. body measurements use specialized techniques and / or equipment and trained personnel to obtain body measurements of different body parts including (waist circumference, hip circumference and other measures)	2	0.5	1.5
	PC12. calculate waist hip ratio and / or waist height ratio to ascertain central obesity	1	0.25	0.75
	PC13. body composition analysis ( bca) perform bca to measure the amount and distribution	2	0.5	1.5

	of body fat, fat free mass and water in the body of an individual using standard procedure and under standardized conditions as per equipment available ( bio-electrical impedance – 2 electrodes or 4 electrodes / dexta)			
	PC14. review individual's recent and past biochemical reports to ascertain nutritional and health status	1	0.25	0.75
	PC15. assesse current and past information related to personal, medical, family and social history: assesses the following: <ul style="list-style-type: none"> <li>personal history relative to age, sex, race/ethnicity, language, education, role in the family or organization</li> <li>client or family disease states, conditions, and illnesses that may have nutritional impact:-</li> <li>family history of and risk factors for medical conditions and chronic diseases (e.g., diabetes, cardiovascular disease, hypertension, osteoporosis, dyslipidaemia, obesity, disordered eating, behavioural/mental health issues)</li> <li>client history of metabolic and hormonal conditions (e.g., diabetes, metabolic syndrome, polycystic ovary syndrome, thyroid abnormalities, exercise-induced asthma) or chronic diseases</li> <li>client menstrual history and status</li> </ul>	2	0.5	1.5
	PC16. medication and dietary and herbal supplement use, including	2	0.5	1.5



	prescription and over-the-counter medications, herbal preparations and complementary medicine products			
	PC17. appropriateness of dietary and supplement intake (e.g., macro- and micro nutrients, fiber, bioactive substances, alcohol, caffeine, herbals) and supplements for health and exercise/task-specific physical performance	2	0.5	1.5
	PC18. assesses sport/dietary supplements for the risk of adverse events associated with sport/dietary supplement intake.	2	0.5	1.5
	PC19. evaluates sport/dietary supplements (safety, legality, efficacy, quality, application to sport)	2	0.5	1.5
	PC20. considers recommendations that may include adding, maintaining, changing, or discontinuing sport/dietary supplements	2	0.5	1.5
	PC21. considers dose and timing of medication/supplements relative to health and issues such as meals, training, competition, travel schedules, and time-zone change	2	0.5	1.5
	PC22. identifies actual or potential drug/sport/dietary supplement/food interactions	2	0.5	1.5
	PC23. knowledge, beliefs, and attitudes including understanding of nutrition-related concepts, body image and preoccupation with food and weight, and readiness to change nutrition-related behaviours:-	2	0.5	1.5

	<ul style="list-style-type: none"> <li>• general food and nutrition knowledge/skills/strategies</li> <li>• sport-specific food and nutrition knowledge, skills, and/or strategies</li> <li>• beliefs and attitudes (e.g., behavioural mediators or antecedents related to sports nutrition, intentions, readiness and willingness to change, appropriateness of goals and coping strategies)</li> <li>• misinformation regarding health and nutrition for exercise/physical performance, weight management, and culture of sport or organization)</li> </ul>			
	<p>PC24. behaviour: including client activities and actions which influence achievement of nutrition-related goals</p> <ul style="list-style-type: none"> <li>• various influences (e.g., language, sport/organizational culture, ethnicity, religion) that relate to the potential for behaviour change</li> <li>• assess social history (socioeconomic status, social and medical support, cultural and religious beliefs, and social isolation/connection.)</li> </ul>	2	0.5	1.5
	<p>PC25. evaluate composition, adequacy and appropriateness of food, beverages and nutrient intake, meal and snack patterns, and food allergies and intolerances</p>	1	0.25	0.75
	<p>PC26. adequacy of nutrition intake to maintain energy</p>	4	1	3

	balance under various conditions (e.g., rest, physical activity, exercise/ task-specific physical performance)			
	PC27. total food and beverage intake (type, amount, and pattern of intake of foods and food groups, indices of diet quality, intake of fluids), including intakes before, during, and after exercise and special dietary and beverage patterns associated with exercise/task-specific physical performance	4	1	3
	PC28. client history of food allergies/intolerances (e.g., gluten sensitivity or intolerance, lactose intolerance)	1	0.25	0.75
	PC29. current and past use of alcohol, specialized diets, sport foods/drinks, energy drinks, functional foods, liquid meal replacements, sport/dietary supplements and/or ergogenic aids	4	1	3
	PC30. energy balance assessment using measures of energy intake/expenditure (e.g., intake via calorie counts), including changes in body weight or composition, medication use, health status, or attempts at weight gain or loss.	4	1	3
	PC31. measures of energy availability for adequacy of energy intake	2	0.5	1.5
	PC32. special energy and nutrient needs (e.g., energy shakes, vitamin/mineral supplements) for health, weight management, exercise/task-specific physical performance	4	1	3
	PC33. daily fluid needs for health, fitness, exercise/task-specific	4	1	3

	physical performance based on sweat rate, environmental conditions, fluid balance assessments (e.g., urine-specific gravity), and patterns of fluid replacement (e.g., during and after exercise/task-specific physical performance)			
	PC34. changes in appetite or usual intake (e.g., as a result of weight control, alteration in body composition/physique, change in training volume/intensity, travel, unfamiliar environments, phase of sport/competition or task-specific physical training, medical conditions, illnesses and injuries, treatment and rehabilitation), and psychological issues (e.g., stress, trauma, depression)	4	1	3
	PC35. changes in usual intake as a result of dietary manipulation to optimize exercise/task-specific physical performance (e.g., tapers, carbohydrate loading, glycogen restoration, rehydration, recovery nutrition following pre competition weigh-in)	4	1	3
	PC36. food and nutrient administration including current and previous diets and diet modifications, eating environment <ul style="list-style-type: none"> <li>diet experience (e.g., previously prescribed diets, previous diet/nutrition duration/ counselling, self-selected diets followed, dieting attempts, food allergies, food intolerances)</li> </ul>	4	1	3

	<ul style="list-style-type: none"> <li>• eating environment (e.g., location, atmosphere, companion, eats alone)</li> <li>• more complex nutrition issues (e.g., controlled type 1 diabetes, managed gastrointestinal diseases and conditions) related to food intake and clinical complications in individuals exposed to variable exercise/task-specific physical performance situations</li> <li>• most complex issues (e.g., newly diagnosed type 1 diabetes, uncontrolled diabetes, recovery from injury/illness) related to food intake and clinical complications</li> </ul>			
	PC37. assess any barriers or conflicts (e.g., communication, transportation, financial) that interfere with food access, selection and preparation	2	0.5	1.5
	PC38. physical activity and function, including physical activity, history of physical activity and exercise/task-specific physical performance, cognitive and physical ability to engage in specific tasks:- <ul style="list-style-type: none"> <li>• physical activity/exercise: history, consistency, frequency, duration, intensity, type (e.g., leisure and recreational activities, exercise training, competitive sport, training)</li> <li>• physical inactivity: television/screen time and other sedentary activity time</li> <li>• environmental</li> </ul>	4	1	3

	<p>conditions (e.g., cold, heat, humidity, altitude) and nutrition-related complications (e.g., hydration status, nutrient deficiencies)</p> <ul style="list-style-type: none"> <li>• history of exercise, training, task-specific physical performance, sports participation</li> <li>• training state/fitness level, competitive status, performance goals and results</li> <li>• additional exercise performed outside of scheduled exercise/task-specific physical performance training</li> <li>• effect of current and past dietary interventions on exercise/ physical performance in training and competition</li> </ul>			
	PC39. exercise, training, or competition issues that alter appetite, ingestion, digestion, absorption, metabolism, utilization of nutrients, and/or eating behaviours and patterns	4	1	3
	PC40. identify standards by which data will be compared	2	0.5	1.5
	PC41. document the entire relevant data accurately and timely as per the organisation's policy	1	0.25	0.75
	<p>PC42. include the following information for quality documentation:-</p> <ul style="list-style-type: none"> <li>• date and time of assessment;</li> <li>• pertinent data collected and compared with standards</li> <li>• name / signature of staff member collecting the data</li> <li>• individual /client's perceptions, values, and motivation related to presenting problems</li> </ul>	2	0.5	1.5



	<ul style="list-style-type: none"> <li>• changes in client's level of understanding, food-related behaviours, and other outcomes for appropriate follow-up</li> <li>• discussion with individual and /or interdisciplinary team throughout assessment process</li> <li>• reason for discontinuation or referral, if appropriate</li> </ul>				
	PC43. accurately interpret anthropometric data ,body composition analysis , dietary, health and medical data and biomedical profile against relevant standards		2	0.5	1.5
	PC44. evaluate diet and exercise / physical activity		2	0.5	1.5
	PC45. make judgement about potential impact of health and medical, social, psychological, economic and personal factors on nutrition and fitness		2	0.5	1.5
	PC46. organize and cluster nutrition risk factors, complications, and assessment data to identify possible problem areas for determining nutrition and activity diagnoses		1	0.25	0.75
	PC47. integrate assessed data in order to assign priorities for nutrition planning and lifestyle modification		1	0.25	0.75
	PC48. define nutritional and activity problems / diagnosis as a prelude to planning management		1	0.25	0.75
			<b>100</b>	<b>25</b>	<b>75</b>
<b>5. BWS/N3135 (Develop and implement personalised nutrition and lifestyle programme for physically active clients )</b>	PC1. estimate the energy, macro nutrient and relevant micro-nutrient intake for elderly individuals from food intake collected during comprehensive nutritional assessment ,	<b>100</b>	3	1	2

	using food composition tables				
	PC2. evaluate physical activity/ exercise level levels		3	1	2
	PC3. estimate nutrient and fluid needs based on age, sex, medical condition, activity level, current nutritional state, medications, and goals of medical nutrition therapy		4	1	3
	PC4. use predictive equation for energy needs based on age, height, weight and activity level / determine energy needs from bmr values obtained by bca taking into account activity level		2	0.5	1.5
	PC5. determine protein requirement based on clinical condition and body weight in kilograms		2	0.5	1.5
	PC6. determine the split of energy from other macro-nutrients		2	0.5	1.5
	PC7. determine any specific micro-nutrient consideration		2	0.5	1.5
	PC8. compare the current nutrient intake with rdas for the age and sex or estimated requirements		2	0.5	1.5
	PC9. identify and describe an actual occurrence of, risk of or potential for developing a nutrition problem that can be resolved or improved through nutrition intervention		2	0.5	1.5
	PC10. derive the nutrition diagnosis from the assessment data <ul style="list-style-type: none"> <li>• identify and label the problem</li> <li>• determine etiology (cause, contributing risk factors)</li> <li>• cluster signs and symptoms (defining characteristics)</li> </ul>		2	0.5	1.5
	PC11. use clinical judgment (e.g., selects from a range		4	1	3

	of possibilities with consideration to health, fitness, exercise, task-specific physical performance, medical condition) when ranking activity diagnoses in order of importance and urgency for the client			
	PC12. use clinical judgment and experience that reflects the significant differences between active individuals (e.g., beginner, competitive, or elite), others (e.g., , military service member, air hostess) and/or clinical conditions (e.g., newly diagnosed type 1 diabetes, uncontrolled type 1 diabetes, extreme environmental conditions, clinical complications) when ranking activity diagnoses in order of importance and urgency for the patient/client	2	0.5	1.5
	PC13. document the nutrition diagnosis in the pes format : problem (p), etiology (e), and signs and symptoms (s)	2	0.5	1.5
	PC14. re-evaluate and revise nutrition diagnoses when additional assessment data become available	2	0.5	1.5
	PC15. identify appropriate, purposefully planned actions designed with the intent of changing a nutrition-related behaviour, risk factor, environmental condition, or aspect of health status for a client with the goal to promote health and increase the capacity to exercise, train, improve recovery, promote training adaptation, and enhance exercise, and physical performance	3	1	2
	PC16. prioritizing the nutrition	6	2	4

	<p>diagnoses based on the severity of the problem, safety, client needs, likelihood that nutrition intervention/plan of care will influence problem, and client perception of importance. prioritization consideration may include:-</p> <ul style="list-style-type: none"> <li>• immediacy of the problem</li> <li>• client's available resources and support</li> <li>• readiness of patient/client to receive selected nutrition interventions</li> <li>• presence of medical conditions (e.g., diabetes, dyslipidaemia, depression, eating disorders, low bone mass, anaemia)</li> <li>• timing of the problem relative to training /competition plan, or duty schedule</li> </ul>			
	PC17. determining client-centered plan, goals, and expected outcomes in observable and measurable terms.	2	0.5	1.5
	PC18. setting smart (specific, measurable, achievable, realistic and time bound) short term and long term goals in collaboration with client and other members of health care team	2	0.5	1.5
	PC19. selecting appropriate intervention. considerations for the intervention plan may include:-	8	3	5
	<ul style="list-style-type: none"> <li>• intervention to address current issues (e.g., fatigue, dehydration, muscle cramping, inadequate recovery, exercise, task-specific physical performance improvement ,diarrhoea and other</li> </ul>			

	<p>gastrointestinal issues; illness; injury; disordered eating; dietary and sports/dietary supplement use; or other clinical issues)</p> <ul style="list-style-type: none"> <li>• identification of barriers to successful implementation (e.g., client compliance, food availability and preparation issues, financial issues, regulations of sport governing bodies and associations, organization policies, situations in occupational settings, influence of team - athlete-coach-family dynamics)</li> <li>• address issues related to off-season/transition weight change, detraining, and scheduled and unscheduled breaks in training, such as holiday, and extended travel</li> </ul>			
	PC20. develops the nutrition prescription based on scientific evidence, best practices, and professional experience considering the educational needs of the client, constraints such as time (e.g., exercise training, competition, recovery, traveling), finances, ability to store and prepare food	6	2	4
	PC21. define time and frequency of care including intensity, duration, and follow-up	2	0.5	1.5
	PC22. initiates and individualizes the nutrition intervention/plan of care	2	0.5	1.5
	PC23. implements, initiates or modifies orders for diet,	6	2	4

	nutrition supplements, dietary supplements, food texture modifications for dentition or individual preferences, nutrition-related laboratory tests and medications, and nutrition education and counselling consistent with competence and approved clinical privileges an organizational policy			
	PC24. advise the use of dietary supplements, sports and functional foods (e.g., portion or dosage adjustments based on energy needs or laboratory results, addition of new dietary supplements, sports foods functional foods or modifications for fluid intake) consistent with organization policy	6	2	4
	PC25. use appropriate goal setting and behaviour change strategies and techniques to facilitate self-management and self-care	3	1	2
	PC26. follows up and verifies that nutrition intervention/plan of care is occurring	2	0.5	1.5
	PC27. communicates with the interdisciplinary or multidisciplinary team to verify progress and adjust strategies	2	0.5	1.5
	PC28. adjusts nutrition intervention/plan of care strategies, if needed, as response occurs	2	0.5	1.5
	PC29. use a variety of educational approaches, tools, and materials as appropriate	3	1	2
	PC30. adapt nutrition educational tools to individualized learning styles and method of communication and to	3	1	2



	the culture of the organization				
	PC31. adjust nutrition intervention (e.g., energy balance, macro- and micronutrient needs, hydrations guidelines) according to training/competition plan		6	2	4
	PC32. maintain clear and concise records, in accordance with the organization's policy <ul style="list-style-type: none"> <li>• date and time of consultation</li> <li>• specific treatment goals and expected outcomes</li> <li>• recommended interventions</li> <li>• adjustments to the plan and justification</li> <li>• client receptivity and comprehension</li> <li>• barriers to change</li> <li>• other information relevant to providing care and monitoring progress over time</li> <li>• plans for follow-up and frequency of care</li> <li>• rationale for discontinuation or referral if applicable</li> <li>• timely update the records</li> <li>• maintain statistics and other reports required of the organization</li> </ul>		2	0.5	1.5
			<b>100</b>	<b>30</b>	<b>70</b>
<b>6.BWS/N3005 (Motivate the clients)</b>	PC1. observe the clients' exercise pattern and his/her attitude towards exercise to determine the level of readiness towards following the plan	<b>100</b>	6	2	4
	PC2. identify and articulate the client's needs and preferences for a fitness programme		10	2	8
	PC3. communicate in detail the benefits to be reaped by client through this programme		6	2	4
	PC4. identify various options of		10	2	8

	incentives and rewards available for the clients to follow their exercise plan			
	PC5. ensure on a regular basis that the programme is in line with the client's liking and preferences as well as giving results to the client; modify the plan, in case, client is not getting the desired results	10	2	8
	PC6. identify perceived barriers to clients for following the exercise plan and discuss the way forward with clients to reduce these	6	2	4
	PC7. in collaboration with clients, devise a long term strategy to adhere to exercise plan; collaborate to develop mutual trust, openness and a willingness to take responsibility for their own fitness and related lifestyle changes	10	2	8
	PC8. support the clients to develop their own motivational strategies for adhering to the exercise plan	6	2	4
	PC9. use influencing skills and personal attitudes to positively influence clients for adhering to the plan	10	2	8
	PC10. apply a variety of motivational techniques when training the clients	6	2	4
	PC11. deploy effective verbal and nonverbal communication skills when instructing clients	8	2	6
	PC12. take care of the client by monitoring his/ her performance regularly and provide feedback on a regular basis	6	2	4
	PC13. identify on-going barriers to continuation of long term exercise and provide tips/ recommendations as and when required	6	2	4
		<b>100</b>	<b>26</b>	<b>74</b>

<b>7.BWS/N9002 (Maintain health and safety at the workplace)</b>	PC1. set up and position the equipment, chemicals, products and tools in the work area to meet legal, hygiene and safety requirements	<b>100</b>	10	3	7
	PC2. clean and sterilize all tools and equipment before use		10	3	7
	PC3. maintain one's posture and position to minimize fatigue and the risk of injury		10	3	7
	PC4. dispose waste materials in accordance to the industry accepted standards		12	2	10
	PC5. maintain first aid kit and keep oneself updated on the first aid procedures		15	3	12
	PC6. identify and document potential risks and hazards in the workplace		10	3	7
	PC7. accurately maintain accident reports		10	4	6
	PC8. report health and safety risks/ hazards to concerned personnel		10	3	7
	PC9. use tools, equipment, chemicals and products in accordance with the organization's guidelines and manufacturers' instructions		13	3	10
			<b>100</b>	<b>26</b>	<b>74</b>
<b>8. BWS/N9003 (Create a positive impression at the workplace)</b>	PC1. maintain good health and personal hygiene	<b>100</b>	8	2	6
	PC2. comply with organisation's standards of grooming and personal behaviour		9	6	3
	PC3. meet the organisation's standards of courtesy, behaviour and efficiency		5	1	4
	PC4. stay free from intoxicants while on duty		6	1	5
	PC5. wear and carry organisation's uniform and accessories correctly and smartly		6	1	5
	PC6. take appropriate and approved actions in line with instructions and guidelines		6	2	4

	PC7. record details related to tasks, as per procedure		5	2	3
	PC8. participate in workplace activities as a part of the larger team		5	1	4
	PC9. report to supervisor immediately in case there are any work issues		3	1	2
	PC10. use appropriate language, tone and gestures while interacting with clients from different cultural and religious backgrounds, age, disabilities and gender		7	2	5
	PC11. communicate procedure related information to clients based on the sector's code of practices and organisation's procedures/ guidelines		7	2	5
	PC12. communicate role related information to stakeholders in a polite manner and resolve queries, if any		7	2	5
	PC13. assist and guide clients to services or products based on their needs		4	1	3
	PC14. report and record instances of aggressive/ unruly behaviour and seek assistance		4	1	3
	PC15. use communication equipment (phone, email etc.) as mandated by your organization		4	1	3
	PC16. carry out routine documentation legibly and accurately in the desired format		4	1	3
	PC17. file routine reports and feedback		4	1	3
	PC18. maintain confidentiality of information, as required, in the role		6	2	4
			<b>100</b>	<b>30</b>	<b>70</b>
<b>OPTIONAL NOS -Personal Trainer- Special population expert</b>					
<b>1. BWS/N3021 (Plan and conduct session for improving athletic performance)</b>	PC1. study in depth and apply various principles of human anatomy, control of skeletal muscles by	<b>100</b>	3.5	0.5	3

of the client)	nervous system and various muscle groups with their motion patterns and motion ranges			
	<p>PC2. coach athlete to increase speed</p> <ul style="list-style-type: none"> <li>during the off-season, athletes should perform speed training on tuesdays and thursdays and lift on mondays, wednesdays, and fridays. speed technique workouts should also be performed twice per week during the in-season</li> <li>athletes should be tested for speed twice per month on either a 40-yard (37-meter) or a 20-yard (18-meter) sprint.</li> <li>record the times so that the progress can be tracked</li> <li>video analysis is a great way to learn precisely what needs work, it heightens the athlete's awareness of proper sprinting technique</li> <li>athletes should have about 30 seconds of rest between sprints so that they are breathing easily before their next sprint.</li> <li>perform flexibility training six times per week. to improve speed, one must stretch correctly.</li> <li>perform plyometric twice per week, minimum</li> <li>perform parallel squat.</li> <li>perform the straight-leg deadlift to strengthen and stretch the gluteus and hamstrings at the same time</li> </ul>	10	2	8
	<p>PC3. coach athlete to increase strength</p> <ul style="list-style-type: none"> <li>start the workouts</li> </ul>	10	2	8

with barbell exercises

- the squat, deadlift, bench press, and shoulder press are the best strength-building exercises. they can be assistance lifts to complement the bench and shoulder press, keeping athlete's pulling muscles in balance with the pressing ones.
- focus on raising and lowering the weights in a controlled manner, pausing for a one-second count at the top of the lift. using an arbitrary tempo can lessen tension on muscles or force to use varying amounts of weight, slowing the progress. the only way to be sure that one is getting stronger is if the loads consistently increase.
- write down the exercises, sets, reps, and the fate of each workout. keep track of the best lifts and the most reps done with a certain weight on an exercise. constantly strive to improve those numbers
- try to stick to three or four lifts per workout. keeping your workouts short helps you take advantage of hormonal surges. when too many exercises are done in a session, at least some of them get done half. all that is needed is one main lift per workout (one of the big four), one or two assistance lifts (for keeping the body in balance and further strengthening the muscles that perform the main lift), and then core or specialty work at the

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	<p>end (ab exercises or some forearm or calf moves, depending on your goals). doing any more lessens your results.</p> <ul style="list-style-type: none"> <li>the athlete should rotate many different rep ranges in the workouts, but sets of five seem to offer the best blend of muscle size and strength gains.</li> <li>the main reason athlete's plateau and stop gaining strength is that they go too heavy for too long. one should do main lifts using 10% less than the most weight one can lift for the given rep range. increase the weight each session — but by no more than 10 pounds</li> <li>cardio is a must if one wants to be lean and healthy, but long-distance running or cycling increases levels of hormones that break down the muscle tissues. to get stronger while getting leaner, one must do cardio in short, intense bursts. go to a moderately steep hill and sprint to the top, then walk back down.</li> </ul>		
	<p>PC4. the two of the most important factors that combine to create an athlete's endurance profile are :-</p> <ul style="list-style-type: none"> <li>vo2 max, or the maximum rate at which an athlete's body can consume oxygen during exercise, is the most popular measurement of aerobic capacity</li> <li>lactate threshold, or the level of exertion at which lactate accumulates in the muscles. to improve lactate threshold—and therefore the</li> </ul>	8	1
		7	

	<p>ability to workout harder for longer periods of time</p> <p>PC5. coach athlete to increase stamina</p> <ul style="list-style-type: none"> <li>rest up-to go long and hard, athletes need fresh muscles</li> <li>eat right-when it comes to exercise nutrition, carbs is the key, since the body uses glycogen for fuel. once glycogen runs out, the body turns to energy from other sources, and begins to burn fat. for extended cardio sessions, one should consume 30-60 grams of carbs every hour, depending on body weight. studies have also found a mix of carbs and protein can enhance endurance performance and reduce muscle damage</li> <li>hiit- high intensity interval training—aka quick bouts of intense exercise—can help improve endurance in conjunction with traditional training. running for some stairs or trying a track workout for some speed. one should not ignore to get plenty of recovery after these workouts as they're very intense</li> <li>add some strength-when it comes to endurance training, variation is important. resistance training can strengthen the bones, ligaments, tendons, and muscles—helping improve overall fitness and helping with that final sprint to the finish. mix up aerobic exercise with kettle bells, dumbbell, and bodyweight exercises to help</li> </ul>		
	12	2	10

	<p>improve stamina</p> <ul style="list-style-type: none"><li>• turn on the tunes- listening to music has been shown to boost endurance performance while walking and because of this the mind-body connection is especially strong among endurance athletes</li><li>• work on what's weak- people often find their fitness niche and stick to it. instead, athletes should mix it up in order to build endurance</li><li>• drink beet juice- one study found nitrate-rich beets may help increase stamina up to 16 percent by reducing oxygen intake in athletes</li><li>• train smart- using the gradual adaption principle— that is, slowly and steadily increasing mileage and speed— is a great way to build endurance. there are ways to do this safely to avoid injury, from running on soft surfaces, to getting enough sleep and drinking tons of water.</li></ul>			
	PC6. analyse various principles of group dynamics and group management	4	1	3
	PC7. conduct an exhaustive planning of exercises suitable for groups in a cycling set up	3.5	0.5	3
	PC8. conduct benchmarking study to identify various interesting options for making the training sessions more engaging	3.5	0.5	3
	PC9. identify common reasons for which athletes don't attend the training sessions and design interventions to address these reasons	3.5	0.5	3
	PC10. select exercises that will help athletes to achieve goals like muscular fitness, improve lung capacity. boost energy	3.5	0.5	3

	levels and increase metabolism.			
	PC11. select appropriate equipment's	3.5	0.5	3
	PC12. anticipate the potential risks relevant to the programme and identify various mechanisms to minimize the same	3.5	0.5	3
	PC13. identify and finalize the fitness objectives to be achieved through the session.	3.5	0.5	3
	PC14. plan intensity and resistance assessment techniques	3.5	0.5	3
	PC15. ensure catering to the requirements of different set of clients i.e. the beginners, experts etc.	3.5	0.5	3
	PC16. obtain the information of group members in terms of their fitness profiles, training history, exercise preferences etc. in order to identify the needs and potential of the clients so as to encourage them for the participation in the group session	3.5	0.5	3
	PC17. change teaching positions during the session to improve observation and ask questions	3.5	0.5	3
	PC18. deploy effective verbal and visual communication while delivering the sessions	3.5	0.5	3
	PC19. identify the risks associated and plans accordingly in order to overcome them by describing the correct demonstrations of the body movement and positions and also the expected outcome from it	3.5	0.5	3
	PC20. the training sessions to be observed very carefully so that the proper feedback and instructing points can be provided in a timely manner in order to	3.5	0.5	3

	enhance the confidence and motivation of the clients				
	PC21. identify and address the issues/ concerns related to inappropriate behaviours of certain athlete/s		3.5	0.5	3
			<b>100</b>	<b>16</b>	<b>84</b>
<b>2. BWS/N3022 (Enable minimization of Athletic Injuries &amp; Conduct Fitness Assessment for Sports related activities of the client)</b>	<p>PC1. to reduce athletic injuries , following can be of great help:-</p> <ul style="list-style-type: none"> <li>• take time off. plan to have at least 1 day off per week from a particular sport to allow the body to recover.</li> <li>• wear the right gear. players should wear appropriate and properly fitting protective equipment such as pads (neck, shoulder, elbow, chest, knee, and chin), helmets, mouthpieces, face guards, protective cups, and/or eyewear.</li> <li>• strengthen muscles. conditioning exercises during practice strengthen muscles used in play.</li> <li>• increase flexibility. stretching exercises before and after games or practice can increase flexibility. stretching should also be incorporated into a daily fitness plan.</li> <li>• use the proper technique. this should be reinforced during the playing season.</li> <li>• take breaks. rest periods during practice and games can reduce injuries and prevent heat illness.</li> <li>• play safe. strict rules against headfirst sliding (baseball and softball), and spearing (football) etc. should be</li> </ul>	<b>100</b>	30	5	25

	<p>enforced.</p> <ul style="list-style-type: none"> <li>• stop the activity if there is pain.</li> <li>• avoid heat injury by drinking plenty of fluids before, during and after exercise or play; decrease or stop practices or competitions during high heat/humidity periods; wear light clothing.</li> </ul>				
	<p>PC2. educating the client about the benefit of fitness assessment</p> <ul style="list-style-type: none"> <li>• obtain scientific baseline measurements of your fitness levels</li> <li>• discover your movement style and how that affects your exercise programming</li> <li>• develop a personal awareness of your physical health</li> <li>• establish attainable goals and maintain accountability to them</li> <li>• recognize your potential risks of injury</li> <li>• increase your self-confidence in any workout environment</li> </ul>		30	5	25
	<p>PC3. fitness tests for specific fitness components. physical fitness is a complex, multifaceted phenomenon composed of:-</p> <ul style="list-style-type: none"> <li>• aerobic power- when developing a series of fitness tests, the sce should first refer to other coaching and sport science information. there they may find established tests which are proven for their own sport or at least suitable tests designed for similar sports that can be used with or without minor modifications. this will obviously greatly reduce the</li> </ul>		40	7	33



	<p>time required to deliver an effective series of tests, while providing the coach with reassurance that the tests they are using are appropriate.</p> <ul style="list-style-type: none"> <li>• anaerobic power and anaerobic capacity- tests for aerobic fitness must use the same type of exercise as the sport in which the individual participates and should generally last in the region of 8-15 minutes, any shorter and the increased anaerobic energy contribution may make the test less valid.</li> <li>• muscular endurance- these tests may assess either dynamic muscular endurance (the capacity to repeat contractions) or static muscular endurance (the capacity to sustain a muscular contraction). to be specific to a sport it is important to ensure that the test uses the appropriate muscle groups, through relevant ranges of movement and at suitable speeds. often this may not be entirely feasible and therefore standard endurance exercises such as the sit-up and press-up may be used.</li> <li>• muscular strength- tests for muscular strength should ensure that the muscles being assessed are appropriate and are used through a relevant range of movement, or in the case of static strength at a specific joint angle. in a laboratory setting, equipment such as dynamometers are</li> </ul>				
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	<p>often used but selecting and using fitness tests. such as cricket the test may be conducted over the distance between the wickets. in order to ensure the test is even more specific, the test should be conducted in full clothing and kit.</p> <ul style="list-style-type: none"> <li>• flexibility and joint mobility- field tests for flexibility/joint mobility range from simple “yes / no” assessments of whether the individual can perform a specific task, to the measurement of joint angles and ranges of movement (e.g. sit and reach test). by breaking down a movement into its component parts, the coach will be able to determine which joint movements are essential to performance and need to be assessed. for example, in hurdling good hip mobility and hamstring flexibility are necessary for good technique, whereas in team sports (e.g. football) an appropriate level of flexibility is required to reduce injury risk. when standardizing tests of flexibility/joint mobility the coach must pay close attention to, and note the position of all limbs, not just those being assessed. for example, if measuring hamstring flexibility in one leg the position of the other leg will influence the results. similarly, if measuring hip flexibility, movement in the back or pelvis may cause the</li> </ul>				
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	<p>measurement to be overestimated.</p> <ul style="list-style-type: none"> <li>• speed and acceleration tests- in many sports the performers must change direction rapidly. this may be assessed using tests such as star runs, where the performer runs from a central marker to other markers (usually 6-12) situated around the central marker while being timed alternatively a zigzag setup can be used to assess dodging/dribbling skills. the coach may wish to incorporate an assessment of turning ability and/or running forwards, backwards and sideways, as deemed applicable to the participants sport (e.g. football, hockey, tennis, etc.)</li> </ul>				
			100	17	83
<b>OPTIONAL NOS - Sports Conditioning Expert</b>					
<b>1. BWS/N3014 (Plan and conduct personal training for clients from different population groups)</b>	PC1. deploy the knowledge and understanding of various aspects of human anatomy and physiology while providing fitness related recommendations	<b>100</b>	3	1	2
	PC2. understand in detail various human body systems like circulatory system, musculoskeletal system, joints and bones, muscles, respiratory system etc. and impact of fitness programmes on their functioning		4	1	3
	PC3. identify the potential sources of injury and risks as per the needs and case of the client and keep the same under consideration while devising fitness programme		3	1	2
	PC4. understand in detail the medical history of the client and ask for a doctor's		3	1	2

	recommendation before planning for a fitness plan			
	PC5. evaluate the impact of exercise and its intensity on the energy levels of a client and consider the capacity of the client to perform the devised exercises basis his/ her background i.e. pre/post natal woman, disabled client etc.	4	1	3
	PC6. basis the health assessment and detailed understanding of anatomy & physiology of the client's body, plan a range of exercises for client to achieve his/ her goals	4	1	3
	PC7. as per the client's preferences, identify the appropriate training techniques	4	1	3
	PC8. identify and plan for availability of equipment needed for suitable exercises	3	1	2
	PC9. display sensitivity and empathy to the special set of clients which are emotionally vulnerable	4	1	3
	PC10. ensure proper communication and support to the attendants of special category clients (if applicable)	4	1	3
	PC11. explain in detail the planned exercise schedule to client	4	1	3
	PC12. communicate the physical demands of the planned exercises to clients	3	1	2
	PC13. discuss with client on any observed concerns/ changes/ modifications required in the plan	3	1	2
	PC14. observe the client carrying out the exercises and ensure	3	1	2

	right usage of the fitness equipment to prevent any injuries			
	PC15. develop phase wise detailed activity chart in consultation with the client	3	1	2
	PC16. provide clear instructions and demonstrations that are technically correct, safe and effective and ensure client is following them accurately without hurting himself/ herself or damaging the equipment	3	1	2
	PC17. plan outcomes and stages of achievement during personal training and agree on a progressive timetable of sessions	3	1	2
	PC18. discuss the methods of monitoring and evaluation of the performance of the client	4	1	3
	PC19. ensure that all the exercises are integrated in a single plan and being deployed by the client to achieve his/ her goals; in case, there are any concerns faced by client to perform any of the exercises, provide alternate options	4	1	3
	PC20. monitor the client's exercises and adherence to the planned schedule as well as analyse the performance of client on a daily basis	3	1	2
	PC21. progress or regress exercises according to clients' performance	3	1	2
	PC22. motivate the clients for ensuring adherence to plan; provide any related support to the clients in this regard	3	1	2
	PC23. communicate the	4	1	3

	anatomical changes in the body of client due to training programme				
	PC24. identify the signs of strain/ over work outs and recommend the strategies for prevention of the same		4	1	3
	PC25. adapt the training programme as per the client body's response, lifestyle changes, preferences etc.; discuss and agree of changes with the client		4	1	3
	PC26. discuss specific issues like cultural or social barriers to exercise and personal training		3	1	2
	PC27. provide the data to fitness manager in order to improvise/ addition in the existing portfolio of services		3	1	2
	PC28. obtain regular feedback from the client and analyse effectiveness of the personal training programme basis the feedback and goals achievement		4	1	3
	PC29.obtain feedback from technical standpoint		3	1	2
			<b>100</b>	<b>29</b>	<b>71</b>