School of Engineering and Technology

GURU GHASIDAS VISHWAVIDYALAYA
(A CENTRAL UNIVERSITY ESTABLISHED BY THE UNIVERSITIES ACT, 2009)
BILASPUR (C.G.) 495009

STUDENT'S
HANDBOOK

2014-15

Bachelor of Technology Programme
Department of Information Technology Engineering

Information Technology Engineering

Student's Handbook

INSTITUTE OF TECHNOLOGY,

GURU GHASIDAS VISHWAVIDYALAYA,

(A Central University)

BILASPUR, C.G. – 495009

Preface

The Institute of Technology under Guru Ghasidas Vishwavidyalaya (now a Central University since 15th Jan., 2009), Bilaspur (C.G.), was set up in the year 1997 with an objective of making available the facilities of quality higher education in the field of Engineering and Technology to the students of, particularly, the Central region of country where the rural and tribal population still remain deprived of such facilities. The Institute, remaining fully conscious of its objectives and responsibilities, is growing towards the level of a centre of excellence for quality engineering education in the country. Especially, after up-gradation of the University as a Central University, there has been many fold enhancements in infrastructural facilities as well as faculty and staff. Today, the Institute has well equipped laboratories with latest equipment, a good library, adequate computational facilities and smart E-classrooms needed for ensuring quality in higher education and research. The mission of the Institute is to create an ambiance in which new ideas, research and scholarship flourish and to engender the leaders and innovators of tomorrow.

The University campus houses faculties like Arts, Science, Social Science, Humanities, Law and Management etc, our students get opportunities of studying varied nature of elective courses from other faculties, and are groomed to work not only with a group of technically trained people but also with persons having knowledge in different domains of education.

The Institute on an average, admits around 400 students annually for the 4 - year undergraduate B. Tech programme in seven branches. Admissions are made through Joint Entrance Examination (JEE) (main) or the entrance examination conducted as per the directions of MHRD, Govt. of India. Presently, M.Tech. programme is being run by two departments (Mechanical and Chemical Engineering) and the students who are Graduate Aptitude Test in Engineering (GATE) qualified get admitted. To keep pace with new developments and changes in the field of technology, the Institute revises its Undergraduate and Postgraduate Programmes syllabi from time to time. Institute follows semester system of teaching (odd- July - December; and even- January – June).

Ours is a student-centric Institution and, therefore, the endeavor is always to ensure that students are offered the quality and value based education and training so as to create not only outstanding scientists and engineers but also good citizens.

This booklet contains comprehensive information on the existing Rules and Regulations governing the B.Tech. Programmes. The students and parents/ guardians are, therefore, advised in their own interest to get fully familiar with the academic system of the Institute and rules and regulations. Students' attention is particularly drawn to the attendance requirement, regular assessment procedures, conditions of promotion to higher semesters and grading system, etc.

Thank you for your interest in the Institute of Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur. We wish all our students a very bright future and successful career.

Dean (SOS, Engg. & Tech.)

Sl. No	Content	Page. No.
1.	Preface	03
2.	Introduction	06
3.	Ordinance – 12	07
4.	Scheme & Syllabus of B.Tech.-1stYear	16
5.	Scheme & Syllabus of 2nd , 3rd & 4th Year	32
6.	Code of Conduct for Students	84
7.	About Ragging	86
8.	Discipline Among Students in University Examinations	96
9.	Important contact details.	101
10.	Phone No.of Staff and Faculty Members of IT Engineering Department	104

Introduction:

Guru Ghasidas Vishwavidyalaya, a Central University established by an Act 2009 of the Parliament, was originally established as State University by an Act of State Legislative Assembly of the then undivided Madhya Pradesh on 16 June 1983. GGV is an active member of the Association of Indian Universities and Association of Commonwealth University. The National Assessment and Accreditation Council (NAAC) has accredited the University as B.

Situated in a socially and economically challenged area, the Vishwavidhyalaya is appropriately named to honour the great Satnami Saint Guru Ghasidas (born in 17th century), who championed the cause of the downtrodden and waged a relentless struggle against all forms of social evils and injustice prevailing in the society.

The Vishwavidyalaya is a semi-residential institution. The Vishwavidyalaya covers almost the total spectrum of higher education in 32 numbers of Vishwavidyalaya teaching departments offering various courses in the areas of Arts, Commerce, Education, Engineering and Technology, Humanities, Life Sciences, Management, Pharmacy, Sciences and Social Sciences. The lush green sprawling campus of the Vishwavidhyalaya spread over an area of aprox. 655 acres is located five KM away from the main Bilaspur Town. River Arpa, the lifeline of Bilaspur, runs parallel to the Vishwavidhyalaya campus. Bilaspur is a fast Industrializing City, already having a large number of industrial units coming up in the region. The area is the nerve center of trade in iron and steel, coal, aluminium, textiles, foodgrains, ' Kosa' silk, cement, paper, furniture and jewellery and is internationally known for its rice production. The Vishwavidyalaya aims at disseminating and advancing knowledge by providing instructional and research facilities in various branches of learning. It promotes innovation in teaching learning process, interdisciplinary studies & research, establish linkages with the industries for the promotion of science & technology, educate and train man-power for the development of the country and is committed to the improvement of the social, economic conditions and welfare of the people by improving their intellectual, academic and cultural development.

The city is well connected with all parts of the country by road and rail. Being a railway zone, Bilaspur facilitates travel by train to and from any part of the country. 120 Kilometers away, at Raipur, the Capital of Chhattisgarh, is the nearest airport.

Institute of Technology:

The Institute of Technology is a prestigious institute of higher learning producing meritorious students with excellent career growth and universal recognition. The students get the best of opportunities in the form of highly advanced courses, eminent faculty members, well-equipped laboratories, library, hostels and immense facilities to excel in research and development. The selection procedure for students at undergraduate and postgraduate is highly stringent so that Institute of Technology gets the best brains of India. Highly scientific and innovative technology is used for teaching and carrying out research activities. Every year Institute of Technology is enriched by the laurels brought by the faculty members and

the students in the form of research publications, projects, fellowships and industrial exposure.

The Institute awards Bachelors and Masters Degrees in various branches of technology. It has been making special efforts to recruit talented faculty on a world-wide basis and to admit bright students from all over the country by a careful selection process through Central Counseling Board (CCB), Government of India based upon AIEEE merit. The Institute has about 1600 undergraduate students. We have one of the finest technological libraries with complete information retrieval system.

The Institute has well established Training & Placement Cell which provides the necessary facilities to the students for their placements. The Training & Placement Cell of the Institute will strive to develop itself as one of the best placement centre in our country.

The Institute of Technology is poised to reach heights with its quality research, training, collaborations, and projects. It has signed MOUs with some reputed organizations like IBM and IIT Kanpur. The faculty is also involved in research and development and has a number of publications to their credit and some are under process. Finally Institute of Technology produces career ready graduates who are immediately employee.

Department of Information Technology Engineering

The Department has been conceived with the ambitious objectives of developing professional expertise and skilled manpower in Information Technology (IT) and related areas. This will contribute in enabling the country to exploit efficiently emerging opportunities, and meet economic challenges being thrown up by the rapid global IT revolution, which is influencing virtually every area of development and social activity. The syllabi and courseware are designed to be flexible and wide-ranging, incorporating the cutting edge as well as ensuring a firm grasp of core fundamentals. A modular course design, along with several opportunities for industry training, gives students the freedom to tailor their learning experience. The department is committed to establish facilities for education and training in the field of IT for students and faculty members. The alumni students of this department are performing well in different multinational companies (MNC's). Some of our students are performing well in the competitive exams of international/National repute like GRE, GATE, and MATS etc.

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ORDINANCE – 12

AMENDED ORDINANCE

GOVERNING THE AWARD FOR THE DEGREE OF

BACHELOR OF TECHNOLOGY

(B. TECH. - 4 YEARS (8 SEMESTERS) DEGREE COURSE)

IN THE SCHOOL OF STUDIES, ENGINEERING AND TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
[EFFECTIVE FROM SESSION 2013-14]

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1.0 GENERAL

The first degree of four years (Eight Semester) Course in Technology, hereinafter called 4-year B.Tech degree course, shall be designated as 'BACHELOR OF TECHNOLOGY' in respective Branches. The conduct of the programme and the performance evaluation of B. Tech. courses are on the basis of percentage of marks earned as well as credit system.

2.0 ADMISSION

The minimum qualification for admission to the first year B. Tech. shall be the passing of Higher Secondary School Certificate Examination (10+2) scheme with Physics, Chemistry and Mathematics conducted by Central Board of Secondary Education or any other equivalent examination from recognized Board or University. The candidate shall be eligible for admission on the basis of the merit list of Joint Entrance Examination (JEE) (main) or any other entrance examination decided by Guru Ghasidas Vishwavidyalaya for Admission to B. Tech. degree course time to time. In general the admission to B. Tech. degree course shall be governed by the rules of, MHRD, Govt. of India and Guru Ghasidas Vishwavidyalaya.

3.0 ATTENDANCE REQUIREMENT (as per UGC Model Ordinance)

3.1   A Student shall be required to attend at least 75% of the classes actually held in the semester which may include theory class, seminars, sessionals/ practicals, as may be prescribed.

Provided that the Dean of the School concerned on the recommendations of the Head of the Department may condone the shortage in attendance not exceeding 5% for valid and convincing reasons.

Provided, further that students representing the Institute/University in the extra co-curricular events be given a extra concession up to 5% attendance, if necessary, in addition to the relaxation in the attendance requirement as provided above. Such concessions would be available for the days of actual participation in the event, including journey time, with the prior approval of the Dean of the Students Welfare.

3.2   A student who does not satisfy the requirement of attendance as per clause 3.1, he/she will be detained due to shortage of attendance in a particular semester and he/she will have to repeat the same semester taking re-admission as a regular student in the next commencing academic session.

4.0 DURATION

The duration of undergraduate (U.G.) degree programmes leading to B. Tech. degree, shall be normally four years and the maximum duration shall be six years from the date of initial registration in First year B.Tech. Course. If a candidate will not be able to complete the course in the maximum duration of 6 years then he / she will not be eligible to continue the course from that point of time itself

5.0   EXTRA ORDINARY LONG ABSENCE

If a student does not participate in the academic activities of the School of Studies of Engineering and Technology of this Vishwavidyalaya for a period exceeding two years he / she shall neither be permitted to appear in any subsequent examinations nor shall be admitted or promoted to any semester and he / she shall cease to be a student of B. Tech. Degree Course. Here participation in academic activity means attending Lectures, Tutorials, Practicals/Sessionals and such other activities declared as academic activities.

6.0 EXAMINATIONS

6.1   _Medium of Instruction/Examination_ – Medium of instruction and examination shall be English only.

6.2   _Practical/ Sessional Work_ – The student shall be required to complete the Laboratory / Drawing / Design / Job preparation and other academic work assigned for that semester in the session.

6.3   There shall be a full End Semester Examination at the end of each semester consisting of theory papers, practicals/ sessionals.

6.4 *Preparation Leave* – A preparation leave, as decided by the University time to time shall precede the End Semester (Main) Examination of each semester.

6.5 There shall be one End Semester Examination (ESE) at the end of each semester conducted by Guru Ghasidas Vishwavidyalaya. Only those students, who will satisfy the attendance requirement to be eligible to appear at the End Semester Examination as per clause 3.0, will be permitted to appear in the End Semester Examination. The examination will consist of theory papers, laboratory practical/sessional and viva-voce as per the scheme of examination of that semester. These examinations shall be designated as follows.

a. During First year - I & II sem. B. Tech. Examination

b. During Second year- III & IV sem. B. Tech Examination

c. During Third year - V & VI sem. B. Tech. Examination

d. During Fourth year - VII & VIII sem. B. Tech. Examination

6.6 The semester examination will normally be held in the month of November-December and April – May in every academic session, or as decided by the University time to time.

6.7 Supplementary examination will be held only once in a year (for both even and odd semesters) normally in the month of July/August, or as decided by the University time to time.

6.8 End Semester Examination time table shall be declared by the Controller of Examination before the commencement of examination.

7.0 PASSING OF EXAMINATION

7.1 *Basis of Subjects Evaluation*

7.1.1 For passing in a subject (theory / practical/sessional) the performance of the candidate in each semester shall be evaluated subject wise. There shall be continuous assessment throughout the semester by conducting quizzes / class tests/assignments/seminar, etc. and mid semester examination, called as Internal Assessment (I.A.) carrying 40% weightage, and End Semester Examination (E.S.E.) carrying 60% weightage. For each practical/sessional subject 60% weightage will be given to the actual practicals/sessionals performed during the semester I.A. and 40% weightage will be given to the End Semester Examination (E.S.E.).

7.1.2 For evaluation of end semester practical/sessional examination of a subject, there shall be a panel of three examiners appointed by Head of the Department. All the three

examiners shall be internal from the concerned department of the Institute of Technology, or external examiners may also be appointed.

7.1.3   To allot the marks of Internal Assessment (I.A.), there will be one Mid Semester Examination (M.S.E.) in each theory subject of that semester, apart from Class Tests (CT) and Assignments.

7.2   *Passing Marks in a Subject*

For passing a subject the student is required to fulfill the following conditions:

(a)   Must have appeared at the End Semester Examinations of that subject.

(b)   Must have secured minimum 40% marks (Marks of Internal Assessment + Marks of End Semester Examination) for each theory subject.

(c)   Must have secured minimum 50% marks (Marks of Internal Assessment + Marks of End Semester Examination) for each practical/sessional subject.

(d)   Must have scored minimum total aggregate of 45% marks in the semester.

(e)   If a student has cleared all the Theory and Practical/Sessional subjects of a semester, but has failed to secure overall 45% aggregate in the semester then he/she will be allowed to re-appear in theory supplementary Examination in those subjects in which the student's score is less than 45%.

(f)   If a student has passed a semester examination in all the subjects as per clause 7.2 (a-d), he/she shall not be permitted to reappear in that examination for improvement in grades/division.

7.3   *Basis of Credits*

Credit of a theory or practical/sessional subject is decided by:

Credit = {L+ (T+P)/2}, where L = Lecture periods per week, T = Tutorial period per week, P = Practical/Sessional periods per week. Credit in a subject will be an integer, not in a fractional number. If a credit in a subject turns out in fraction, it will be taken as next integer number.

8.0   ASSESSMENT AND GRADING

8.1 Mode of Assessment and Evaluation

8.1.1 For Theory Subjects

For the assessment of performance of students in a semester, continuous evaluation system will be followed with two components : Internal Assessment (IA), carrying 40% weightage and End Semester Examination. (ESE), carrying 60% weightage. There will be at least two class tests and one mid semester examination in each theory subject in a semester forming

the part of Internal Assessment (IA). Evaluation in End Semester Examination shall be done internally.

8.1.2 For Practical/ Sessional Subjects

Evaluation of practical/sessional during the semester will form 60% weightage and the End Semester Examination (ESE) will carry 40% weightage.

8.2   *Grading System*

Percentage as well as absolute grading system will be followed, in every subject, theory or practical/sessional. A student will be awarded a **Letter Grade**, based on his combined performance of Internal Assessment (IA) and End Semester Examination (ESE). These grades will be described by letters indicating a qualitative assessment of the student's performance through a number equivalent called "Grade Point" (GP) as given below. The following is the **Grade Point** pattern. Grade 'F' indicates not clearing (passing) of the subject.

Letter Grade (LG)	A+	A	B+	B	C+	C	F
Grade Point	10	9	8	7	6	5	0

Grades will be awarded for every theory and practical/sessional subject separately.

8.3   *Absolute Grading System*

The Absolute Grading System as explained below will be adopted for theory and practical/sessional subjects.

GRADE	THEORY	PRACTICAL/SESSIONAL
A^+	90 ≤ Marks ≤ 100%,	90 ≤ Marks ≤ 100%,
A	80 ≤ Marks < 90%,	82 ≤ Marks < 90%,
B^+	70 ≤ Marks < 80%,	74 ≤ Marks < 82%,
B	60 ≤ Marks < 70%,	66 ≤ Marks < 74%,
C^+	50 ≤ Marks < 60%,	58 ≤ Marks < 66%,
C	40 ≤ Marks < 50%,	50 ≤ Marks < 58%,
F	0 ≤ Marks < 40%,	0 ≤ Marks < 50%,

8.4 Semester Performance Index (SPI)

Performance of a student in i^{th} semester is expressed by $[SPI]_i$ which is a weighted average of course grade points obtained by a student in the semester, and is expressed by

$$[SPI]_i = \frac{[C_1G_1 + C_2G_2 + ...]_i}{[C_1 + C_2 + ...]_i} = \frac{\left[\sum C_j G_j\right]_i}{\left[\sum C_j\right]_i} = \frac{N_i}{D_i}$$

Where C_j stands for Credit and G_j stands for Grade points corresponding to j^{th} subject in a semester. SPIs will be calculated up to two places of decimal without rounding off. SPI will be calculated only when a student clears a semester without failing in any subject, theory or practical/sessional.

8.5   *Cumulative Performance Index (CPI)*

This is a weighted average of course grade points obtained by a student for all the courses taken, since his / her admission to the degree program with 50% weightage of I and II semester marks and 100% for the remaining semesters. Thus, CPI in the ith semester with "i" greater than 2 will be calculated as follows

$$[CPI]_i = \frac{0.5[N_1 + N_2] + \sum_{k=3}^{k=i} N_k}{0.5[D_1 + D_2] + \sum_{k=3}^{k=i} D_k}$$

If a student repeats a course or is declared fail in a subject, then only the grade points earned in the attempt when he / she cleared the course / subject are counted towards CPI. CPI will be calculated in every semester along with SPI, so that a student knows his / her latest CPI.

8.6   Award of Class or Division

8.6.1   The class/division awarded to a student with B. Tech. Degree shall be determined by the student's CPI after clearing all the subjects of all the eight semesters, as given below:

- First Division with Distinction or **Honours**   : $7.5 \leq CPI \leq 10.0$
- First Division   : $6.5 \leq CPI < 7.5$
- Second Division   : $5.0 \leq CPI < 6.5$

8.6.2   Division shall be awarded to a student only after clearing all the eight semesters successfully, and having earned a total credit of **208** for the award of B.Tech. degree. It shall

be based on the integrated performance of the candidate for all the eight semesters as per clause 8.6.

8.6.3   No student shall be declared to have passed the final B.Tech. course unless he/she has fully passed all the eight semesters. The results of the eighth semester of those students, who have not passed examination in any previous semester, will be withheld. Such students shall be deemed to have passed the final B.Tech. examination in the year in which they pass / clear all the subjects of all the eight semesters, within the limit of the prescribed period of the whole course.

8.7   Conversion of CPI / SPI in Percentage

Percentage of particular semester   = SPI × 10

Percentage of B.Tech. Degree   = CPI × 10

9.0   PROMOTION TO HIGHER PART (YEAR) AND HIGHER SEMESTER

9.1   Those students who have cleared all the theory, practical/sessional subjects prescribed for the odd semester of that part (Year) shall be promoted to the next higher (even) semester of the same part (year). Here, Part – I, Part-II Part-III and Part-IV mean First year, Second year, Third year, and Fourth year respectively during the B.Tech. programme.

9.2   Those students who have not cleared all the theory, practical/sessional subjects prescribed for the odd semester, for such students to be promoted from odd to the next higher even semester of the same part (year), they will have to pass at least N/2 number of subjects (theory, practical/ sessional) where N is even number of total subjects (theory, practical/sessional) prescribed for that odd semester,   and (N+1)/2 number of subjects (theory, practical/ sessional) where N is odd number of total subjects (theory, practical/ sessional) prescribed in that odd semester.

9.3   Supplementary examinations will be held only once in a year (for both even and odd semesters) normally in the month of July/August after declaration of results of even semester examination of the incumbent session, or as decided by the University time to time.

9.4   Those students who would have backlogs in theory and/ or practical/ sessional subjects in the odd and or even semesters of any part (year) will be allowed to appear in the supplementary examination of the same part (year) only once (one time).

9.5   Those B.Tech. students who are allowed to appear the supplementary examination (of odd or even or both semester)**,** may be provisionally admitted to attend the classes of

the next higher odd semester of the next part (year). However, such provisionally admitted students will become regular only after passing in all their backlog papers in supplementary examination, if eligible otherwise.

9.6 If a student fails to clear in the supplementary examination all the backlogs of theory, practical/sessional subjects of the odd and even semesters, he/she will not be promoted to the odd semester of the next higher part (year), and such student shall be treated as ex-student.

9.7 Ex-students, (as per clause – 9.6), shall be required to clear their backlog papers (theory and or practical/sessional subjects), in the end semester examination of the corresponding semesters (odd and even) to be conducted next year (in the following academic session). Such ex-students will be required to deposit the examination fees only.

9.8 If an ex-student fails to clear all remaining backlogs (theory and practical/sessional subjects) which he/she could not clear as an ex-student in the previous year, he/she will be allowed to appear in the corresponding examination of odd and even semester examinations in the next subsequent year as a last chance. Such ex-students will be required to deposit only examination fees. For example, if a first year student does not clear all the subjects being ex-student in two consecutive years, he/she will be relieved from the programme at the end of the semester. As such, as an ex-student, a student will be allowed to appear in the end semester examination of not more than two academic sessions throughout his/her B.Tech. programme. At any time during his/her B.Tech. programme, if a student has availed two number of attempts for appearing in the end semester examination as an ex-student, for clearing the backlog papers (theory and practical/sessional subjects), he/she will be relieved from the programme at the end of the semester.

9.9 If a student fails to appear in the practical/sessional examination of a semester due to unforeseen incident, a makeup end semester practical/sessional examination may be conducted, if required, strictly on the recommendation of the concerned Head of the Department, and approval of the Dean (Engineering & Technology).

10.0   BRANCH CHANGE AFTER FIRST YEAR RESULT

Starting from the session 2011-12, students admitted in First Year B. Tech. course of the Institute of Technology having CPI of 08 or above at the end of their First Year course, are allowed to change their branch according to merit and subject to the seat availability in the branch where students want to shift. Only those students will be considered for the branch change who would have cleared all the subjects of First and Second semesters in the first attempt itself in the End Semester Examination.

11.0   TRANSCRIPT

Transcript will be provided to the students as per the University norms

12.0   INTERPRETATION

In case of any dispute in the matter of interpretation of this Ordinance, the decision of the Executive Council of the University. shall be final and binding on the students.

13.0 POWER TO MODIFY

Notwithstanding all that has been stated above, the Academic Council of the University has the right to propose any modifications or amendments to the Executive Council for final decision of the above regulations and further actions from time to time.

14.0 Matters not covered in this Ordinance shall be governed by the relevant ordinance of the University.

Scheme & Syllabus

I- SEM. & II-SEM.

(B.Tech.-1stYear)

SCHEMEOF EXAMINATION B.Tech – I Year, Common to All Branches, Course – A, w.e.f. Session: 2012 - 13

S. No.	Subject Code	Subjects	Periods / Week			Percentage Credit of Internal Assesment				% Credit of E.S.E	Grand Total	Total Credit
			L[1]	T[2]	P[3]	M.S.E[4]	C.T[5]	L.A.[6]	Total			
1.	BSH-111	Professional Communication in English	3	1	-	20	20	-	40	60	100	4
2.	BSH-112	Engineering Chemistry	3	1	-	20	20	-	40	60	100	4
3.	ME-113	Engineering Mechanics	3	1	-	20	20	-	40	60	100	4
4.	CSE-114	Introduction to Computer Programming	3	1	-	20	20	-	40	60	100	4
5.	BSH-115	Engineering Maths - I	3	1	-	20	20	-	40	60	100	4
PRACTICAL												
1.	BSH-116	Engineering Chemistry Lab	-	-	3	-	-	30	30	20	50	2
2.	ME-117	Engineering Mechanics Lab	-	-	3	-	-	30	30	20	50	2
3.	ME-118	Engineering Drawing	-	-	3	-	-	30	30	20	50	2
Total Work Load / week : 29 Total Credit : 26 Total Marks : 650												

SCHEMEOF EXAMINATION B.Tech – I Year, Common to All Branches, Course – B, w.e.f. Session: 2012 - 13

S.No.	Subject Code	Subjects	Periods / Week			Percentage Credit of Internal Assesment				% Credit of E.S.E	Grand Total	Total Credit
			L[1]	T[2]	P[3]	M.S.E[4]	C.T[5]	L.A.[6]	Total			
1.	BSH-121	Environmental Studies	3	1	-	20	20	-	40	60	100	4
2.	ME-122	Engineering Thermodynamics	3	1	-	20	20	-	40	60	100	4
3.	BSH-123	Basic Electrical & Electronics Engineering	3	1	-	20	20	-	40	60	100	4
4.	BSH-124	Engineering Physics	3	1	-	20	20	-	40	60	100	4
5.	BSH-125	Engineering Maths – II	3	1	-	20	20	-	40	60	100	4
PRACTICAL												
1.	BSH-126	Basic Electrical & Electronics Engg. Lab	-	-	3	-	-	30	30	20	50	2
2.	BSH-127	Engineering Physics Lab	-	-	3	-	-	30	30	20	50	2
3.	WS-128	Workshop Practice	-	-	3	-	-	30	30	20	50	2
Total Work Load / week : 29 Total Credit : 26 Total Marks : 650												

1: Lectures Hours, 2:Tutorials Hours, 3: Practicals Hours, 4: Mid Semester Exam, 5: Class Tests (Two), 6: Lab Work Assesment

BSH 111 - PROFESSIONAL COMMUNICATION IN ENGLISH

BSH-111	Credits	L	T	P
	4	4	1	0

UNIT-I: Business Communication : Some key concepts; Meaning and process of communication, Types, channels, Medium of Communication, Barriers of communications, Professional communication; types and principles.

UNIT-II: Business Letters; Elements and layout of a business letter, Application, enquiries, calling quotation, sending quotation, orders complains and adjustment.

UNIT-III: Report writing; Technical reports; essentials, characteristics and structure. Observation report survey report, trouble report, project report.

UNIT-IV: Reading comprehension; Developing comprehension skill through reading of passanges, summarizing, précis writing etc.

UNIT-V: Speaking; The process of speaking. Various phonetory orangs. Introduction to phonetics, classification of pure English sounds. Relation between sound, symbol and alphabet.

Suggested Books and References :

1. D'Souza Evnice and Shahani, G; "Communication Skills in English" Noble Publishing House.

2. Fiske, John, "Introduction to Communication Studies" Rotledge London.

3. Sharma, R.C. and Mohan,, K "Buisness Corres, Pondence and Report Writting", Tata Magraw Hill, New Delhi.

4. Gartside, "Model Business Letter", Pitman London, 1992.

5. Chhabra, Dr. T.N., "Professional Communication, Sun India Publications,New Delhi.

BSH 112 – ENGINEERING CHEMISTRY

3	Credits	L	T	P
	4	3	1	0

[Total 42 h]

Unit – I: Chemical Bonding and Transition Metals   (8h)

VSEPR theory, Valance Bond Theory and Molecular Orbital Theory. Structures of coordination compounds corresponding to coordination numbers up to 6. Geometrical and optical isomerism.

UNIT – II: Structure and Reactivity of Organic Molecules   (8h)

Inductive effect, hyper conjugation, resonance and steric hindrance. Carbocation, carbanion and Free Radicals. Basic concept of nucleophilic & electrophilic-addition, elimination and substitution reactions. Mechanisms of the reactions viz., Aldol condensation, Cannizzaro reaction, Perkin Reaction, Beckmann Rearrangement and Hoffmann rearrangement.

UNIT – III: Reaction Dynamics & Electrochemistry   (8h)

Thermodynamics of chemical process: Concept of entropy, Chemical potential and equilibrium, Dynamics of chemical reactions: order of reactions, chain reactions and photochemical reactions. Basic concept of electrochemistry & corrosion.

UNIT – IV: Polymers and Stereochemistry   (8h)

Basic concepts and types of polymers, mechanism of polymerisation, vulcanisation, natural rubber, Nylon-6, Nylon-6.6., PVC, PET, PS, PE. Stereoregularity in polymers. Conformational analysis (acyclic and cyclic molecules), geometrical and optical isomerism; E, Z and R, S nomenclature.

UNIT – IV: Spectroscopy and Chromatography   (10h)

Theory and application of UV-visible, Infrared and 1H NMR spectroscopy in organic compounds. Wood words-Fieser rule for calculating λmax. Basic concept and application of TLC and column chromatography.

Books recommended:

1. Kalsi, P.S.; "Stereochemistry conformation and Mechanism", New Age Int. (P), Ltd. New Delhi, 1997.

2. Puri, B. R.; Sharma, L. R. And Pathania, M. S. "Principals of Physical Chemistry", Shoban Lal Nagin Chand & Co.

3. Mukherji, S. M. And Singh, S. P., "Reaction Mechanism in Organic Chemistry" Macmillan India Ltd., New Delhi 2007. Alberty R.A. and Silbey R. J., "Physical Chemistry", John Wiley & Sons, Inc., Singapore, 1996.

4. Cotton F.A., Wilkinson G. and Gaus P.L., "Basic Inorganic Chemistry", John Wiley & Sons, Inc., Singapore, 3rd Ed., 1996.

5. Graham-Solomon T.W., "Fundamentals of Organic Chemistry", John Wiley & Sons, Inc., Singapore, 1997.

6. Odian T.W., "Principles of Polymerization", John Wiley & Sons, Inc., New York, 1981.

7. Sykes P., "A Guidebook to Mechanism of Organic Chemistry", Longman Inc., New York, 1981.

8. Dye J.R. r, "Application of absorption Spectroscopy of Organic Compounds", Prentice Hall of India, 1965.

9. Williams D.H. and Fleming I., "Spectroscopic Methods in Organic Chemistry", Tata McGraw Hill Edition, New Delhi, 4th Ed., 1988.

10. Atkins P.W., "Physical Chemistry", Oxford Univ. Press, 4th Ed., 1990.

11. Morrison R.T. and Boyd R.N., "Organic Chemistry", Prentice Hall of India, 6th Ed., 1992.

12. Rao C.N.R. and Agarwala U. C., "Experiments in General Chemistry", East-West Press, New Delhi, 1969.

ME 113 - ENGINEERING MECHANICS

BSH-113	Credits	L	T	P
	4	3	1	0

UNIT-I: Force, classification of force, laws of the forces, equilibrium, moment, varignon's theorem, parallel force, couple, General case of equilibrium and their problems.

UNIT-II: Trusses – Analysis by methods of joints and methods of sections. Frames – Analysis of frames, difference between truss & frames.

UNIT-III: Friction, law of friction, General problems on friction, wedge friction, Belt friction, Ratio of tension of belt, power transmitted by a belt, Condition of maximum power transmission by belt. Screw friction – Expression for maximum efficiency of a screw jack, and its problems. Simple lifting machine – Velocity Ratio, Mechanical Advantage, Efficiency, reversibility of a machine, wheel and axle, pulley system & its types, single purchase & double purchase winch crab.

UNIT- IV: Centroid and centre of gravity, Methods & procedure of finding C.G by method of

moments and method of integration for various geometrical areas. Moment of Inertia – various theorems on M.I, Radius of gyration, polar M.I, Centroidal axis, Area moment of inertia, product of Inertia & their problems, Introduction of mass moment of inertia.

UNIT-V: Dynamics of body, D 'Alembert's principle, rectilinear motion, work and energy, impulse & momentum and principles of conservation of momentum, collision of elastic bodies.

Recommend Text Books

1. Engineering Mechanics – Beer Johnson, TNH publisher

2. Engineering Mechanics – K.L. Kumar, TMH publisher.

3. Engineering Mechanics - Mokashi, TMH, Publisher

4. Engineering Mechanics – Timoshenko & Young, East West publisher

5. Engineering Mechanics - Irvin Shames, PHI publisher

6. Engineering Mechanics – A.K. Tayal . Umesh publication

CSE 114 - INTRODUCTION TO COMPUTER PROGRAMMING

BSH-114	Credits	L	T	P
	4	3	1	0

UNIT I : Hardware Organization of computer; Introduction of computer, Evolution , types of computer , block diagram of computer , internal architecture of CPU, I/O units (keyboard, monitor, printers etc.) computer memory : primary and secondary memory, cache memory and virtual memory.

UNIT II : Data Representation and system software; Number system, conversion of one number system to another number system.Software, classification of software (application and system software), concept of operating system such as DOS, UNIX, WINDOWS, function of Operating system.Compiler , Interpreter, Assembler and Device drivers.

UNIT III : Introduction to Programming Language; Introduction to software devlopment, Algorithms and its characteristics, Flow chart: symbols, rules for drawing flow charts, decision tables. Origin of C : data type, constants, variables, operators and expressions, operator precedence and associativity rules, header and library files of C.

UNIT IV : Decision making and control statements in C; Decision making and branching : simple if statement, if else statement, nested if--- else statements, switch statements. unconditinal statements : break , continue, goto . Looping : for loop, Do While loop, While loop. Application to simple problems of general nature.

UNIT V : Function and Arrays in C; Function and its pros and cons, function prototype, calling a function, actual and formal arguments ,parameter passing techniques , returning values from function. Arrays: one dimensional and two dimensional arrays. Overview of pointers. Introduction of object oriented programming methodology.

Reference Books:

1. Computer fundamentals by P.K.Sinha

2. Computer fundamentals by B.Ram

3. Fundamentals of Computers by V.Rajaraman

4. Programming in C By E. Balagurusamy

5. Programming in C by Byron Gottfrid.

BSH-115: ENGINEERING MATHS-I

BSH-115	Credits	L	T	P
	4	3	1	0

UNIT-1: Differential Calculus ; Successive Differentiation Leibnitz Theorem, Roll's Theorem, Lagrange's Mean value Theorem, Expansion of functions by Maclaurian and Taylor's series. Tangents and Normal's, Maxima and minima of one van able.

UNIT-II: Indeterminate forms, Asymptotes, Radius of curvature, Partial differentiation, Total differentiation.

UNIT-III: Integral Calculus; Reduction formulae, Curve Tracing, Length, Area, Surface volume, Theorem of Pappas or Guldin. Gamma function, Beta function.

UNIT-IV: Differential Equations; Differential Equations of first order and its applications, Linear equation of second order, Simultaneous differential equation.

UNIT-V: Partial differential equation of first order, Linear homogenous partial differential equation, Application of partial differential equation.

Books Recommended :

1-Diffrential Calculus by Gorakh Prasad.

2-Integral Calculus by Gorakh Prasad.

3-Diffrential Equation by P.N. Chattrjee.

4-Engineering Mathematics by Bali & Iyangar.

5- Engineering Mathematics by H.K. Das.

6-Higher Engineering Mathematics by B.S. Grewal.

BSH 116 – ENGINEERING CHEMISTRY LAB

BSH-116	Credits	L	T	P
	2	0	0	3

1. To determine the Normality and Strength (g/L) of given KMnO4 solution titrating against standard (N/30) Mohr's salt solution

2. To determine the Normality and Strength (g/L) of given Ferrous Ammonium Sulphate solution 'A' using standard Ferrous Ammonium Sulphate (N/30) solution 'B' taking KMnO4 solution as an intermediate.

3. To determine the concentration of hypo solution (Na2S2O3.5H2O) iodimetrically titration with given Iodine (N/50) solution

4. To prepare the Urea Formaldehyde resin and calculate the yield.

5. To prepare the Aspirin and calculate the yield.

6. Study of Bomb Calorimeter

7. Study of Cleveland's Apparatus

8. Find out the Total hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator.

9. Find out the Permanent hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator

10. Find out the Temporary hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator.

11. Determination of dissolved oxygen in the given sample water

12. To determine chloride ion in a given water sample by Argentometric method (Mohr's method)

ME 117 - ENGINEERING MECHANICS LAB

ME-117	Credits	L	T	P
	2	0	0	3

1. Varification of Law of Parallelogram of force.

2. Verification of law of triangle of forces.

3. Verification of law of polygon of forces.

4. Verification of law of moment.

5. Practical verification of forces in the member of nib crane.

6. Practical verification of forces in the member of roof truss.

7. Determination of coefficient of friction between two given surface.

8. Determination of coefficient of wheel and axle.

9. Determination of coefficient of single purchase winch crab.

10. Determination of coefficient of double purchase winch crab.

11. Determination of coefficient of simple screw jack.

ME-118 ENGINEERING DRAWING

ME-118	Credits	L	T	P
	2	0	0	3

UNIT- I: CONVENTIONAL LINES, DRAWING SHEETS – THEIR LAYOUT &

PLANNING; Technical lettering – Introduction, single stroke letters, capital and lower letters Scales – Introduction, Representative fraction, construction of scales, Types- plain & diagonal scale. Cycloid curve- Cycloid, Epicycloids & Hypocycloid, Involutes to a plain curve. Spiral curve – Archimedean spiral and logarithmic spiral.

UNIT- II: Projection of points; Concept of quadrant system, first angle and third angle projection, projection of point in all quadrants. General procedure to draw projection of points on HP & VP. Projection of lines – Different situation of lines in spaces.

UNIT- III: Theory of orthographic projection & projection of planes.

UNIT –IV: Projection of solids & section of solids

UNIT – V: Development of Surfaces & Isometric Projection

Recommended Text Book

1. Fundamental of Engineering Drawing – Luzzadar & Dulf, PHI

2. Engineering Drawing – N.D. Bhatt, Charottar Publishing House

3. Engineering Drawing – Arshad Siddiquee, Zahid Khan & Ahmed , PHI

4. Engineering Drawing – P.S. Gill, S.K. Kataria & Sons publishers.

BSH-121 - ENVIRONMENTAL STUDIES

BSH-121	Credits	L	T	P
	4	3	1	0

Environment and ecology: Segments of environment. Concept, structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem, food chains, food webs and ecological pyramids. Types, characteristic features, structure and function of terrestrial and aquatic ecosystem. **Environmental Pollution:** Definition, cause, effects and control measures of Air pollution, Water pollution and Land pollution. Smog (Oxidizing & Reducing), Acid rain, Green house effect, Ozone depletion, BOD, COD, Eutrophication, and Solidwaste management.

Green Chemistry: Introduction, Principles of green chemistry, Introduction to green solvents and green catalysis: Water, Ionic liquid, CO_2, bio-catalysis.

Green technologies: Photochemistry, Sonochemistry, and Microwave assisted reactions.

Renewable energy resources: Solar, Wind, Hydro, Geothermal, Ocean, Fuel cells.

Books:

1. G. M. Matlers, Introduction to Environmental Engg. & Sciences, Prentice Hall of India Pvt. Ltd.

2. B. J. Novel, Environmental Sciences, Printice Hall Inc.

3. A.K. De, Environmental Chemistry, New Age International (P) Ltd., 5th Ed.

4. Thomas G. Spiro, William M. Stigliani, Chemistry of the Environment, 2nd Edition Prentice Hall of India pvt. Ltd.

5. S. V. S Rana, Essential of Ecology and Environmental Sciences, 4th Edition, PHI, Learning Pvt. Ltd.

6. S.S Dara, Environmental chemistry and Pollution Control, S. Chand & Company Ltd.

7. V. K. Ahluwalia, Green Chemistry: Environmentally Benign Reactions, Ane Books India, New Delhi, 2006.

8. M. M. Srivastava, R. Sanghi, Chemistry for Green Environment, Narosa, New Delhi, 2005

9. D. P. Kothari, Rakesh Ranjan, and K. C. Saigal, Renewable Energy Sources and Emerging Technologies, Prentice Hall of India Pvt. Ltd.

10.M.C. Das & P.C. Mishra, Man & Environment, McMillan India Ltd.

ME-122 ENGINEERING THERMODYNAMICS

ME-122	Credits	L	T	P
	4	3	1	0

UNIT-I: BASIC CONCEPTS AND DEFINITION; Thermodynamic System, Surrounding and Universe, Phase, Microscopic and Microscopic Point of View, Thermodynamic Equilibrium, Property, state, Path, Quasi-static Process, Reversible and Irreversible process. Heat and work Forms of work during quasi-static or reversible process, work as a path function, Heat, various thermodynamic processes. Temperature and Zeroth law of thermodynamics, First law of thermodynamics- first law of thermodynamics undergoing cyclic process, first law of thermodynamics undergoing a process, Internal energy of a perfect gas, Application of first law to a closed system, First law of thermodynamics for flow process- flow processes and control volume, flow energy and flow work, first law of thermodynamics applied to open system, General study flow energy equation, application of study flow energy equation

UNIT-II: SECOND LAW OF THERMODYNAMICS; Limitation of first law and essence of second law, thermal reservoir, heat engine, thermal efficiency of heat engine, heat pump and co-efficient of performance, statement of second law, equivalence of Kelvin and clausius statement, types of Irreversibility, Carnot cycle, Corollary 1 & 2, Entropy -Clausius inequality, Entropy Principle, temperature and entropy diagram, application of entropy principle.

UNIT-III: PROPERTIES OF PURE SUBSTANCE; Properties of steam – types of steam, wet, saturated and superheated steam, phase transformation at constant pressure, T-s and h-s diagram, sensible heat, latent heat, superheat, internal energy, enthalpy, dryness fraction. Steam Processes – Constant volume, adiabatic, isothermal, polytropic, entropy of steam.

UNIT- IV: Vapour Power cycle; Carnot vapour cycle, rankine cycle , effect of operating conditions on ranking efficiency, principle & method of increasing the thermal efficiency, deviation of actual cycle from theoretical cycle, thermal efficiencies and specific steam

consumptions, requirement of an ideal working fluid, the reheat cycle, binary vapour cycle

UNIT-V: Gas power cycles & Boilers; Air Standard Cycle- Otto, Diesel and Dual, Comparison among cycles, Boilers, Types, Requirements of boiler, boiler efficiency, boiler mountings and accessories.

Recommend Text Books

11.Engineering Thermodynamics - P.K. Nag , TMH publisher.

12.Engineering Thermodynamics – C.P. Arora, TMH publisher.

13.Engineering Thermodynamics - Cengel, TMH, Publisher

14.Engineering Thermodynamics - Jones Dugan, PHI publisher

15.Fundamentals of Engg Thermodynamics - R. Yadav, C. P House publisher

16.Applied Thermodynamics – Onkar Singh, New Age Publishing Co.

BSH 123 -BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

BSH-123	Credits	L	T	P
	4	3	1	0

UNIT 1: - Dc Networks: Kirchoff's Laws, node voltage and mesh current methods, star-delta transformation, classification of Network Elements, Superposition theorem, Thevenin and Norton theorems, maximum power transfer theorem, only independent sources, source conversion.

UNIT 2: - Single Phase AC Circuits: RMS value, average value, form factor, solution of R,L,C series and parallel circuits, representation of impedance, phasor diagram, power in complex notation, series and parallel resonance. Three phase AC Circuits: Delta and star connections, line and phase quantities, solution of three phase circuits, balanced supply voltage and balanced load, phasor diagram, measurement of power in three phase circuits.

UNIT 3: - Introduction of Electrical Machines – Faradays' laws of electromagnetic induction, Single phase Transformer: Construction, emf equations, rating, phasor diagram on no load and full load, equivalent circuit, regulation, losses, efficiency, open and short circuit tests.

UNIT 4:- D. C. Machines: Construction, emf and torque equations, classification and application and characteristics of DC motors, speed control. Single and three phase Induction Motors: Construction, principle of operation, torque-slip curve, starting of single phase IM, application of three phase and single phase induction motors.

UNIT 5: - Semiconductor Devices: V-I characteristics of P-N Junction diode, diode parameters, equivalent circuits, zener diode, working and characteristics, applications.Rectifiers: Analysis of half wave & full wave rectifier with resistive load, efficiency, ripple factor, filter circuits,

Suggested Text Books and References:

1. Electrical Technology by B.L.Theraja, volume 1 and 2.

2. Electrical Technology by Ian Mckenzie-Smith and Edward Hughes.

3. Basic Electrical Engineering by I.J.Nagrath (TMH)

4. Fitzrald and Higgonbothom: Basic Electrical Engineering, 5th Edition, MGH.

5. Del Torro, Vincent: Electrical Engineering Fundamentals, 2nd Edition, PHI.

6. Cotton H: Advance Technology, ISSAC Pitman, London.

7. Electronic principles: A. V. Malvino

8. Electronic Devices: Bell

9. Electronic Devices & Circuits: Sanjeev Gupta

10. Electronic Devices & Circuits: Robert. L. Boylestad

BSH 124 - ENGINEERING PHYSICS

BSH-124	Credits	L	T	P
	4	3	1	0

UNIT – I: Special Theory of Relativity; Reference frames, Concept of ether, Michelson-Morley experiment, Einstein's postulates, Lorentz Transformation, Length contraction, Time dilation, variation with velocity, and Mass-Energy equivalence.

UNIT – II: Interference and Diffraction of Light, Introduction of Interference, Young's experiment, theory of Interference, Coherent and non-coherent sources, Fresnel's Bi-prism, Newton's ring. Introduction of diffraction, Fresnel and Fraunhofer diffraction, resultant of n harmonic waves, diffraction due to Plane diffraction grating.

UNIT – III: Electromagnetism; Coulomb's law and superposition principle, Electrostatics Field and potential, Electric Flux, Gauss's law and its Applications, Poisson's and Laplace's equations, Equation of continuity, Ampere's law and its Applications, Maxwell's Electromagnetic equations and their physical significance, Electromagnetic energy (Poynting Theorrem), Electromagnetic waves in free space.

UNIT – IV: Solid State Physics and Devices; Energy band gap of metals, insulators and semiconductors, Intrinsic and Extrinsic semiconductors, Fermi levels in intrinsic and extrinsic semiconductors, Electrical conductivity in conductors and semiconductors, Construction, working and Applications of P-N Junction diodes and transistor.

UNIT – V: Wave Mechanics and Laser; Introduction, wave-particle duality, De Broglie waves, Wave equation, Phase and Group Velocity, Davisson and Germer experiment. Introduction, elementary idea of spontaneous and stimulated emission, active medium, population inversion, Einstein's coefficients, Applications of lasers.

Text Book's and References

1) Engg. Physics by S. K. Srivastava and R. A. Yadav, New Age Pub. New Delhi

2) Engg. Physics by Uma Mukherjee, Narosa Publication

3) Engg. Physics by M. N. Avadhanulu, S. Chand Pub.

4) Engg. Physics by R. K. Gaur and S. L. Gupta, Dhanpat Rai Pub..

5) Electricity and Magnetism by Rangwala and Mahajan, Tata McGraw Hill, 1998

6) Concepts of Physics Part -II by H. C. Verma, Bharati Bhawan (P&D), 1998

7) Modern Physics by Beiser, McGraw Hill Inc. New York, Publication 1995

8) Modern Physics by Mani and Mehta, East-West Press Pvt. Ltd. 1998

BSH 125 – ENGINEERING MATHS-II

BSH-125	Credits	L	T	P
	4	3	1	0

UNIT-1: Linear Algebra: Vector space, Linear dependence and Linear Independence Linear transformation, Rank & Inverse by elementary transformation, System of Linear equations-inconsistency, Eigen valve and Eigen vectors, Caley Hamilton theorem and its application to find inverse.

UNIT-II: Theory of Equations: Polynomial & Polynomial equation, Division Algorithm, roots of equations, Reminder theorem, Factor theorem, Synthetic division, Fundamental theorem of Algebra. Multiplication of roots, Reciprocal equations, Symmetric function of the roots, Descarte's Rule of sign, Cardon's Method, Ferrari's Method Descarte's Method.

UNIT-III: Vector Calculus: Vector functions, Differentiation of vectors, Velocity and acceleration, Scalar and vector field, Gradient of Scalar field, Directional derivative, properties of gradient, Divergence of vector, Point Function, curl of vector point function, properties of divergence and curl, Integration of vector function, Line integral, Surface Integral, Green, Gauss theorem and Stoke's theorem (without proof) and their simple applications.

UNIT-IV: Complex Number : Complex number and its properties, conjugate complex number, Standard form of complex number, De Moivre's theorem, Root's of complex number, Exponential function of complex variable, Circular function of complex variable, Hyperbolic function of complex number, Logarthim of complex number C + iS method of summation.

UNIT-V: Sequence, Convergent, Divergent, Oscillating sequence, Infinite series, Ratio test, Root test, Comparison test, Raabe's Logarithmic test, Couchy's Root test, Gauss's Test, Leibnitz Test Conditionally convergant.

BSH 126 -BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB

BSH-126	Credits	L	T	P
	2	0	0	3

List of Laboratory Experiments:
1. Verification of Ohm's Law, KVL & KCL.
2. Verification of Superposition theorem.
3. Verification of Maximum Power Transfer Theorem.
4. Verification of Thevenin's and Norton's Theorem.
5. To Find power factor & circuit constants in R-L-C series circuit.
6. To find V-I characteristics of incandescent Lamp.
7. O.C. & S.C. Tests on single phase transformer.
8. Diode characteristics.
9. Half wave & Full wave Rectifier.
10. Study of Filters.
List of books for laboratory:
1.Laboratory courses in Electrical Engg: Tarnekar, Kharbanda, Bodkhe & Naik.
2.A text book of practicals in Electrical Engg: Dr. N.K.Jain
3.Electronics Practical Manuals.

BSH 127 - ENGINEERING PHYSICS LAB

BSH-127	Credits	L	T	P
	2	0	0	3

List of Experiments
1. To determine the wavelength of sodium light with help of Fresnel's Bi-prism.
2. To determine the refractive index and dispersive power of the material of prism with the help of spectrometer.
3. To determine the wavelength of sodium light by Newton's ring method.
4. To determine the wavelength of sodium light by plane diffraction grating.
5. To demonstrate the diffraction pattern and determine the wavelength of different colors of mercury light using diffraction grating.
6. To determine the wavelength and number of lines per cm on a diffraction grating using semiconductor laser diode.
7. To determine the specific rotation of sugar solution with the help of polarimeter.
8. Determine the width of the single slit and diameter of circular aperture using Fraunhofer diffraction pattern produced by semiconductor laser diode.
9. To determine the Energy band gap (Eg) of a semiconductor material using P-N junction diode.
10. To determine the e/m ratio by Thomson's method
11. To study the P-N junction diode characteristics, in forwarded and reverse bias conditions.
12. To study the Zener diode characteristics.
13. To study the characteristics and gain of Transistor in C-B and C-E mode.
14. To study the FET characteristics and determine different parameters.
15.To study the MOSFET characteristics
Text Book's and References
1. Engg. Physics Practical by M. N. Avadhanulu, S. Chand Pub.
2. Unified Practical Physics by R. P. Goyal
3. Engg. Physics Practical by Ruby Das et. al.
4. Engg. Physics Theory & Experiments by S. K. Srivatava, New Age International

WS 128 - WORKSHOP PRACTICE

WS-127	Credits	L	T	P
	2	0	0	3

Fitting Shop: Preparation of step cutting a job of 5mm thick strip. Preparation of V-notch and V-groove out of 5mm thick strip. Preparation of male female joint out of 5mm thick strip.

Machine Shop: Job on Lathe with plane turning, facing, chamfering and step cutting operation. Job on Shaper for finishing two sides of a job. Job on Drilling machine – drilling holes of size 5mm and 12mm diameter on a job.

Welding Shop: Preparation of Butt joint, Lap joint, T-joint, Corner joint from the given work piece using arc welding.

Carpentry Shop: Prepare a simple Butt joint, Cross Lap joint, T-Lap joint, T-Hole joint and Mortise and Tenon joint.

Smithy and Forging Shop: Forging principles, Study of operations like drawing, upsetting, bending and forge welding.

Foundry Shop: Study of preparation of a mould of one piece pattern on the bench.

Reference books:

i. Workshop Technology by Hajara Choudhary, Vol.-I & II.

ii. Workshop Technology by B.S.Raghuwanshi, Vol.-I & II.

iii. Manufacturing Process by H.S.Bawa, Vol.-I & II.

Scheme & Syllabus

(2nd Year to 4th Year)

B.Tech.

(Information Technology

Engineering)

III- SEM. to VIII-SEM.

SCHEME of B.TECH.-III- SEMESTER – INFORMATION TECHNOLOGY ENGINEERING

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
SECOND YEAR, INFORMATION TECHNOLOGY
SEMESTER III

Session: 2013-2014

Sl. No.	Course No.	SUBJECT	PERIODS			Credits			
THEORY			L	T	P	IA	ESE	SUBJECT TOTAL	
1	IT2101	Numerical Analysis & Computer Applications	3	1	-	40	60	100	4
2	IT2102	Mathematics III	3	1	-	40	60	100	4
3	IT2103	Object Oriented Programming with C++ & application	3	1	-	40	60	100	4
4	IT2104N	Data Structure & Programming Methodology	3	1	-	40	60	100	4
5	IT2105N	Software Engineering and Project Management	3	1	-	40	60	100	4
		TOTAL	15	5		200	300	500	20

.	Course No.	SUBJECT	PERIODS			Credits			
PRACTICAL			L	T	P	IA	ESE	SUB TOTAL	
6	IT2106	Computer Programming Lab	-	-	3	30	20	50	2
7	IT2107N	Data Structure Lab	-	-	3	30	20	50	2
8	IT2108N	NACA Lab	-	-	3	30	20	50	2
		TOTAL			9	90	60	150	06

IA – Internal Assessment   ESE – End semester Exam.   Total Credits: 26

SCHEME of B.TECH. - IV - SEMESTER - INFORMATION TECHNOLOGY ENGINEERING

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
SECOND YEAR, INFORMATION TECHNOLOGY
SEMESTER IV

Session: 2013-2014

Sl. No.	Course No.	SUBJECT	PERIODS			Credits			
THEORY			L	T	P	IA	ESE	SUBJECT TOTAL	
1	IT2201N	Digital Logic and Design	3	1	-	40	60	100	4
2	IT2202N	Computer Network	3	1	-	40	60	100	4
3	IT2203	Network Analysis and Synthesis	3	1	.	40	60	100	4
4	IT2204	Introduction to Communication	3	1	-	40	60	100	4
5	IT2205	Discrete Structure	3	1	-	40	60	100	4
			15	5		200	300	500	20

.	Course No.	SUBJECT	PERIODS			Credits			
PRACTICAL			L	T	P	IA	ESE	SUB TOTAL	
6	IT2206	Mini Project	-	-	3	30	20	50	2
7	IT2207N	Digital & Logic Design Lab	-	-	3	30	20	50	2
8	IT2208	Communication Lab	-	-	3	30	20	50	2
		TOTAL			9	90	60	150	06

IA – Internal Assessment   ESE – End semester Exam.   Total Credits: 26

SCHEME of B.TECH. – V - SEMESTER - INFORMATION TECHNOLOGY ENGINEERING

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
THIRD YEAR, INFORMATION TECHNOLOGY
SEMESTER V

Session 2013-2014

Sl. No.	Course No.	SUBJECT	PERIODS			Credits			
	THEORY		L	T	P	IA	ESE	SUBJECT TOTAL	
1	IT3101N	Advanced Computer Organization	3	1	-	40	60	100	4
2	IT3102	Operating System	3	1	-	40	60	100	4
3	IT3103	Data Base Management System	3	1	-	40	60	100	4
4	IT3104	Microprocessor & Interfacing	3	1	-	40	60	100	4
5	IT3105N	Analysis and Design of Algorithm	3	1	-	40	60	100	4
		TOTAL	15	5		200	300	500	20

	Course No.	SUBJECT	PERIODS			Credits			
	PRACTICAL		L	T	P	IA	ESE	SUB TOTAL	
6	IT3106	Microprocessor Lab	-	-	3	30	20	50	2
7	IT3107	Operating System Lab	-	-	3	30	20	50	2
8	IT3108	Data Base LAB	-	-	3	30	20	50	2
		TOTAL			9	90	60	150	06

IA – internal Assessment,   ESE – End semester Exam.   Total Credits : 26

SCHEME of B.TECH. – VI - SEMESTER - INFORMATION TECHNOLOGY ENGINEERING

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
THIRD YEAR, INFORMATION TECHNOLOGY
SEMESTER VI

Session 2013-2014

Sl. No.	Course No.	SUBJECT	PERIODS			Credits			
	THEORY		L	T	P	IA	ESE	SUBJECT TOTAL	
1	IT3201	Object Oriented System & Java Programming	3	1	-	40	60	100	4
2	IT3202	Interactive Computer Graphics	3	1	-	40	60	100	4
3	IT3203	Introduction to Information Science	3	1	-	40	60	100	4
4	IT3204N	Theory of Computation	3	1	-	40	60	100	4
5	IT3205	Mobile Communication	3	1	-	40	60	100	4
		TOTAL	15	05		200	300	500	20

Sl. No.	Course No.	SUBJECT	PERIODS			Credits			
	PRACTICAL		L	T	P	IA	ESE	SUB TOTAL	
6	IT3206	Computer Graphics Lab	-	-	3	30	20	50	2
7	IT3207	Java Programming Lab	-	-	3	30	20	50	2
8	IT3208	Project	-	-	3	30	20	50	2
		TOTAL			9	90	60	150	06

IA – internal Assessment,   ESE – End semester Exam.   Total Credits: 26

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
FORTH YEAR, INFORMATION TECHNOLOGY
SEMESTER VII

Session 2013-2014

Sl. No.	Course No.	SUBJECT	PERIODS			Credits			
THEORY			L	T	P	IA	ESE	SUBJECT TOTAL	
1	IT4101	Advance Operating System	3	1	-	40	60	100	4
2	IT4102	Introduction to .NET Technology	3	1	-	40	60	100	4
3	IT4103	Data Mining and Warehousing	3	1	-	40	60	100	4
4	IT4111	Multimedia System Design	3	1	-	40	60	100	4
5		Professional Elective – I	3	1	-	40	60	100	4
		TOTAL	15	05		200	300	500	20

Sl. No.	Course No.	SUBJECT	PERIODS			Credits			
PRACTICAL			L	T	P	IA	ESE	SUB TOTAL	
6	IT4105	Major Project Synopsis	-	-	3	60	40	100	4
7	IT4106	Advance Operating System Lab	-	-	3	30	20	50	2
8	IT4107	.NET Technology Lab	-	-	3	30	20	50	2
		TOTAL			9	120	80	200	08

IA – Internal Assessment,   ESE – End semester Exam.   Total Credits: 28

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
FORTH YEAR, INFORMATION TECHNOLOGY
SEMESTER VIII

Session 2013-2014

Sl. No.	Course No.	SUBJECT	PERIODS						Credits
THEORY			L	T	P	IA	ESE	TOTAL	
1	IT4201	Artificial Intelligence & Expert System	3	1	-	40	60	100	4
2	IT4202	Information and Network Security	3	1	-	40	60	100	4
3	IT4203	Management Information System	3	1	-	40	60	100	4
4		Professional Elective – II	3	1	-	40	60	100	4
		TOTAL	12	04		160	240	400	16

S No.	Course No.	SUBJECT	PERIODS						Credits
PRACTICAL			L	T	P	IA	ESE	TOTAL	
5	IT4204	Information and Network Security Lab	-	-	3	30	20	50	2
6	IT4205	Artificial Intelligence & Expert System Lab	-	-	3	30	20	50	2
7	IT4206	Major Project	-	-	9	60	40	100	4
		TOTAL	-	-	15	120	80	200	8

IA – Internal Assessment,   ESE – End semester Exam.   Total Credits: 24

Professional Elective – I		Professional Elective – II	
Subject Code	Subject Name	Subject Code	Subject Name
IT4108	Wireless Sensor Network	IT4206	Internetworking and Network Programming
IT4109	Digital Signal Processing	IT4207	Software Testing and Quality Management
IT4110	Image Processing	IT4208	Information Technology for Automation
		IT4209	Grid and Cloud Computing
IT4112	Real Time System	IT4210	Cyber Crime and Laws
IT4113	Advanced Database Design	IT4211	Advanced Computer Architecture
IT4114	Web Technology & E-Commerce	-	-
IT4115	Compiler Design		

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2101	3	1	3	3 HOURS	40	60	4

NUMERICAL ANALYSIS & COMPUTER APPLICATIONS

UNIT – I   Approximations and Errors in Computation: Errors and their analysis, Types of errors, General Error – formula, Errors in   numerical computation. Curve fitting : Method of Least squares , fitting of a straight line , fitting of an exponential cures , polynomial fit : Non linear Regression (second degree parabola) , Least Square Approximation , Method of moments.

UNIT – II Numerical Solution of Algebraic and Transcendental Equations: Graphical method bisection Method, Secant Method ,Regulfalsi Method, Newton Raphson Method, Iteration Method AITKEN'S Method Newton rate of convergence. Solution of a system of simultaneous linear algebraic Equations Direct method: Gauss elimination Method, Gauss Jordan method, triangularisation method crout's method choleshy method, Ill conditioned system of equation and refinement of solution. Iterative methods .Jacobi Iterative Method, Gauss Seidel Iterative method, Successive over relaxation (SOR) method.

UNIT – III   The Calculus of Finite Differences: Finite differences, Difference formula, operators and relation between operators. Differences of a polynomial factorial polynomial, Effect of an error on a difference table. Inverse Operator, Interpolation with equal intervals: - Newton's forward and backward interpolation formula. Central difference interpolation formula:-gauss's forward and backward interpolation formula, Sterling's formula Bessel's formula, Lap lace – Everett is formula, choice of interpolation formula. Interpolation with Unequal intervals: - Lagrange's interpolation Newton's difference formula, hermit's interpolation, inverse interpolation,

UNIT –IV Numerical Differentiation and Integration: - Numerical Differentiation Newton's forward and Backward difference interpolation formula. Maxima and Minima of a Tabulated function, Numerical Integration   :- Newton-cote's quardrative formula Trapezoidol rule , simpson is (1/3)rd and (3/8) th rule , Boole's rule, weddle rule , Difference Equations -: Definition ,order and degree of a diference equation ., Linear difference equations, Difference equations reducible to Linear form . simultaneous difference equations with constant coefficents . Applications

UNIT – V   Numerical solution of ordinary differential equation :   Taylor series method , Picard's Method , Euler's method, Modified Euler method Runge's method Runge Kutta method , predict corrctor method , Milne's method , Adam – Bashforth method. Numerical solution of partial differential Equations :   Classification of P.D.E. of the second order Elliptic equations , solution of Laplace equation , solution of poisson's Equation, solution of elliptic equations by Relaxation method parabolic equations , solution of one two dimensional heat equation Hyperbolic Equations , solution of wave equations .

SUGGESTED BOOKS & REFERENCE:-

1. JAIN & IYNGAR Numerical Methods for Scientific and Engineering Computations.

2. RAO G.S. Numerical Anlysis.

3. Grewal B S Numerical Methods In Engineering and Science.

4. Das K K Advance Engineering Methods.

5. Rajaraman V Computer Oriented Numerical Methods

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2102	3	1	0	3 HOURS	40	60	4

MATEHMATICS – III

UNIT – I Functions of Complex Variables: Limit, Derivative, Analytic function, Cauchy-Riemann equations, Harmonic functions, Geometrical representation, Transformation, Bilinear transformation, Application to Flow problems, Complex integration, Cauchy's integral theorem and integral formula, Taylor's & Laurent's series, Singular point, Poles & residues, Residue theorem & its application to contour integration.

UNIT – II Fourier Series: Periodic functions, Definition of Fourier series, Euler's formulae, Dirichlet conditions, Change of interval, Even and odd functions, Half range Fourier Sine & Cosine series, Parseval's identity, Practical harmonic analysis.

UNIT – III   Laplace Transform: Definition, Linearity, Shifting & scaling properties, Transform of elementary functions, Transform of Derivatives and integrals, Multiplication by t & division by t, Inverse Laplace transform, Convolution theorem, Transform of periodic functions, Unit step function & Dirac delta function, Initial value & final value theorems, Application to solution of ordinary differential equations.

UNIT – IV Fourier Transform: Definition of Fourier integrals – Fourier Sine & Cosine integrals, Complex form of Fourier integral, Fourier Sine & Cosine transforms, Complex form of Fourier transform, Linearity, Shifting & scaling properties, Modulation theorem, Inverse Fourier transform, Fourier transform of derivatives.

UNIT – V Wavelet – Transform: Introduction to wavelets, Basic functional Specification, Admissibility condition, Continuous wave transform definition, CWT as a correlation, constant Q Factor , Filtering interpretation and time frequency resolution, Inverse CWT.

SUGGESTED BOOKS & REFERENCE:-

1. H.K.Das, "Advance Engg. Mathematics", S-Chand Publication

2. B.S.Grewal, "Higher Engg. Mathematics", Khanna Publishers

3. Erwin Kreyszig, "Advance Engg. Mathematics", John Wiley & Sons.

4. Louis A.Pipes, "Applied Mathematics for Engineers & Physicists", TMH

5. Rao R.M. & Bopardikar A.S., 'Wavelet Transforms-Introduction to Theory and Applications'

6. Sidney Burrus, Gopinath R.A. & Haitao Guo, Introduction to Wavelets and Wavelet

Transforms", Prentice Hall International.

7. Chan Y.T., 'Wavelet Basics', Kluwer Academic Publishers

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2103	3	1	3	3 HOURS	40	60	4

Object Oriented Programming with C++ & application

UNIT I Principles of OOP –A look at procedure oriented programming , OOP paradigm , Basic Concepts of OOPs , Benefits of OOP , object oriented Language. Beginning with C++ characters used in C++ , Basic Data Types , C++ Tokens, Identifiers , Keywords , Constants , Variables , Input / Output statements ,Structure of C++ program.

UNIT II Operations and Expressions - Concept, Arithmetic Operations and Expressions, Relational and Logical operators and Expressions ,Order of evaluation of expressions ,Type conversion , Compound assignment Operator ,Standard Library Functions and header files. Flow of control – Compound statement , sequential structure ,selection structure ,simple if

,if … else nested if , ladder ,switch , go to , loop structure , do … while ,for , statement break , continue , function exit ( )

UNIT III   Array and Function - Concept of array, Concept of subprogram, Parameter passing in function, Function prototype, Calling function, Call by value, Call by reference, Array parameters, Default argument, Returning values, Scope rules, Storage class, Inline function, Function overloading, Recursive functions.

Structure, Class and Object - Define structure, Returning structure elements, Nested structure, Passing structure to function, User defined data type, Specifying a class, Defining member function, Scope of class and its member, Nested class, Data Hiding and encapsulation, Friend function, Object as function argument, Function returning object, Static member.

UNIT IV   Constructors, Destructors, constructor function, parameterised multiple constructor, Default constructor, Copy constructor and Destructor function. Inheritance and aggregation - Derived class, various type of inheritance, Inheriting Constructors, Parts explosion as aggregation, Abstraction and property of aggregation, Constructing aggregations. Polymorphism, overloading and operator overloading.

UNIT V   Pointer and virtual function - Pointer variable, dynamic allocation operators, new and delete, this operator Pointers to derived class. Working with files - File & stream, Opening and closing a file, read ( ) and write ( ) functions, detecting end of file.

Reference Books :

Object Oriented Programming With C++ by M. P. BhaveS. A. Patekar, Pearson Education

Object Oriented Programming With C++ by E. Balaguruswamy.

Object Oriented Programming in turbo C++ by Robert Lafore.

Programming with C++ by D. Ravichandan.

Programming with C++(SOS) by Hubbard.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2104N	3	1	3	3 HOURS	40	60	4

DATA STURCTURE & PROGRAMMING METHODOLOGY

UNIT I - String algorithms, Arrays algorithms development simple examples of algorithm development, complexity, Divided & conquer binary search, selection sort, insertion sort, merge sort, quick sort, complexity of sorting.

UNIT II - Linear list: Stacks, application of Stacks, arithmetic notations, queues and circular queues , Linked list definition in C, creation and deletion of nodes , circular and doubly linked list .

UNIT III - Trees: Basic Technology , Binary Tree ,Binary tree representation , algebra Expressions , complete Binary Tree, Extended Binary Tree, Array and linked Representation of Binary trees, traversing Binary trees , traversing Threaded Binary trees, Binary search trees(BST) , Insertion and deletion in BST, AVL trees, heap sort.

UNIT IV - Graph and representation: graph algorithms, minimum spanning tree, shortest path, DFS, BFS search, hashing.

UNIT V - Files: File organization, sequential file, direct file organization, index sequential file organization, Data storage and management.

Reference Books

1. Data structures with c, schaum's outline series by seymour lipschutz.
2. Data Structures and Algorithm Analysis in C++, 2/e by Mark Allen Weiss, Pearson Education Wirth Niclaus , "Algorithm + Data Structure = Programs " PHI
3. Horwitz E. and Sahani S. "Fundamentals and Data Structure ", Computer Science Press. Knuth D. "Threat of Computer Programming ", Vol 1-2 Addision - Wesley 1970-80
4. Aho A.V.Hopcraft and Ullman J.E. "Data Structure and Algorithms " addsion Wesley ",1992. Tanonbaum , A.M.and Augenstein , M.J. "Data Structure with Pascal" PHI 1985.
5. Trambley and Sorenson "Data Structure using Pascal " , MGH 1985.
6. Stubbs D. "Data Structure with Abstract Data Type and Modula 2", Brooks & Cole Publication Comp 1987

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2105N	3	1	0	3 HOURS	40	60	4

SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

UNIT I

Software Engineering – What is software, Characteristics of software, Application of software, SDLC, Software Process Models - Linear Sequential model, Prototype model, RAD model, Incremental model, Component Based Development Model, Spiral Model, Fourth Generation Techniques?

UNIT II

Software Requirement Specification-Problem Analysis, Requirement Specification, Validation, metrics, monitoring and control. Models, The Make /Buy Decision. Software Project Management - Cost estimation, project scheduling, Staffing, Software configuration management, Quality assurance, Project Monitoring, Risk management etc.

UNIT III

System Design - Problem portioning, abstraction, top-down and bottom-up design, structured approach, Functional versus Object oriented approach, design specification and verification, metrics, monitoring and control.

MANAGING SOFTWARE PROJECT: The Management Spectrum-People, Product, Process, Software Process and Project Metrics - Measures, Metrics and Indicators, Process and Project Metrics.

UNIT IV

Coding: Top–down and bottom-up structured programming, information hiding, programming style, internal documentation, verification. Metrics, monitoring and control.

Software Measurement-Size Oriented Metrics, Function Oriented Metrics, Metrics For Quality- Overview, Measuring Quality, DRE.

UNIT V

Software testing – software Testing fundamentals, white box testing, Basics path testing, A strategic Issues, Unit testing, Integration testing, validation testing, System Testing software metrics, software evaluation, software maintenance & reliability.

List of Books:

1. Software Engg, Pressmen
2. Software Engg, Pankaj Jalote
3. Software Engg, Shaum's Outline Series
4. Fundamentals of Software Engineering, Rajib Mal.

SEMESTER IV

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2201N	3	1	3	3 HOURS	40	60	4

DIGITAL LOGIC AND DESIGN

UNIT-1   BINARY SYSTEM   Binary : Number , Number Base conversion , Octal and Hexadecimal Numbers Complements ,Binary Codes Binary Storage and Registers , Binary Logic , Integrated   Circuits, Properties of Boolean algebra Boolean Functions.

UNIT – 2 SIMPLIFICATION OF BOOLEAN FUNCTIONS: The K-map method Two –and Three – Variable Maps, Four –Variable Map, Sum of Product and Product of sums Simplification, NAND and NOR implementation, don't –Care Conditions. COMBINATIONAL LOGIC: Introduction, Design procedure Adders, half /full adders, half /full Subtractors, Multilevel NAND Circuits, Multilevel NOR Circuits.

UNIT -3   COMBINATIONAL LOGIC WITH MSI AND LSI – Introduction Binary Parallel Adder, Decimal , Adder ,Magnitude Comparator , Decoders and encoder ,BCD to 7 segment decoder , Multiplexers and Demultiplexers ,Read – Only Memory (ROM)   , Programmable Logic Array (PLA).

UNIT- 4   SEQUENTIAL LOGIC: Introduction Flip –Flops , triggering of Flips –Flops , Analysis of Clocked Sequential Circuits , State Reduction and Assignment . Flip –Flop Excitation Tables.

UNIT -5 REGISTERS, COUNTERS, AND MEMORY UNIT Introduction, Registers, shift Registers, Ripple Counters, Synchronous Counters, Timing Sequences, The Memory Unit Examples of Random Access Memories.

REFERENCES:

1   Digital Logic & Computer Design PH1 M Mano
2   Switching Circuit & Finite automata –ZVI Kohavi (TMH)
3   Fletcher W.I.: An engineering approach to Digital design PH1

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2202N	3	1	0	3 HOURS	40	60	4

Computer Network

UNIT I Network topologies, synchronous and asynchronous transmission, error detection techniques like parityCheck, LRC and CRC (Cyclic Redundancy check).

UNIT II Circuit switching, circuit switched networks, switching concepts, space division switching, and time division

Switching. Packet switching: - Packet switching principles, switching techniques, comparison with circuit switching, routing and congestion control algorithms, introduction to spread spectrum and its applications.

UNIT-III Uses of Computer Network, Network hardware, Layered Architecture, function of the layers, Network Standardization, OSI & TCP/IP Reference model, Physical layer services & hardware protocols. DATA LINK CONTROL: - Framing, Flow Control: Stop and wait Protocols, Sliding Window Protocols. Error Detection & Error Control, High Level Data Link Control (HDLC),Other Data Link Control Protocols : Pure ALOHA & Slotted ALOHA.

UNIT-IV NETWORK LAYER & TRANSPORT LAYER: - Network Layer Protocols: Design issues : Virtual Circuits and datagram's, Routing Algorithms: Optimality principle, Shortest path routing- Dijkstra's algorithms, Distance Vector routing, Link state routing, Flow and Congestion Control: packet discarding , Traffic shaping, Choke packets, RSVP, IP fragment, RIP, OSPF, Inside router, Transport Layer Protocols : Basic functions, Connection Management: Establishment and releases, TCP & UDP.

UNIT-V UPPER LAYERS: - Session Layer Protocols: Dialog Management, Synchronization, Presentation layerfunctions: translation, encryption, compression, Cryptography : substitution and Transposition Ciphers, Data Encryption standards (DES), Public Key cryptography, Authentication protocols, Different compression coding techniques.

Application layer protocols & services: Email, World Wide Web, file, transfer protocol, remote file server, internet telephony & chatting.

Text Books:

1. Data Communication & Networking by Behrouz A. Forouzan.

2. Data and Computer Communication by William Stalling (Pearson Education)

3. Computer Networks by Andrew S.Tanenbaum

Reference Books:

1. Computer Networking by Ed Tittel (Schaum's series) (TMH)

3. Telecom Switching system & Networking by Thiagrajan viswanathan (PHI)

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2203	3	1	0	3 HOURS	40	60	4

NETWORK ANALYSIS AND SYNTHESIS

UNIT – I Introduction to charge and energy, The relationship of field and circuit concepts: The Capacitance parameter, the Inductance parameter, the Resistance parameter, Dot conventions for coupled circuits, Topological description of N/W, Kirchoff's laws, Loop variable analysis, Node variable analysis, Duality, State variable analysis, First Order differential equations: General and Particular solutions, time constants, Integration factor, initial factor, initial conditions in elements.

UNIT – II Second order differential equations; Internal excitation, Network excited by external energy sources, Responses as related to the s-plane location of roots, General solutions in terms of S, Q and Wn, Laplace transformation: laplace transform of some important functions, Shifting theorem, Gate function, Wave – form synthesis, the Initial & Final value of f(t) and F(s), the Convolution integral, Convolution as a summation.

UNIT – III Impedence function: Complex frequency, Transform impedance and transform circuits, Network theorems: Thevenin's & Norton's theorem, Superposition, Reciprocity, Maximum Power transfer and Milliman's theorem. Poles and Zeros of Network function, Restrictions on poles and zeros, Locations for transfer function & driving point functions, Time domain behavior from the pole and zero plot, Stability of active networks.

UNIT – IV Two port parameter's: Short circuit admittance parameter, Open circuit

impedance parameter, h – parameter, Relation between parameter sets. Sinusoidal steady state analysis & Frequency response plots, Telligen's theorem. Sinusoidal steady state analysis: Steady state response of R,C, L elements to sinusoidal excitation, Resonance, Frequency domain Specification , Frequency domain analysis of continuous time systems, Fourier series , Properties, Fourier Transform, Properties and Application to systems

UNIT – V   Network Synthesis: Realisibility concept, Hurwitz property positive realness properties of positive real functions, Synthesis of RL, RC and LC, Driving point impedance functions using simple canonical Networks – Foster and Causer form.

SUGGESTED BOOKS & REFERENCE:-

1.   Introduction to modern n/w synthesis : ME vanvalkenburg
2.   Introduction to circuit synthesis & design : Temes & Laptra (Tata Mcgraw Hill)
3.   Network analysis : ME Vanvalkenburg

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2204	3	1	3	3 HOURS	40	60	4

Introduction to Communication

UNIT I

Introduction to communication system, Representation of signals and systems, Modulation, Need for modulation, Amplitude modulation, Modulation Index, Frequency spectrum for AM wave, Power control in AM wave, Balanced modulator, The square law demodulator, DSB-SC modulation.

UNIT II

Phase modulation, Frequency Modulation, and their relationship, frequency deviation, spectrum of FM signals, effect of modulation on BW, Method of FM generation and FM demodulators.

UNIT III

Sampling theorem, Pulse modulation, PAM,PPM, PWM, quantization of signals, Pulse code modulation(PCM), Time division multiplexing (TDM), DPCM, DM, ADPCM, Introduction to ASK,FSK, PSK.

UNIT IV

Spread spectrum, spread spectrum modulation, requirement of spread spectrum signals, classification of pread spectrum systems, Frequency hopped spread spectrum system (slow freq., fast freq.) , Advantages and Limitations of DS & FH system, CDMA spread spectrum system, Application of spread spectrum.

UNIT V

Components & block diagram of satellite communication system, Transponders, up-link, down-link, Budget calculations. Keplea's law and Geostationary orbit, satellite multiple access techniques.

Fiber Optic communication: Principle of light propagation in optical fiber, losses in fiber, dispersion, connectors and splices. Fiber optic communication link.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT2205	3	1	0	3 HOURS	40	60	4

DISCRETE   STRUCTURE

UNIT I

Set Theory: Definition of sets, countable and uncountable sets, Venn Diagrams, proofs of some general identities on sets Relation: Definition, types of relation, composition of relations, Pictorial representation of relation, equivalence relation, and partial ordering relation. Function: Definition, type of functions, one to one, into and onto function, inverse function, composition of functions, recursively defined functions. Theorem proving Techniques: mathematical induction (simple and strong), pigeonhole principle, prove by contradiction.

UNIT II

Algebraic Structures: Definition, Properties, types: Semi Groups, Monoid, Groups, Abelian group, properties of groups, Subgroup, cyclic groups, Cosets, factor group, Permutation groups, Normal subgroup, Homomorphism and isomorphism of Groups, example and standard results, Rings and Fields: definition and standard results.

UNIT III

Posets, Hasse Diagram and Lattices: Introduction, ordered set, Hasse diagram of partially, ordered set, isomorphic ordered set, well ordered set, properties of Lattices, bounded I and complemented lattices.

Boolean Algebra: Basic definitions, sum of products and product of sums, form in Boolean Algebra, Logic gates and Karnaugh maps. Tree: Definition, Rooted tree, properties of trees, binary search tree, tree traversal.

UNIT IV

Propositional Logic: Proposition, First order logic, Basic logical operation, truth tables, tautologies, Contradictions, Algebra of Proposition, logical implications, logical equivalence, predicates, Universal and existential quantifiers.

UNIT V

Combinatorics & Graphs: Recurrence Relation, Generating function., Simple graph, multi graph, graph terminology, representation of graphs, Bipartite, Regular, Planar and connected graphs, connected components in a graph, Euler graphs, Hamiltonian path and circuits, Graph coloring, chromatic number, isomorphism and Homomorphism of graphs.

Text books and Supplementary reading:

1. Liptschutz, Seymour, " Discrete Mathematics", McGraw Hill.
2. Trembley, J.P & R. Manohar, "Discrete Mathematical Structure with Application to Computer Science", McGraw Hill.
3. Kenneth H. Rosen, "Discrete Mathematics and its applications", McGraw Hill.
4. Deo, Narsingh, "Graph Theory With application to Engineering and Computer.Science.", PHI.
5. Krishnamurthy, V., "Combinatorics Theory & Application", East-West Press Pvt. Ltd.,

SEMESTER V

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3101N	3	1	0	3 HOURS	40	60	4

ADVANCED COMPUTER ORGANIZATION

UNIT-I BASIC COMPUTER ORGANIZATION AND DESIGN
Computer Organization, Computer Architecture, Machine Language, Organization of a Simple Computer, Interconnection Structures, Bus Interconnection, MAR, MBR, PC, IR, PCI. Data Path of a typical Vo n Neumann Machine, Instruction Code, Decoding & Execution, The Fetch- Decode-Execute Cycle: Example, Instruction Formats, Stack Organization, architectural classification schemes , SISD , SIMD , MISD , MIMD architectures , multiprocessor and multicomputers , UMA , NUMA , COMA , NORMA models.

UNIT-II ARITHMETIC PROCESSOR DESIGN
Fixed-Point Arithmetic- Addition and Subtraction: addition and subtraction with Signed-Magnitude Data, Hardware Implementation, Hardware Algorithm, addition and subtraction with Signed- 2's Complement Data. Multiplication Algorithm: Hardware Implementation, Hardware Algorithm, Binary Multiplication, Booth Multiplication Algorithm. Division Algorithm, Floating-Point Arithmetic Operations: Basic Considerations, Register Configuration, Addition, subtraction, Multiplication & Division. Decimal Arithmetic Unit: Decimal Multiplication, Decimal division.

UNIT-III CONTROL UNIT ORGANIZATION
The Control Unit: Type of control unit, Control Unit Function, Control Unit Operation, Hardwired Control Unit- Basic Concept, Advantages, Disadvantages. Micro-Programmed Control Unit- Basic Concept, Advantages, Disadvantages. Difference between Hardwired Control Unit and Micro-Programmed Control Unit, Control Memory, Address Sequencing. Micro -Programmed Micro-Instruction Types- Vertical Micro-Programming, Horizontal Micro-Programming, Control Store, Horizontal Versus Vertical, Principle Advantages, Disadvantages, Microinstruction Formats, Microinstruction Sequence, Emulation, Bit Slicing.

UNIT-IV PRINCIPAL OF PIPELINING
Over lapped parallelism , principal of Liner pipelining processor , General pipelining and reservation tables, arithmetic pipelining, Design of pipeline Instruction units , arithmetic pipelining designexample, hazard detection and resolution , JOB sequencing and collision prevention.

UNIT V PRINCIPLES OF MULTITHREADING

Multithreading issue and solution, multiple context processor, multidimensional architecture, Advanced processor technology – RISC & CISC computers, super scalar architecture. Superscalar Processor.

Text Books
1. Computer System Architecture By, M. Morris Mano Prentice- Hall, 1993.
2. Computer Architecture & Organization By John P. Hayes, McGraw Hill-1998
3. Advanced computer Architecture by Kai Hwang.

Reference Books
1. Structured Computer Organization by Andrew S. Tanenbaum.
2. Computer architecture a quantitative approach, Patterson D. A. and Hennessy, J. L.,
3. Computer architecture and parallel processing by Hwang and Briggs.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3102	3	1	3	3 HOURS	40	60	4

OPERATING SYSTEM

UNIT I INTRODUCTION TO OPERATING SYSTEM :

objective and function . The evaluation of the operating system , system components operating system services , system structure ,batch interactive , time sharing and real time operating system , Protection. File system : File concepts , file organization and access mechanism , directory.

UNIT II CONCURRENT PROCESS :

Process concepts , principal of concurrency . the producer consumer problem , the critical section problem , semaphore, classical problem in concurrency , inter process communication , process generation , process scheduling .

UNIT III CPU SCHEDULING :

scheduling concepts, performance criteria scheduling algorithms. algorithm evaluation , multiprocessor scheduling.I/O management and Disk scheduling I/O devices and organization of the I/O functions. I/O buffering disk I/O operating system design issues.

UNIT IV DEAD LOCKS :

system models, deadlock characterization , prevention , avoidance and detection recovery from deadlock , combined approach.

UNIT V MEMORY MANAGEMENT :

Base machine , Residence monitor , multiprogramming with fixed partition , multiprogramming with variable partitions, multiple base register, paging, segmentation, paging segmentation, virtual memory concepts , demand paging performance , page

replacement algorithms , allocation of frames, thrashing , cache memory organization impact on performance .

Reference Books

1. Milenkovic M. , "Operating System concepts", MGH
2. Tanenbaubm A. S. "Operating System design and implementation" , PHI
3. Silberschartz A.and Patterson J.I. , " Operating system concepts", Wisley.
4. Stilling William " Operating System ", Maxwell McMillan International Edition 1992.
5. Dectel H.N. , "An introduction to operating system ", Addision Wisley.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3103	3	1	3	3 HOURS	40	60	4

DATA BASE MANAGEMENT SYSTEM

UNIT- I INTRODUCTION:
An overview of database management system, database system Vs file system, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure.
Data Modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.
UNIT- II RELATIONAL DATA MODEL AND LANGUAGE:
Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple and domain calculus, Introduction to SQL: Characteristics of SQL. Advantage of SQL. SQL data types and literals. Types of SQL commands. SQL operators and their procedure. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL.
UNIT- III DATA BASE DESIGN & NORMALIZATION:
Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependences, loss less join decompositions, normalization using FD, MVD, and JDs, alternative approaches to database design.
UNIT- IV TRANSACTION PROCESSING CONCEPTS:
Transaction system, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures, log based recovery, checkpoints, deadlock handling.

UNIT- V CONCURRENCY CONTROL TECHNIQUES:

Concurrency control, locking Techniques for concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi version schemes, Recovery with concurrent transaction.

Text Books

1. Date C J, "An Introduction To Database System", Addision Wesley
2. Korth, Silbertz, Sudarshan, "Database Concepts", McGraw Hill
3. Elmasri, Navathe, "Fundamentals Of Database Systems", Addision Wesley
4. Leon & Leon, "Database Management System", Vikas Publishing House.

References

1. Bipin C. Desai, "An introduction to Database Systems", Galgotia Publication
2. Majumdar & Bhattacharya, "Database Management System", TMH
3. Ramakrishnan, Gehrke, "Database Management System", McGraw Hill
4. Kroenke, "Database Processing: Fundamentals, Design and Implementation", Pearson Education.
5. Maheshwari Jain, "DBMS: Complete Practical Approach", Firewall Media, New Delhi

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3104	3	1	3	3 HOURS	40	60	4

MICROPROCEESOR AND INTERFACES

UNIT I MICROPROCESSOR ARCHITECTURE:

Introduction to Microprocessors, Architecture of 8085, internal register & flag register, Generation of Control Signals: Bus Timings: Demultiplexing of address /data bus; Fetch Cycle, Execute Cycle, Instruction Cycle, Architecture of 8086, Pin configuration & functions, Instruction execution timings, Bus Standards.

UNIT II ASSEMBLY LANGUAGE PROGRAMMING :

Instruction format : Data transfer instructions : Arithmetic instructions , Branching and looping instructions , NOP and HLT. Flag manipulation instructions . logical shift and Rotate instructions . Directives and operators . Assembly process . Translation of assembler instructions.

UNIT III MODULAR PROGRAMMING :

Linking and relocation , Stacks and procedures , Interrupts and interrupt routines Macros Program design. Byte and String manipulation : String instructions.

UNIT IV ARCHITECTURE OF PERIPHERAL INTERFACING DEVICES :

Architecture, Pin Diagram and functioning of 8155/8156 (RAM), 8355/8755 (ROM), 8255 (PPI). Programmable Internal Timer 8253/8254: Block Diagram, Pin Configuration, Modes, Initialization Instruction, Interfacing.

UNIT V - 80386

Basic Architecture : Memory capacity : 32 – bit architecture , Data types , Tasks address , Calculation , Page- based virtual memory, Segment and page protection , Additional exceptions , Input/Output , Pipelining . General-purpose registers. Real protected and virtual mode operations . Address segmentation , Segment length , Paging segment registers.

Reference Books

1. Microcomputer System 8086/8088 Family – Architecture Programming and design : Y Liu and G. A. Gibson : Prentice Hall
2. Microprocessor 8086 , 80386 & Pentium , Barry B. Brey
3. The 8086 microprocessor : programming and interfaceing The PC by Kenneth J Ayala
4. 80386 Microprocessor Handbook C.H. Pappas and W. H. Murray : Osborne McGraw Hill
5. Microprocessor Architecture Programming and Application : R.C. Gaonkar : Wiley Eastern.
6. Programmed Logic and Microprocessor K.L. Short , Prentice Hall of India

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3105N	3	1	0	3 HOURS	40	60	4

ANALYSIS AND DESIGN OF ALGORITHM

UNIT I   PERFORMANCE ANALYSIS

Space and Time Complexity, Asymptotic Notations. Divide and Conquer: Finding Maxima and Minima Binary search, Merge Sort, Quick Sort, selection sort.

UNIT II   GREEDY METHOD

Knapsack problem, Job Sequencing, Optimal Merge Patters, and Minimum Spanning trees. Dynamic Programming: All pairs shortest path, optimal binary search tree, o/1 knapsack problem, traveling sales man problem, flow shop scheduling.

UNIT III   SEARCH TECHNIQUES

Techniques for binary trees, techniques for graphs –DES and BFS, connected components and spanning tree, Bi-connected components and DFS. Backtracking: The 8-queen problem , graph coloring , Hamiltonian cycles.

UNIT IV   BRANCH AND BOUND

O/1 knapsack problem, traveling sales person problem, efficiency consideration, Algebraic Problems, lower Bound theory.

UNIT V   NP HARD AND NP COMPLETE PROBLEM

Basic concepts, problem classes, P, NP, NP hard, NP complete problem, deterministic and non deterministic polynomial time algorithm

REFERENCE BOOKS:

1. Horowitz E & sahani s, "Fundamentals of Computer algorithms" , Galgotia.
2. Aho , Hopcroft & Ullman , "the design and Analysis of computer Algorithms" Addison Wesely
3. Sedgewick , "Algorithms in C"

SEMESTER VI

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3201	3	1	3	3 HOURS	40	60	4

OBJECT ORIENTED SYSTEM AND JAVA PROGRAMMING

UNIT I OBJECT MODELING :
Objects and classes, links and association, generalization and inheritance, aggregation, abstract class, candidates keys, constraints.
UNIT II DYNAMIC MODELING :
Events and states, operations, nested state diagrams and concurrency, advanceddynamic modeling concept, a sample dynamic model.
UNIT III FUNCTIONAL MODELING :
Dada flow diagram, specifying operations, constraints, a sample functional model. OMT (Object modeling techniques) methodologies, SA/SD, JSD
UNIT IV JAVA PROGRAMMING:
Introduction, operators, data types, Variables, Methods & classes, Multithread programming, I/O, java Applet. Java library: Event Handling, AWT, AWT controls, Layout manager and Menus.
UNIT V SOFTWARE DEVELOPMENT WITH JAVA :
Java Beans, Java swing, Java servlets, Migrating from C++ to java, Application of java, Dynamic Billboard applet, Image Menu : An Image based menu, Lavatron Applets, Scrabblets, JDBC.

Text Books
1. James Rumbaugh et al " object Oriented Modeling and design" PHI
2. Herbert Schieldt " The complete Reference : Java" TMH
3. E. Balagurusamy " Programming in Java", TMH

Reference Books :

1. Booch Grady, " Object Oriented Analysis & design with application 3/e", Person
2. Bjarne Stroustrup " C++ Programming Language" Addison Wesley
3. E Balagurusami " Object Oriented Programming with C++, TMH

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3202	3	1	3	3 HOURS	40	60	4

INTERACTIVE COMPUTER GRAPHICS

UNIT-I OVERVIEW OF GRAPHICS SYSTEM :

I/O devices, Raster scan & Random scan system, line-circle-ellipse generating algorithm, filled area primitives, 2-D & 3-D transformation, Clipping: 2-D Cyrus Beck clipping, 2-D & 3-D Sutherland cohen clipping, Polygon clipping, Hodgeman-sutherland & Weiler-Atherton polygon clipping.

UNIT-II CURVES & SURFACES :

Conics-Parametric forms for circle, ellipse, parabola, Bezier Curves-Need for cubic parametric curves c0, c1, c2 continuity, Generation though Bernstein polynomials, Condition for smooth joining of 2 segments, Convex Hull property, B-Spline Curves: Knot vectors-uniform and open uniform curves, Uniform, Periodic B-splines, Open, Uniform Bsplines, Non-uniform, rational B-splines, Beta splines, Subdividing curves, Drawing curves using forward differences.

UNIT-III PROJECTIONS & HIDDEN SURFACE REMOVAL :

3-D Transformation for right handed co-ordinate system (Z-axis towards viewer), Parallel projection on xy plane (including oblique view), Perspective projection-1, 2 and 3 Vanishing points, Reconstruction of 3-D images. Hidden Surface Removal: Back face removal, Floating Horizon method for curved objects, ZBuffer or depth buffer algorithm, Painters algorithm (Depth sorting method), Binary space partitioning trees, Scan-line algorithm, Warnock's algorithm.

UNIT-IV SHADING & COLOR ISSUES :

Illumination model for diffused & specular reflection, Computing reflection vector, Gouraud and Phog tracing, Band Illusion, Lateral inhibition, Texture mapping & their characteristics, Bump mapping, Handling shadows, Radiosity: Lambert's Law, Basic element, Recapitulation, Modeling transparency, Visualization of data sets, volume rendering, Color issues: Additive, Subtractive primaries, Wavelength spectrum, JCM color.

UNIT-V FRACTALS & ANIMATION :

Fractals: self-similar fractals-fractal dimension, Generation of Terrain-random mid point displacement, Grammar based models, Self-squaring fractals. Soild Modelling: Generation through sweep techniques, Constructive sold geometry, B representations, Octrees, Ray Tracing & their Theory, Animation: In-betweening using rotation and translation, Procedural animation, Image Transformation-Translation and rotation, Morphing, Motion Control (Key framing).

Text Books:

1. Computer graphics, Hearn and Baker, PHI
2. Computer Graphics, Foley, PE-LPE,

Reference Books:
1. Procedural Elements of Computer graphics, Rogers, McGraw Hill
2. Computer graphics, Harringtons S., McGraw Hill.
3. Computer Graphics, Schoum Series.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3203	3	1	0	3 HOURS	40	60	4

INTRODUCTION TO INFORMATION SCIENCE

UNIT-I

Uncertainty, Information and Entropy Information Measures: Characteristics on information measure; Shannon's concept of information; Shannon's measure of information; Model for source coding theorem; Communication system; Source coding and line/channel coding; channel models, channel mutual information capacity (Bandwidth).

UNIT-II

Channel coding, Theorem for discrete memory less channel, Information capacity theorem:Error detecting and error correcting codes; Types of codes; Block codes; Tree codes; Hamming codes;Description of linear block codes by matrices; Description of linear tree code by matrices; Parity check

codes; Parity check polynomials.

UNIT-III

Compression: Lossless and lossy; Huffman codes; Binary Image compression schemes; Runlength Encoding; CCITT group-3 1D compression; CCITT group-3 2D compression; CCITT group-42D compression.

UNIT-IV

Video Image Compression: Requirement of full motion video compression; CCITT H 261video coding algorithm; MPEG compression methodology; MPEG-2 compression; Audio (Speech)compression.

UNIT-V

Cryptography: Encryption; Decryption; Cryptogram (cipher text); Concept of cipher;Cryptanalysis; Keys: Single key (Secret key); Cryptography; two-key (Public key) cryptography; Single key cryptography; Ciphers; Block Cipher code; Stream ciphers; Requirements for secrecy; The data Encryption Standard; Public Key Cryptography; Diffie-Hellmann public key distribution; The Rivest-Shamin Adelman(R-S-A) system for public key cryptography; Digital Signature.

Text Books:
1. Digital Communication by Das, Mullick & Chatterjee, New Age Pub.
2. Digital Communication by Proakis, TMH
3. Digital Image Processing by Gonzales & Woods, Pearson (for Unit – III & IV)

4. Local Area Network by G. Keiser, TMH (for Unit – V)

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3204N	3	1	0	3 HOURS	40	60	4

THEORY OF COMPUTATION

UNIT I

Deterministic and non deterministic finite automata , Regular Expression , Two way finite automata , finite automata with output , properties of regular set , pumping lemma , closure properties, My-Hill Nerode Theorem.

UNIT II

Context Free Grammars (CFG), derivation trees, Simplification normal forms, Chomskey Hierarchy: Regular Grammars, Unrestricted Grammars and Relations Between Classes of languages .

UNIT III

Push Down Automata: Definitions relationship between PDA and Context Free Languages, properties of CGL's Decision Algorithms.

UNIT IV

Turing Machine : The Turing machine model , Computable languages and functions, Modification of Turing machines Church's Hypothesis.

UNIT V

Properties of recursive and recursive enumerable languages, Universal Turing machine, Undesirability Post correspondence problem introduction to recursive function theory.

REFERENCE BOOKS:
1. Hopcroft and Ullman " Introduction to Automata Theory Languages and Computation ", Narosa.
2. Mishra and Chandrashekharan, " Theory of Computer Science ", PH.
3. Kohan " Theory of Computer Science".
4. Korral " Theory of Computer Science".

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT3205	3	1	0	3 HOURS	40	60	4

MOBILE COMMUNICATION

UNIT-I INTRODUCTION TO MOBILE & WIRELESS DEVICES:

Mobile and Wireless Devices, History,Applications, Simplified Reference Model; Wireless Transmission, Frequencies for Radio Transmission,Regulations, Signals, Antennas, Signal Propagation, Multiplexing, Modulation, Wireless LANs And Wireless WANs, Spread Spectrum, FHSS and DSSS Spread Spectrum Technology; Cellular Systems, The Radio

Spectrum, Cell Size and Achievable Throughput; Medium Access Control, Specialized MAC; SDMA; FDMA; TDMA; CDMA.

UNIT-II TELECOMMUNICATION & BROADCAST SYSTEMS GSM:

Mobile Services, SystemArchitecture, Radio Interface, Protocols, Localization and Calling, Handover, Security, New Data Services; DECT, TETRA, UMTS & IMT-2000; CDPD, Data Over Analog and Digital Cellular, Paging and Two-Way Paging; Satellite Systems, Applications, GEO, LEO, MEO, Routing, Localization, Handover; Broadcast Systems, Cyclic Repetition of Data, Digital Audio Broadcasting.

UNIT-III WIRELESS NETWORKS Wireless LAN:

Hidden Nodes in Wireless Networks, Ordered MAC Techniques and Wireless Networks, Deterministic MACs for Wireless Networks, Comparison Of MAC Techniques for Wireless Networks; Infrared V/S Radio Transmission; IEEE 802.11, Architecture, Layers, Management; HIPERLAN; Bluetooth; Wireless ATM, Services, Reference Model, Functions, RAL, Handover, Location Management, Addressing, QOS, APCP.

UNIT-IV MOBILE NETWORK AND TRANSPORT LAYERS:

Mobile Network Layer; Mobile IP, DHCP, ADHOC Networks; Mobile Transport Layer; Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP; Fast Transmit/Fast Recovery, Transmission/Time Out Freezing, Selective Retransmission, Transaction Oriented TCP.

UNIT-V MOBILE SYSETEM DEVELOPMENT & SUPPORT :

File Systems; World Wide Web, HTTP; HTML; System Architectures; WAP; Architecture, Wireless Datagram Protocol, Wireless Transport Layer Security, Wireless Transaction Protocol, Wireless Session Protocol, Wireless Application Environment; WML;WMLscript; Wireless Telephony Applications.

Text Book
1. Mobile Communications – Schiller, Jochen; 2nd Indian Reprint, Pearson Education Asia-Addison Wesley Longman PTE. Ltd.

Reference Books:
1. Mobile Data Wireless LAN Technologies – Dayem, Rifaat A.; Prentice Hall International.
2. The Essential Guide To Wireless Communication Applications – Dornan, A.; 1st Indian Reprint, Pearson   Education Asia.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4101	3	1	3	3 HOURS	40	60	4

ADVANCED OPERATING SYSTEM

UNIT I

GENERAL OVERVIEW OF THE SYSTEM: Introduction to Multi user System, History of UNIX, features & Benefits, Variants, UNIX Commands - who, pwd, cd, mkdir, rm, rmdir, ls, mv, ln, chmod, cp, grep, tr, etc. Vi Editor: Command & edit Mode, Invoking Vi, deleting & inserting Line, Deleting & Replacing Character, Searching for Strings, Introduction to sed. Bourne Shell, C Shell, Shell Variables, Scripts, Meta Characters, If & CASE Statements, For, While and Until loops. AWK Pattern Scanning and Processing, AWK Arithmetic and Variables, built in functions and Operators, Arrays, Strings.

UNIT II

DESIGN OF OPERATING SYSTEM: System Structure, User Perspective, Operating System Services Assumption about Hardware, the Kernel and Buffer Cache Architecture of UNIX Operating System, System Concepts, Buffer Headers, Structure of the Buffer Pool, Scenarios for Retrieval of the Buffer, Reading and Writing Disk Blocks, Advantages and Disadvantages of Buffer Cache.

UNIT III

INTERNAL REPRESENTATION OF FILES: Overview of File system, System Calls for the File System, INODES, Structure of Regular File, Directories, Conversions of a Path, name to an INODE, Super Block, INODE Assignment to a New File, Allocation of Disk Blocks. Open, Read, Write, File and Record Close, File Creation.

UNIT IV

STRUCTURES OF PROCESSES AND PROCESS CONTROL: Process States and Transitions Layout of System Memory, The Context of a Process, Manipulation of the Process Address Space, Sleep Process Creation/Termination, The User ID of a Process, Changing the Size of a Process.

UNIT V

DISTRIBUTED OPERATING SYSTEM: Design of distributed OS, Resource sharing, Distributed OS architectures, software layers, Architectural Model, The Operating System Layer, Protection, Processes and Threads, Communication and invocation, Distributed File System: File Service Architecture, Sun Network File System, the Andrew File System, and Recent Advances.

List of Books:

1. The Design of Unix Operating System, Maurice J. Bach, Pearson Education
2. Advance UNIX, a Programmer's Guide, S. Prata, BPB Publications, New Delhi.
3. Shell Programming, Yashvant Kanitkar, BPB Publications, New Delhi.
4. UNIX Concepts and Applications, Sumitabh Das.
5. Distributed OS, A.S Tanenbaum, PHI.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4102	3	1	3	3 HOURS	40	60	4

INTRODUCTION TO .NET TECHNOLOGY

UNIT I

Introduction to .NET framework, Managed Code and the CLR- Intermediate Language, Metadata and JIT Compilation, Automatic Memory Management, CLR, The Framework Class Library, IDE of .Net, Introduction to C# Language

UNIT II

.Net Elements, Variables and constants, Data types, Operators, Loops and Program flow, Decision statements Type, Arrays with various types, Collections, Windows Forms, Windows controls – Button, Check box, Combo box, Label, List box, Radio Button, Text box, Various Events, Creating menus – menu items – context menu - Common dialog boxes & MDI

UNIT III

Architecture of ADO.NET – ADO.NET providers – Connection – Command – Data Adapter – Dataset. Connecting to Data Source, Accessing Data with Data set and Data Reader - Create an ADO.NET application - Using Stored Procedures.

UNIT IV

ASP.NET Features, IIS Configuration, ASP.Net Web Controls - HTML Controls, Using Intrinsic Controls, Using Input Validation Controls, Selecting Controls for Applications - Adding Web controls to a Page.

UNIT V

XML Serialization in the .NET Framework, Introduction to Web services and AJAX, Crystal Reports.

List of Books:

1. Introduction to Visual basic.NET - NIIT Prentice Hall of India,2005
2. Introducing Microsoft .NET- David S. Platt Microsoft Press", Saarc Edition, 2001
3. Introduction to Microsoft® ASP.NET Work Book - Microsoft- Microsoft Press
4. Developing XML Web Services Using Microsoft® ASP.NET -Microsoft- Microsoft Press
5. Designing Microsoft ASP.NET Applications-Douglas J. Reilly-Microsoft Press
6. ASP.NET-Danny Ryan and Tommy Ryan-Hungry Minds Maran Graphics

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4103	3	1	0	3 HOURS	40	60	4

DATA MINING & WAREHOUSING

UNIT I

Data ware Housing: What is a data warehouse?, definition, Multidimensional data model, OLAP operation, warehouse schema, data ware housing architecture, warehouse serve, metadata, OLAP, engine, Data warehousing backend process, other features.

Data Mining: what is data mining? KDD Vs. data mining, DBMS Vs DM other related areas, DM techniques, other mining problem, issues & challenges in DM, Dm application areas.

UNIT II

Association rules: Methods to discover association rules, apriori algorithm ,partition algorithm, pincer –search algorithm, Dynamic Item set counting

algorithm, FP-tree Growth algorithm, Incremental algorithm, Border algorithm, hierarchical association rule, generalized association rules, Association rules with item constraints.

UNIT III

Clustering Techniques: Introduction, clustering paradigms, partitioning algorithms, k-Medoid Algorithm, CLARA, CLARANS, Hierarchical clustering, DBSCAN, BIRCH, CURE, Categorical clustering algorithms , STIRR, ROCK , CACTUS.

UNIT IV

Decision trees: Tree construction principal, Best spilt splitting indices, splitting criteria, Decision tree construction algorithm, CART, ID3, C4.5, CHAID, Decision tree construction with pre-sorting, rainforest, approximate method, CLOUDS, BOAT, pruning technique, integration of pruning & construction, Hierarchcal associtation rule.

UNIT V

Web Mining: Web mining ,web content mining ,web structure mining ,web usage mining ,text mining , unstructured text , Episode rule discovery for texts , Hierarchy of categories , text clustering , Paging algorithm.

List of Books:

1. Data Mining techniques – Arun K Pujari Universities press
2. Data Mining concepts & techniques – Jiawei han , Micheline kamber Morgan Kaufmann publisher Elsevier India –2001
3. Data Mining methods for knowledge Discovery –Cios , Pedrycz , swiniarski Kluwer academic publishers London –1998

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4111	3	1	0	3 HOURS	40	60	4

MULTIMEDIA SYSTEM DESIGN

UNIT I:

An introduction, Multimedia elements, Multimedia Applications, Multimedia System Architecture, Evolving Technologies for Multimedia Systems, Defining Objects for

Multimedia systems, Multimedia Data Interface Standard, The need for data Compression, Multimedia databases.

UNIT II:

Compression and Decompression, Types of compression, Binary Image Compression schemes, Color, Gray Scale, Still-video image Compression, Video Image Compression, Audio Compression, Fractal Compression.

UNIT III:

Data and Format Standards, Rich-text Format, TIFF File Format, Resource Interchange File Format (RIFF), MIDI File Format, JPEG DIB File Format for still and Motion Images, MPEG standards Pen Input, Video and Image Display systems, Print Output Technologies, Image Scanners, Digital Voice and Audio, Digital Camera, Video Images and Animation, Full-Motion Video.

UNIT IV:

Storage and Retrieval Technologies, Magnetic Media Technology, Optical Media, Hierarchical Storage Management, Cache management for storage systems, Multimedia Application Design, Multimedia application classes, Types of multimedia systems, Components of multimedia systems, Organizing multimedia databases,

UNIT V:

Unified Communication, video conferencing and Chat, Multimedia Authoring and User Interface, Multimedia authoring system, Hypermedia application design consideration, User interface design, Object display/playback issues, Multimedia Operating Systems Introduction, real time, Resource management, process management, file systems.

List of Books:

1. Prabhat K.Andleigh & Kiran Thakrar, multimedia system design, Prentice PTR, NJ.
2. Ralf Steinmetz and Klara Nahrstedt multimedia computing communications and applications, innovating technology series by Pearson Edu. Asia.
3. Jerry D.Gibson, multimedia communications directions & innovations, Harcourt India Pvt.Ltd.
4. Borko, Handbook of multimedia computing,CRC Press.
5. Mark J.Bunzel Sandra K.Morris, multimedia applications development McGraw Hill.
6. Ze-Nian Li, Mark S.Drew, fundamentals of multimedia, by Pearson Edu. Asia
7.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4108	3	1	-	3 HOURS	40	60	4

WIRELESS SENSOR NETWORK

UNIT I

 Wireless Sensor Network: Introduction, Architecture, Hardware and Software used in Wireless Sensor Network

UNIT II

Sensor network application: Motion monitoring, Environmental monitoring, Generic Architecture, Sensor network Evolution

UNIT III

Wireless Sensor Network : Design , Goals and Issues , Sensor deployment, Scheduling and coverage issues, self configuration and topology control, Querying, data collection and processing, Collaborative information processing and group connectivity.

UNIT IV

Wireless Sensor Routing Protocols: Data Centric, Hierarchical, Location based, Energy efficient routing,

UNIT V

Sensor Network Challenges – Miniaturization, power management, scalability, remote management, usability, standardization and security, System Challenges- Tiny OS, Network Sensor Platforms

List of Books:

1. Building Wireless Sensor Networks by Robert Faludi Binding: Paperback Publisher: O'reilly Released: 2011
2. Wireless Sensor Networksby Zhao Feng, Guibas Leonidas Binding: Paperback Publisher: Elsevier India Released: 2004
3. Wireless Sensor Networks by C. S Raghavendra, Krishna M. Sivalingam, Taieb Znati Binding: Paperback Publisher: Springer/bsp Books Released: Rpt.2010

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4109	3	1	0	3 HOURS	40	60	4

DIGITAL SIGNAL PROCESSING

UNIT I

Classification of Signals and systems, Classification of signals, Singularity Functions. Amplitude and Phase Spectra, Classification of System, Simple Manipulations of Discrete-time Signals, Representation of Systems, Analog-to-Digital Conversion of Signals. Z-Transforms -Introduction, Definition of the z-transform, Properties of z-transform, Evaluation of the Inverse z-transform.

UNIT II

Linear time invariant systems, Properties of a DSP System, Difference Equation and its Relationship with System Function, Impulse Response and Frequency Response, Frequency Response.

UNIT III

Discrete and fast Fourier transforms. Introduction, Discrete Convolution, Discrete-Time Fourier Transform (DTFT), Fast Fourier Transform (FFT). Computing of Inverse DFT by Direct DFT, Composite-radix FFT, Fast (sectioned) Convolution, Correlation.

UNIT IV

Finite impulse response (fir) filters Introduction, magnitude response and phase response of digital filters. Frequency response of Linear phase FIR filters, design techniques for FIR filters, design of optimal linear phase FIR filters.

Infinite impulse response (iir) filters   Introduction, IIR filter designed by approximation of derivatives, IIR filter design by impulse invariant method, IIR filter design by the bilinear transformation, butter worth filters Chebyshev filters, Inverse Chebyshev filters, Elliptic filters, Frequency Transformation.

UNIT V

Realisation of digital linear systems Introduction, basic realisation block diagram, signal-flow graph, basic structures for IIR systems, basic structures for FIR systems applications of digital signal processing ;

Introduction, voice processing, application of radar, applications to image processing, Introduction to Wavelets.

List of Books:

1. Digital signal processing- S. Salivahanan, A. Vallavraj, C. Gnanapriya;TMH

2. Discrete time signal processing- A.V. Oppenheim, Schaffer.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4110	3	1	0	3 HOURS	40	60	4

IMAGE PROCESSING

UNIT I

INTRODUCTION: digital image representation, electromagnetic spectrum, fundamental step in digital image processing, elements of visual perception structure of human eye, sampling and quantization, basic relationship between pixels, imaging geometry

UNIT II

STATISTICAL PROPERTIES: Histogram means, standard deviation, profile different distributions. IMAGE TRANSFORM: One and two dimensional DFT the discrete cosine transform, hadamand transform, haar transform

UNIT III

IMAGE ENHANCEMENT: Spatial and frequency domain methods points operations, contrast stretching, bit extraction, range compression, histogram equalization, modification local enhancement, image smoothing spatial operations

UNIT IV

IMAGE RESTORATION: degradation model, Restoration in spatial domain geometric transformation spatial transformation, approach to restoration, image compression: basic of image compression, models, elements of information theory, error free compression, lossy compression,

IMAGE SEGMENTATION: line detection, edge detection, thresholding & region oriented segmentation.

UNIT V

APPLICATION OF IMAGE PROCESSING: Charector recognisation, diagram understanding, medical imaging, scientific analysis, military guidance & reconnaissance remote sensing, telecommunication, example of field that uses digital image processing

List of Books:

1. Gonzawlez & woods, digital image prcessing addison wesley, 1992.
2. Pratt, digital image image processing wiley int. 1991.
3. Sid ahmed digital image prcessing McGraw Hill, 1995.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4112	3	1	0	3 HOURS	40	60	4

REAL TIME SYSTEM

UNIT I

TYPICAL REAL TIME: Application Digital control High-level control, signal processing, Other Real time Application hard verses soft real time system jobs and processors, release times, deadlines, and timing constraints, hard and soft timing constraints, hard real time system, soft real time systems.

UNIT II

A REFERENCE MODEL OF REAL TIME SYSTEMS Processors and resources, temporal parameters of real-time workload, periodic task model, precedence constraints and data dependency, other type of dependencies, functional parameters, resource parameters of jobs and parameters of resources, scheduling hierarchy commonly used approaches to real-time scheduling Clock-driven approach, weighted round robin approach, priority driven, approach, dynamic versus static system, effective release times and deadlines. Optimative of the EDF and LST algorithms, nonoptimality of the EDF and the LST algorithms, challenges in validating timing constraints, in priority-driven system Off-line versus On-Line Scheduling.

UNIT III

CLOCK-DRIVEN SCHEDULING: Notations and assumptions, static, timer-driven scheduler, general structure of cyclic schedules, cyclic executives, improving the average response time of a periodic jobs, practical considerations and generalizations, aigorithm for constructing static schedules, prons and cons of clock-driven scheduling priority-driven scheduling of periodic tasks static assumption, fixed priority versus dynamic priority algorithm maximum schedulable uutilization, optimality of the RM and DM algorithms. A schedulabilty test for fixed priority tasks, with short response times sufficient schedulability condition for the RM and DM algorithm.

UNIT IV

SCHEDULING APERIODIC AND SPORADIC JOBS IN PRIORITY-DRIVEN SYSTEMS: Assumption and approaches, deferrable server, sporadic server, constant utilisation. Total bandwidth, and weighted, fair-queuing server slack stealing in deadline driven system? Slack stealing in fixed-priority system. Scheduling of sporadic jobs, real-time performance for jobs with soft timing constraints, A two-level scheme for integrated scheduling resources and resource access control assumptions on resources and their usage, effect of resource contention and resource access control, nonpremptive critical sections, basic priority inheritance protocol, basic priority ceiling protocol, stack based, priority ceiling (ceiling priority) protocol, use of priority ceiling protocol in dynamic priority system, pre-emption ceiling protocol, controlling accesses to multiple unit recourses, controlling concurrent accesses to data objects.

UNIT V

TIPROCESSOR SCHEDULING, RESOURCE ACCESS CONTROL, AND SYNCHRONIZATION: Model of multiprocessor and distributed system, task assignment, multiprocessor priority ceiling protocol, foment of scheduling algorithm for end-to-end periodic task, schedulability of fixed priority end-to-end periodic task, end-to-end task in heterogeneous system, predictability and validation of dynamic multiprocessor system scheduling flexible computations and tasks with temporal distance constraints.

Flexible applications, tasks with temporal distance constraints REAL-TIME communications model of real-time communication. Priority-based service disciplines for switched networks, weighted round-robin service disciplines, medium access control protocol of broad-cast networks, internet and resourse reservation protocols, real-time protocol, and communication in multicomputer system.

OPERATING SYSTEM Overview, time services and scheduling mechanisms, other basic operating system functions, processor reserves and resources kernel, open system architecture, capabilities of commercial real-time operating system

List of Books:

1. Jane W.S.Liu.pearson education India.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4113	3	1	0	3 HOURS	40	60	4

ADVANCED DATABASE DESIGN

UNIT I

OBJECT ORIENTED DATABASE Need, object oriented data model, object oriented languages, Object Relational Databases Nested relations, Inheritance, Reference types, Junctions & procedures, object oriented versus object relational.

UNIT II

XML Database Structure of XML data, XML Document Scheme, Querying and Transformation, Storage of XML data, Applications.

UNIT III

Distributed Databases Homogeneous and heterogeneous, Distributed data storage, Distributed transactions, Commit protocols, Concurrency control in distributed databases, Heterogeneous distributed databases.

UNIT IV

Parallel Databases Introduction, I/O parallelism, Inter query parallelism, Intra query parallelism, intra-operation parallelism, Inter operation parallelism.

UNIT V

Advanced Transaction Processing Transaction processing monitors, Transactional workflows, Real time transaction systems, Long duration transactions.

List of Books:

2. C.J.Date, Introduction to database systems, Seventh edition, Pearson Education Asia.
3. Elmasri & Navathe, Fundamentals of database systems, 3rd Edition, Pearson Education Asia.
4. Silbersshetz, Korth, Sudarshan, Database system concepts, 4th edition, Mcgraw Hill.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4114	3	1	0	3 HOURS	40	60	4

WEB TECHNOLOGY & E-COMMERCE

UNIT I

Fundamentals of Web, History of the Web, Growth of the Web in post decade, Web function. Security aspects on the web, Computational features encompassing the Web. Working Web Browsers, concepts of search Engines, Searching the Web, Web Servers.

UNIT II

HTML: - Introduction, , content positioning HTML content, Layer object, Handling events using localized scripts, Animating images,HTML List,HTML Table & DHTML. Cascading style sheets.

UNIT III

Active Server Page(ASP) Introduction ,   Internet Information System , Basic authentication ,   active server page, asp objects , server objects , file system objects , session ,accessing database with an ASP page, create an ODBC ADO connection object, common methods & Properties events , ADO record set object.

UNIT IV

XML: Introduction, difference between XML & HTML, building application with XML, XML schemas. DTD & XSLT.

UNIT V

Security of E-Commerce transactions, E-Commerce models- B2B, B2C, review of cryptographic tools, authentication,signatures, observers, anonymity, privacy,

tractability, key certification, managementetc., EDI, Payment protocols and standards, smart card, e-card, e-wallet technologies, electronic money and electronic payment systems.

List of Books:

1. Minoli and Minoli, Web technology and Commerce, TMH
2. Web Technology, Achyut Godbole, Atul Kahate, TMH
3. Principles of Web Design, Sklar, Cengage
4. Electronic Commerce, Schneider, cengage Learn
5. The E-Business revolution, Daniel Amor, PHI
6. E-Government, Satyanarayana, PHI
7. E-Commerce, Greenstein, TMH
8. Koisur David : Electronic Commerce, Microsoft
9. Ravi Kalakota : Frontiers of Electronic commerce

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4115	3	1	0	3 HOURS	40	60	4

COMPILER DESIGN

UNIT I

Overview of translation process. Lexical analysis: Hand coding and automatic generation of lexical analyzers.

UNIT II

Parsing theory: Top down and bottom of parsing algorithms. Automatic generation of parsers. Intermediate code generation: Different intermediate forms. Syntax directed translation mechanism and attributed definition.

UNIT III

Run Time Theory Management: static memory allocation and stack based memory allocation schemes. Symbol table management.

UNIT IV

Code Generation: Machine model, order of evaluation, registers allocation and code selection.

UNIT V

Code Optimization: Global data flow analyses, A few selected optimizations like command sub expression removal, loop invariant code motion, strength reduction etc.

List of Books:

1. A.V.Aho, Ravi Sethi, J.D.Ullman, Compilers tools and Techniques, Addison Wesley,
2. D.M.Dhamdhere, Compiler Construction-Principles and practice Macmillan, India,
3. Tremblay J.P. and Sorenson, P.G. the theory and practice of compiler writing, Mc Graw Hil,
4. Waite W.N. and Goos G., Compiler construction' springer verlag

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4201	3	1	3	3 HOURS	40	60	4

ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS

UNIT I

Introduction: AI definition, structure, Application; Production systems-state space search, control strategies, Application; Search methods: Heuristic search, forward and backward reasoning, Hill climbing techniques, Breadth first search, Depth first search, Best search, Game playing.

UNIT II

Formal Methods: Predicate logic, Resolution question-answering, alpha-beta pruning, mini-max search, statistical and probabilistic reasoning; Informal Methods : Rule based system, frames and scripts, Semantic Nets, conceptual dependency, conceptual graphs.

Unit III

Reasoning: Automated reasoning, Monotonic & Nonmonotonic Reasoning, Default Logic , Probabilistic reasoning ,Bayesian Network, confidence factor, System Interface.

AI languages: Important characteristics of AI languages - PROLOG, LISP.

Unit IV

Introduction to Expert Systems: Structure of an Expert system, Interaction with an expert, Expert system shell, Design of an Expert system, Hardware & software components of Expert system, Application of Expert system in various fields.

Unit V

Neural Network: Basic Structure of a neuron, Perception, Feed forward, Feedback network, Recurrent network; Associative Network: Hopfield, Radial Basis function network, Self organising network.

List of Books:

1. Rich E and Knight K - Artificial Intelligence, TMH New Delhi.
2. Patterson -Artificial Intelligence & Expert System Prentice Hall of India.
3. Artificial Intelligence - R.B. Mishra ,Prentice Hall of India.

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4202	3	1	3	3 HOURS	40	60	4

INFORMATION AND NETWORK SECURITY

UNIT I

A Model for Network Security Services, Mechanisms, and Attacks, Viruses & Worms, The OSI Security Architecture, symmetric cipher model, substitution techniques Transposition techniques, Steganography.

UNIT II

Block ciphers and the data encryption standard , simplified DES , Block cipher principles , The data Encryption Standard , Differential and Linear Cryptanalysis ,Block Cipher Design principles , The AES cipher , Triple DES , blowfish , RC5, Rc4 Stream Cipher

UNIT III

principles of public –Key Cryptosystems , public –Key cryptosystems , Requirements for public –Key Cryptosystems, The RSA Algorithm , Key management , key Distribution ,Hash Functions SHA, MD5. Diffie-Hellman Key Exchange Algorithm

UNIT IV

WEB & IP Security: Web Security Threats, SSL Architecture, SSL Record Protocol, Alert Protocol , Handshake Protocol , Transport Layer Security , Secure Electronic Transaction , IP Security

UNIT V

Intruders : Intrusion Techniques ,Intrusion Detection , Audit Records , Firewall Design principles , Firewall Characteristics , Types of Firewalls .

List of Books:

1. Cryptography and Network Security, Principles and Practice Third edition , William Stallings .
2. Atul Kahate, " Cryptography and Network Security," TMH
3. Introduction to network security, Krawetz, Cengage

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4203	3	1	0	3 HOURS	40	60	4

MANAGEMENT INFORMATION SYSTEM

UNIT I

Introduction Of Information System: MIS concept, definition of MIS, role of MIS, MIS and its user, MIS as control system, business Organisation as a system, types of Business system, Approaches of MIS development-top down and bottom up.

UNIT II

Strategic management of business:- Concept of corporate planning, need of strategic planning, types of Strategic short range planning, tools of planning, strategic analysis of business,

UNIT III

Information Recourse Management: Principle of IRM, IRM objective, functional control of IRM, organization of information resource function, application scarce IS resources, A proactive CIO Strategy.

UNIT IV

Information System for Business Operations: Cross Functional Information System, A study of major Financial, Production, Human Resource Information System and Marketing Information System, Inventory Information System.

UNIT V

Management of Information System and End User Computing, Security and Ethical issues of Information System, Major issues in Information System, case studies, MIS Applications.

List of Books:

Management Information System: Solving Business Problems with Information Technology by Gerald V,. Post and David L. Anderson [Tata McGraw - Hill Edition]

1. Management Information System : Managing Information Technology in the Internet worked Enterprise by James A. O'Brien [Tata Mcgraw -Hill Edition , Fourth Edition]
2. Management Information System : A Contemporary Perspective by Kenneth C. Laudon and Jane Price Laudon [Maxwell Macmilan International Editions]

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4212	3	1	-	3 HOURS	40	60	4

INTERNETWORKING AND NETWORK PROGRAMMING

UNIT I

Networking & TCP/IP: Communication protocols, Network architecture, TCP & IP headers, IPv4 & IPv6 address structures, Programming Applications: Time & date routines, Internet protocols: Application layer, Transport layer, Network layer, Datalink layer protocols, Chat, Email, Web server working method & programming.

UNIT II

Socket Programming: Creating sockets, Posix data type, Socket addresses, Assigning address to a socket, Berkeley Sockets: Overview, socket address structures, byte manipulation & address conversion functions, elementary socket system calls – socket, connect, bind, listen, accept, fork, exec, close, TCP ports (ephemeral, reserved), Berkeley Sockets: I/O asynchronous & multiplexing models, select & poll functions, signal & fcntl functions, socket implementation (client & server programs).

UNIT III

APIs & Winsock Programming: Windows socket API, window socket & blocking I/O model, blocking sockets, blocking functions, timeouts for blocking I/O, API overview, Different APIs & their programming technique.

UNIT IV

Java network programming: Java socket programming, packages, RMI, Overview of Javascript and JSP, CORBA concept, CORBA architecture.

UNIT V

Internet Programming: Creating a Web server, adding multithreading to an HTTP server. Parsing data using string Tokenizer, Retrieving file from an HTTP server, Retrieving web documents by using the URL class, CGI programming.

List of Books:

1. Steven.W.R: UNIX Network Programming, PHI (VOL I& II)
2. Window Socket Programming by Bobb Quinn and Dave Schutes
3. Davis.R.: Windows Network Programming, Addison Wesley
4. NETWORK PROGRAMMING With Windows Socket By Baner .P., PHI

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4207	3	1	0	3 HOURS	40	60	4

SOFTWARE TESTING AND QUALITY MANAGEMENT

UNIT I

Software Quality: Ethical Basis for software Quality , Total quality Management Principles, Software Processes and Methodologies , Quality Standards , Practices & conventions, Top Down and Bottom Up Approach.

UNIT II

Software management Reviews and Audits, Enterprise Resource Planning Software, Measurement Theory , Software Quality Metrics, designing Software Measurement Programs , Organizational Learning.

UNIT III

Improving Quality with methodologies: Structured information Engineering , Object-Oriented Software , Reverse Engineering , Measuring Customer Satisfaction Defect Prevention , Reliability Models , Reliability Growth Models .

UNIT IV

Software Quality Engineering: Defining Quality Requirements Management, Complexity Metrics and Models, Management issues for software Quality, Project Tracking and Oversight, Use of CASE tool Technology, Role of Groupware, data Quality Control.

UNIT V

Project Configuration management: Configuration Management Concepts, Configuration Management Process, Document Control, Configuration Management plan of the WAR Project.

List of Books:

1. Stephan Kan, Metrics and Models in Software quality, Addison Wesley.
2. Mark Paulik, The capability Maturity Model-guidelines for improving the software Process, Addison Wesley.
3. Michael, Deutsch, Willis, Ronald r-Software Quality Engineering- A Total Technical and Management approach, Prentice Hall.
4. Ginac, Frank P, Customer Oriented Software Quality Insurance, Prentice Hall.
5. Wilson, Rodney C, Software RX secrets of Engineering Quality Software, Prentice Hall.
6. Pressman, Software Engineering-A practitioner's approach
7. Pankaj Jalote, CMM Project

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4208	3	1	0	3 HOURS	40	60	4

INFORMATION TECHNOLOGY FOR AUTOMATION

UNIT I

Basic concepts: Information science technology and automation principles

UNIT II

Computerization and networking: Basic computer communication and interconnection mechanism. Network topology. Networking protocols.

UNIT III

Industrial automation: Flexible manufacturing systems. .Process automation, Design of a distributed architecture for the information processing in different units, plants and factories in an industrial set up

UNIT IV

Office automation: Design and development of a centralized and distributed architecture in different administrative sectors of an organization (University, enterprises and Air traffic system)

UNIT V

Hospital information System: design of different inter connected modules for registration, medical consultancy, ward management, patient care and staff management in a hospital. Tele medicine: web based system for distant medical care.

List of Books:

1. Modern Industrial Automation Software design: Principles and Real-World Applications- By Ling Feng Wong, Kay Chen Tan Publisher John Wiley and sons.

2. Software for automation: Architecture, Integration, and Security, By Jonas Berge, ISA

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4209	3	1	0	3 HOURS	40	60	4

GRID AND CLOUD COMPUTING

UNIT I

Cloud Computing, History of Cloud Computing, Cloud Architecture, Cloud Storage, Why Cloud Computing Matters, Advantages of Cloud Computing, Disadvantages of Cloud Computing, Companies in the Cloud Today, Cloud Services

UNIT II

Web-Based Application, Pros and Cons of Cloud Service Development, Types of Cloud Service Development Infrastructure as a Service, Introduction, Resource Virtualization Server, Storage, Network

UNIT III

On-Demand Computing, Discovering Cloud Services, Development Services and Tools, Amazon Ec2, Google App Engine, IBM Clouds Centralizing Email

Communications, Cloud Computing for the Community , Collaborating on Group Projects and Events, Cloud Computing for the Corporation.

UNIT IV

Grid Computing: History, Definition, Types, Architecture and Goals

UNIT V

Applications and Challenges of Grid Computing, Providers of Grid Computing

List of Books: Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.

1. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing.

2. Viktors Berstis , Grid Computing : IBM Red Book

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4210	3	1	0	3 HOURS	40	60	4

CYBER CRIME AND LAWS

UNIT I

Introduction to Cyber Law Evolution of Computer Technology, emergence of Cyber space. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Hierarchy of courts, Civil and criminal jurisdictions, Cyberspace- Web space, Web hosting and web Development agreement, Legal and Technological Significance of Domain Names

UNIT II

Information technology Act Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Cryptographic Algorithm, Public Cryptography, Private Cryptography, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offences, Network Service Providers Liability, Cyber Regulations Appellate Tribunal, Penalties and Adjudication.

UNIT III

Cyber law and related Legislation Patent Law, Trademark Law, Copyright, Software, Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code, IT Act and Criminal Procedural Code, Relevant Sections of Indian Evidence Act, Relevant Sections of Bankers Book Evidence Act, Relevant Sections of Indian Penal Code, Relevant Sections of Reserve Bank of India Act, Law Relating To Employees And Internet, Alternative Dispute Resolution , Online Dispute Resolution (ODR).

UNIT IV

Cyber Security: Definition, Architecture, Types, Policies, Prevention and Attacks.

UNIT V

Application area: business, taxation, electronic payments, supply chain, EDI, E-markets, Emerging Trends

List of Books: Cyber Laws: Intellectual property & E Commerce, Security- Kumar K, dominant Publisher

1. Information Security policy &implementation Issues, NIIT, PHI
2. Cyber CRIME notorious Aspects of the Humans & net Criminals activity in Cyber World Barna Y Dayal D P Dominant Publisher
3. Cyber Crime Impact in the new millennium, Marine R.C. Auther press
4. Spam Attack, Cyber Stalking & abuse, Barna Y, Dayal D P Dominant publisher
5. Frauds & Financial criouses in Cyber space, Barna Y, Dayal D P , Dominant publisher
6. Information Security , NIIT: PHI

SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT4211	3	1	-	3 HOURS	40	60	4

ADVANCED COMPUTER ARCHITECTURE

UNIT I:

Flynn's Classification, Linear pipeline processor: Nonlinear pipeline processor, Instruction pipeline design, Mechanisms, Dynamic instruction scheduling, Arithmetic pipeline design, Super-scalar processors, VLIW architecture.

Unit II:

Memory Hierarchy & I/O organization: Cache memories, Cache coherence, High bandwidth memories, High bandwidth I/O, Disk I/O, Bus specifications and standards.

UNIT III:

Parallel Computer Models & Program parallelism: Classification of Machines, SISD, SIMD & MIMD, Condition of parallelism, data and resource dependencies, Program partitioning & scheduling, grain size latency, control flow versus data control, data flow architecture.

UNIT IV:

Synchronous Parallel Processing: Vector instruction types, vector access memory schemes, vector and symbolic processors, SIMD architecture, SIMD parallel algorithms, SIMD computers and performance enhancements.

UNIT V:

System Interconnection: Network properties and routing, static interconnection networks, dynamic interconnection networks, Multiprocessor system interconnection, Multistage & combining networks.

List of Books:

1. Flynn, computer Architecture: Pipelined and parallel processor design, JB, Boston.
2. Computer Architecture & Parallel processing - Kai Hwang 7 Briggs. (MGH).
3. R.W. Hockney, C.R. Jesshope, "Parallel Computer 2 –Arch..& Algo.", Adam Hilger.
4. K. Hwang, "Advanced Computer Architecture with ParallelProgramming", MGH.
5. Parallel computing- Theory and practice - Michael J Quinn- Mc Graw Hill

CODE OF CONDUCT FOR STUDENTS

CODE OF CONDUCT FOR STUDENTS

The students are admitted to Guru Ghasidas Vishwavidyalaya to achieve excellence and shape their character to become responsible citizens. They must realize their responsibility towards the Vishwavidyalaya and to its components like faculty, staff and fellow students. Failure to maintain a good standard of conduct shall result in disciplinary action.

Attendance: 75% attendance is compulsory in each subject.

Misconduct: Any of the following activities (but not limited to these only) will be treated as misconduct.

1. Disruption of teaching activities or disturbing the learning process of other students on the campus.
2. Any act on the part of the students, which disrupts functioning of the university, endangers health and safety of campus residents and da mages Vishwavidalaya properties.
3. Cheating in examination and supplying of false documents / information in order to seek any consideration / favour from the University.
4. Possession or consumption of intoxicating beverages on the campus.
5. Failure to return back loaned material, settle University dues.
6. Possession of weapons.
7. Use of unparliamentarily language while in conversation with Vishwavidyalaya Staff and fellow students.

Disciplinary Actions:

Failure to adhere to good conduct may result in disciplinary actions like:

1. A warning by the authorities.
2. Suspension from a particular class.
3. Suspension / expulsion from the University.
4. Suspension of campus privileges e.g. hostel, accommodation etc.
5. Withholding of examination result or withdrawal of awarded diploma / degree certificate.
6. Any other disciplinary action deemed appropriate by the University authorities.

ABOUT RAGGING

ABOUT RAGGING

UGC DRAFT REGULATIONS ON CURBING THE MENACE OF RAGGING IN

HIGHER EDUCATIONAL INSTITUTIONS, 2009

In exercise of the power conferred by Clause (g) of Sub-Section (1) of Section 26 of the University Grants Commission Act, 1956, the University Grants Commission hereby makes the following Regulations, namely-

1. Title, commencement and applicability:-

1.1. These regulations shall be called the "UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009".

1.2. They shall come into force with immediate effect.

1.3. They shall apply to all the universities established or incorporated by or under a Central Act, a Provincial Act or a State Act, to all institutions deemed to be university under Section 3 of the UGC Act, 1956, to all other higher educational institutions, including the departments, constituent units and hall the premises (academic, residential, sports, canteen, etc) of such universities, deemed universities and other higher educational institutions, whether located within the campus or outside, and to all means of transportation of students whether public or private.

2. Objective:-

To root out ragging in all its forms from universities, colleges and other educational institutions in the country by prohibiting it by law, preventing its occurrence by following the provisions of these Regulations and punishing those who indulge in ragging in spite of prohibition and prevention as provided for in these Regulations and the appropriate law in force.

3. Defi nitions:-

For the purposes of these Regulations:-

3.1 "college" means any institution, whether known as such or by any other name, which provides for a programme of study beyond 12 years of schooling for obtaining any qualifi cation from a university and which, in accordance with the rules and regulations of such university, is recognized as competent to provide for such programmes of study and present students undergoing such programmes of study for the examination for the award of such qualifi cation.

3.2 "Head of the institution" means the 'Vice-Chancellor' in case of a university/deemed to be university, 'Principal' in case of a college, 'Director' in case of an institute.

3.3 "institution" means a higher educational institution (HEI), like a university, a college, an institute, etc. imparting higher education beyond 12 years of schooling leading to a degree (graduate, postgraduate and/or higher level).

3.4 Ragging" means the following: Any disorderly conduct whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness any other student, indulging in rowdy or undisciplined activities which causes or is likely to cause annoyance, hardship or psychological harm or to raise fear or apprehension thereof in a fresher or a junior student or asking the students to do any act or perform something which such student will not in the ordinary course and which has the effect

of causing or generating a sense of shame or embarrassment so as to adversely affect the physique or psyche of a fresher or a junior student.

3.5 "University" means a university established or incorporated by or under a Central Act, a Provincial Act or a State Act, an institution deemed to be university under Section 3 of the UGC Act, 1956, or an institution specially empowered by an Act of Parliament to confer or grant degrees

4 Punishable ingredients of Ragging:-

• Abetment to ragging;

• Criminal conspiracy to rag;

• Unlawful assembly and rioting while ragging;

• Public nuisance created during ragging;

• Violation of decency and morals through ragging;

• Injury to body, causing hurt or grievous hurt;

• Wrongful restraint;

• Wrongful confinement;

• Use of criminal force;

• Assault as well as sexual offences or even unnatural offences;

• Extortion;

• Criminal trespass;

• Offences against property;

• Criminal intimidation;

• Attempts to commit any or all of the above mentioned offences against the victim(s);

• All other offences following from the defi nition of "Ragging".

5 Measures for prohibition of ragging at the institution level:-

5.1 The institution shall strictly observe the provisions of the Act of the Central Government and the State Governments, if any, or if enacted, considering ragging as a cognizable offence under the law on a par with rape and other atrocities against women and ill-treatment of persons belonging to the SC/ST, and prohibiting ragging in all its forms in all institutions.

5.2 Ragging in all its forms shall be totally banned in the entire institution, including its departments, constituent units, all its premises (academic, residential, sports, canteen, etc) whether located within the campus or outside and in all means of transportation of students whether public or private.

5.3 The institution shall take strict action against those found guilty of ragging and/or of abetting ragging.

6 Measures for prevention of ragging at the institution level:-

6.1 Before admissions:-

6.1.1 The advertisement for admissions shall clearly mention that ragging is totally banned in the institution, and anyone found guilty of ragging and/or abetting ragging is liable to be punished Appropriately (for punishments, ref. section 8 below).

6.1.2 The brochure of admission/instruction booklet for candidates shall print in block letters these Regulations in full (including Annexures).

6.1.3 The 'Prospectus' and other admission related documents shall incorporate all directions of the Supreme Court and / or the Central or State Governments as applicable, so that the candidates and their parents/ guardians are sensitized in respect of the prohibition and consequences of ragging. If the institution is an affiliating university, it shall make it mandatory for the institutions under it to compulsorily incorporate such information in their 'Prospectus'.

6.1.4 The application form for admission/ enrolment shall have a printed undertaking, preferably both in English/Hindi and in one of the regional languages known to the institution and the applicant (English version given in Annexure I, Part I), to be filled up and signed by the candidate to the effect that he/she is aware of the law regarding prohibition of ragging as well as the punishments, and that he/she, if found guilty of the offence of ragging and/or abetting ragging, is liable to be punished appropriately.

6.1.5 The application form shall also contain printed undertaking, preferably both in English/Hindi and in one of the regional languages known to the institution and the parent/ guardian (English version given in Annexure I, Part II), to be signed by the parent/ guardian of the applicant to the effect that he/ she is also aware of the law in this regard and agrees to abide by the punishment meted out to his/her ward in case the latter is found guilty of ragging and/or abetting ragging.

6.1.6 The application for admission shall be accompanied by a document in respect of the School Leaving Certificate/ Character Certificate which shall include a report on the behavioral pattern of the applicant, so that the institution can thereafter keep intense watch upon a student who has a negative entry in this regard.

6.1.7 A student seeking admission to the hostel shall have to submit another undertaking in the form of Annexure I (both Parts) along with his/ her application for hostel accommodation.

6.1.8. At the commencement of the academic session the Head of the Institution shall convene and address a meeting of various functionaries/agencies, like Wardens, representatives of students, parents/ guardians, faculty, district administration including police, to discuss the measures to be taken to prevent ragging in the Institution and steps to be taken to identify the offenders and punish them suitably.

6.1.9. To make the community at large and the students in particular aware of the dehumanizing effect of ragging, and the approach of the institution towards those indulging in ragging, big posters (preferably multicolored with different colours for the provisions of law, punishments, etc.) shall be prominently displayed on all Notice Boards of all departments, hostels and other buildings as well as at vulnerable places. Some of such posters shall be of permanent nature in certain vulnerable places.

6.1.10 The institution shall request the media to give adequate publicity to the law prohibiting ragging and the negative aspects of ragging and the institution's resolve to ban ragging and punish those found guilty without fear or favour.

6.1.11 The institution shall identify, properly illuminate and man all vulnerable locations.

6.1.12 The institution shall tighten security in its premises, especially at the vulnerable places. If necessary, intense policing shall be resorted to at such points at odd hours during the early monthsof the academic session.

6.1.13 The institution shall utilize the vacation period before the start of the new academic year to launch wide publicity campaign against ragging through posters, leafl ets. seminars, street plays, etc.

6.1.14 The faculties/ departments/ units of the institution shall have induction arrangements (including those which anticipate, identify and plan to meet any special needs of any specifi c section of students) in place well in advance of the beginning of the academic year with a clear sense of the main aims and objectives of the induction process.

6.2 On admission:-

6.2.1 Every fresher admitted to the institution shall be given a printed leafl et detailing when and to whom he/she has to turn to for help and guidance for various purposes (including Wardens, Head of the institution, members of the anti-ragging committees, relevant district and police authorities), addresses and telephone numbers of such persons/ authorities, etc., so that the fresher need not look up to the seniors for help in such matters and get indebted to them and start doing things, right or wrong, at their be hest. Such a step will reduce the freshers' dependence on their seniors .

6.2.2 The institution through the leaflet mentioned above shall explain to the new entrants the arrangements for their induction and orientation which promote effi cient and effective means of integrating them fully as students.

6.2.3 The leafl et mentioned above shall also tell the freshers about their rights as bona fi de students of the institution and clearly instructing them that they should desist from doing anything against their will even if ordered by the seniors, and that they have nothing to fear as the institution cares for them and shall not tolerate any atrocities against them.

6.2.4 The leafl et mentioned above shall contain a calendar of events and activities laid down by the institution to facilitate and complement familiarization of juniors with the academic environment of the institution.

6.2.5 The institution shall also organize joint sensitization programmes of 'freshers' and seniors.

6.2.6 Freshers shall be encouraged to report incidents of ragging, either as victims, or even as witnesses.

6.3 At the end of the academic year:-

6.3.1 At the end of every academic year the Vice-Chancellor/ Dean of Students Welfare/ Director/ Principal shall send a letter to the parents/ guardians who are completing the first year informing them about the law regarding ragging and the punishments, and appealing to them to impress upon their wards to desist from indulging in ragging when they come back at the beginning of the next academic session.

6.3.2 At the end of every academic year the institution shall form a 'Mentoring Cell' consisting of Mentors for the succeeding academic year. There shall be as many levels or tiers of Mentors as the number of batches in the institution, at the rate of 1 Mentor for 10 freshers and 1 Mentor of a higher level for 10 Mentors of the lower level.

6.4 Setting up of Committees and their functions:-

6.4.1The Anti-Ragging Committee:- The Anti-Ragging Committee shall be headed by the Head of the institution and shall consist of representatives of faculty members, parents, students belonging to the freshers' category as well as seniors and non-teaching staff. It

shall consider the recommendations of the Anti-Ragging Squad and take appropriate decisions, including spelling out suitable punishments to those found guilty.

6.4.2 The Anti-Ragging Squad:- The Anti-Ragging Squad shall be nominated by the Head of the institution with such representation as considered necessary and shall consist of members belonging to the various sections of the campus community. The Squad will have vigil, oversight and patrolling functions. It shall be kept mobile, alert and active at all times and shall be empowered to inspect places of potential ragging and make surprise raids on hostels and other hot spots. The Squad shall investigate incidentsof ragging and make recommendations to the Anti-Ragging Committee and shall work under the overall guidance of the said Committee.

6.4.3 Monitoring Cell on Ragging:- If the institution is an affi liating university, it shall have aMonitoring Cell on Ragging to coordinate with the institutions affi liated to it by calling for reports from the Heads of such institutions regarding the activities of the Anti-Ragging Committees, Squads, and Mentoring Cells, regarding compliance with the instructions on conducting orientation programmes, counseling sessions, etc., and regarding the incidents of ragging, the problems faced by wardens and other offi cials, etc. This Cell shall also review the efforts made by such institutions topublicize anti-ragging measures, cross-verify the receipt of undertakings from candidates/students and their parents/guardians every year, and shall be the prime mover for initiating action by the university authorities to suitably amendthe Statutes or Ordinances or Bye-laws to facilitate the implementation of anti ragging measures at the level ofthe institution.

6.5 Other measures:-

6.5.1 The Annexure mentioned in 6.1.4, 6.1.5 and 6.1.7 shall be furnished at the beginning of each academic year by every student, that is, by freshers as well as seniors.

6.5.2 The institution shall arrange for regular and periodic psychological counseling and orientation for students (for freshers separately, as well as jointly with seniors) by professional counselors during the first three months of the new academic year. This shall be done at the institution and department/ course levels. Parents and teachers shall also be involved in such sessions.

6.5.3 Apart from placing posters mentioned in 6.1.9 above at strategic places, the institution shall undertake measures for extensive publicity against ragging by means of audio-visual aids, by holding counseling sessions, workshops,painting and design competitions among students and other methods as it deems fit.

6.5.4 If the institution has B.Ed. and other Teacher training programmes, these courses shall be mandated to provide for anti-ragging and the relevant human rights appreciation inputs, as well as topics on sensitization against corporal punishments and checking of bullying amongst students, so that every teacher is equipped to handle at least the rudiments of the counseling approach.

6.5.5 Wardens shall be appointed as per the eligibility criteria laid down for the post refl ecting both the command and control aspects of maintaining discipline, as well as the softer skills of counseling and communicating with the youth outside the class-room situations. Wardens shall be accessible at all hours and shall be provided with mobile phones. The institution shall review and suitably enhance the powers and perquisites of Wardens and authorities involved in curbing the menace of ragging.

6.5.6   The security personnel posted in hostels shall be under the direct control of the Wardens and assessed by them.

6.5.7   Private commercially managed lodges and hostels shall be registered with the local police authorities, and this shall be done necessarily on the recommendation of the Head of the institution. Local police, local administration and the institutional authorities shall ensure vigil on incidents that may come within the definition of ragging and shall be responsible for action in the event of ragging in such premises, just as they would be for incidents within the campus. Managements of such private hostels shall be responsible for not reporting cases of ragging in their premises.

6.5.8   The Head of the institution shall take immediate action on receipt of the recommendations of the Anti-Ragging Squad. He/ She shall also take action suo motto if the circumstances so warrant.

6.5.9   Freshers who do not report the incidents of ragging either as victims or as witnesses shall also be punished suitably.

6.5.10 Anonymous random surveys shall be conducted across the 1st year batch of students (freshers) every fortnight during the first three months of the academic year to verify and cross-check whether the campus is indeed free of ragging or not. The institution may design its own methodology of conducting such surveys.

6.5.11 The burden of proof shall lie on the perpetrator of ragging and not on the victim.

6.5.12 The institution shall fi le an FIR with the police / local authorities whenever a case of ragging is reported, but continue with its own enquiry and other measures without waiting for action on the part of the police/ local civil authorities. Remedial action shall be initiated and completed within the one week of the incident itself.

6.5.13 The Migration / Transfer Certificate issued to the student by the institution shall have an entry, apart from those relating to general conduct and behaviour, whether the student has been punished for the offence of committing or abetting ragging, or not, as also whether the student has displayed persistent violent or aggressive behaviour or any desire to harm others.

6.5.14 Preventing or acting against ragging shall be the collective responsibility of all levels and sections of authorities or functionaries in the institution, including faculty, and not merely that of the specifi c body/ committee constituted for prevention of ragging.

6.5.15   The Heads of institutions other than universities shall submit weekly reports to the Vice-chancellor of the university the institution is affiliated to or recognized by, during the first three months of new academic year and thereafter each month on the status of compliance with anti-ragging measures. The Vice Chancellor of each university shall submit fortnightly reports of the university, including those of the Monitoring Cell on Ragging in case of an affiliating university, to the Chancellor.

6.5.16 Access to mobile phones and public phones shall be unrestricted in hostels and campuses, except in class-rooms, seminar halls, library etc. where jammers shall be installed to restrict the use of mobile phones.

6.6   Measures for encouraging healthy interaction between freshers and seniors:-

6.6.1   The institution shall set up appropriate committees including the course-in-charge, student advisor, Warden and some senior students to actively monitor, promote and regulate healthy interaction between the freshers and senior students.

6.6.2 Freshers' welcome parties shall be organized in each department by the senior students and the faculty together soon after admissions, preferably within the fi rst two weeks of the beginning of the academic session, for proper introduction to one another and where the talents of the freshers are brought out properly in the presence of the faculty, thus helping them to shed their inferiority complex, if any, and remove their inhibitions.

6.6.3 The institution shall enhance the student-faculty interaction by involving the students in all matters of the institution, except those relating to the actual processes of evaluation and of faculty appointments, so that the students shall feel that they are responsible partners in managing the affairs of the institution and consequently the credit due to the institution for good work/ performance is due to them as well.

6.7   Measures at the UGC/ Statutory/ Regulatory bodies' level:-

6.7.1 The UGC and other Statutory /Regulatory bodies shall make it mandatory for the institutions to compulsorily incorporate in their 'Prospectus' the directions of the Supreme Court and/or the Central or State Governments with regard to prohibition and consequences of ragging, and that noncompliance with the directives against ragging in any manner whatsoever shall be considered as lowering of academic standards by the erring institution making it liable for appropriate action.

6.7.2 The UGC (including NAAC and UGC Expert Committees visiting institutions for various purposes) and similar Committees of other Statutory/Regulatory bodies shall cross-verify that the institutions strictly comply with the requirement of getting the undertakings from the students and their parents/ guardians as envisaged under these Regulations.

6.7.3 The UGC and other funding bodies shall make it one of the conditions in the Utilization Certificate for sanctioning any financial assistance or aid to the institution under any of the general or special schemes that the institution has strictly complied with the anti-ragging measures and has a blemishless record in terms of there being no incidents of ragging during the period pertaining to the Utilization Certificate.

6.7.4 The NAAC and other accrediting bodies shall factor in any incident ofragging in the institution while assessing the institution in different grades.

6.7.5 The UGC shall constitute a Board for Coordination consisting of representatives of the AICTE, the IITs, the NITs, the IIMs, the MCI, the DCI, the NCI, the ICAR and such other bodies which have to deal with higher education to coordinate and monitor the anti-ragging movement across the country and to make certain policy decisions. The said Board shall meet once in a year in the normal course.

6.7.6 The UGC shall have an Anti-Ragging Cell within the Commission as an institutional mechanism to provide secretarial support for collection of information and monitoring, and to coordinate with the State level and university level Committees for effective implementation of anti-ragging measures.

6.7.7 If an institution fails to curb ragging, the UGC/ the Statutory/ Regulatory body concerned may stop financial assistance to such an institution or take such action within its powers as it may deem fi t and impose such other penalties as provided till such time as the institution achieves the objective of curbing ragging.

7   Incentives for curbing ragging:-

7.1 The UGC shall consider providing special/ additional annual financial grants-inaid to those eligible institutions which report a blemish-less record in terms of there being no incidents of ragging.

7.2 The UGC shall also consider instituting another category of fi nancial awards or incentives for those eligible institutions which take stringent action against those responsible for incidents of ragging.

7.3 The UGC shall lay down the necessary incentive for the post of Warden in order to attract the right type of eligible candidates, and motivate the incumbent.

8 Punishments:-

8.1 At the institution level:

Depending upon the nature and gravity of the offence as established by the Anti-Ragging Committee of the institution, the possible punishments for those found guilty of ragging at the institution level shall be any one or any combination of the following:

8.1.1 Cancellation of admission

8.1.2 Suspension from attending classes

8.1.3 Withholding/ withdrawing scholarship/ fellowship and other benefi ts

8.1.4 Debarring from appearing in any test/ examination or other evaluation process

8.1.5 Withholding results

8.1.6 Debarring from representing the institution in any regional, national or international meet, tournament, youth festival, etc.

8.1.7 Suspension/ expulsion from the hostel

8.1.8 Rustication from the institution for period ranging from 1 to 4 semesters

8.1.9 Expulsion from the institution and consequent debarring from admission to any other institution

8.1.10 Fine of Rupees 25,000/-

8.1.11 Collective punishment: When the persons committing or abetting the crime of ragging are not identifi ed, the institution shall resort to collective punishment as a deterrent to ensure community pressure on the potential raggers.

8.2 At the university level in respect of institutions under it:

If an institution under a university (being constituent of, affi liated to or recognized by it) fails to comply with any of the provisions of these Regulations and fails to curb ragging effectively, the university may impose any or all of the following penalties on it:

8.2.1 Withdrawal of affi liation/ recognition or other privileges conferred on it

8.2.2 Prohibiting such institution from presenting any students then undergoing any programme of study therein for the award of any degree/diploma of the university

8.2.3 Withholding any grants allocated to it by the university

8.2.4 Any other appropriate penalty within the powers of the university.

8.3 At the UGC level:

If an institution fails to curb ragging, the UGC may impose any or all of the following penalties on it:

8.3.1 Delisting the institution from section 2(f) and /or section 12B of the UGC Act

8.3.2   Withholding any grants allocated to it

8.3.3   Declaring institutions which are not covered under section 2(f) and or 12B as ineligible for any assistance like that for Major/ Minor Research Project, etc.

8.3.4   Declaring the institution ineligible for consideration under any of the special assistance programmes like CPE (College with potential for Excellence), UPE (University with Potential for Excellence) CPEPA (Centre with Potential for Excellence in a Particular Area), etc.

8.3.5   Declaring that the institution does not have the minimum academic standards and warning the potential candidates for admission accordingly through public notice and posting on the UGC Website.

DISCIPLINE AMONG STUDENTS

IN

UNIVERSITY EXAMINATIONS

DISCIPLINE AMONG STUDENTS IN UNIVERSITY EXAMINATIONS

I UNIVERSITY END SEMESTER EXAMINATIONS

1. The end –semester examination shall be held under the general supervision of the Head of Department by the faculty member concerned. He/she shall be responsible for the fair and orderly conduct of the examination
2. In case of detection of unfair means (as specified in clause 1 of General Guidelines below), the same shall be brought to the notice of the head of the department concerned for further action specified under clause 5 of the General Guidelines below

II ENTRANCE EXAMINATIONS

1. During an entrance examination the candidates shall be under the disciplinary control of the chief Superintendent of the centre who shall issue the necessary instructions. If a candidate disobeys instructions or misbehaves with any member of the supervisory staff or with any of the invigilators at the centre, he/she may be expelled from the examination for that session.
2. The Chief Superintendent shall immediately report the facts of such a case with full details of evidence to the Controller of Examinations who will refer the matter to the Examination Discipline Committee in terms of clause 4 of General Guidelines below. The committee will make recommendations for disciplinary action as it may deem fit to the Vice-Chancellor as provided under clause 7
3. Everybody, before an examination begins, the invigilators shall call upon all the candidates to search their persons, tables, desks, etc. and ask them to hand over all papers, books, notes or other reference material which they are not allowed to have in their possession or accessible to them in the examination hall. Where a late-comer is admitted this warning shall be repeated to him at the time of entrance to the examination hall. They are also to see that each candidate has his/her identification card and hall ticket with him/her.

III GENERAL GUIDELINES

1. Use of Unfair means:
   A candidate shall not use means in connection with any examination. The following shall be deemed to unfair means:
   a. Found in possession of incriminating material related/unrelated to the subject of the examination concerned.
   b. Found copying either from the possessed material or from a neighbor.
   c. Inter-changing of answer scripts.
   d. Change of seat for copying.
   e. Trying to help others candidates.

f. Found consulting neighbours

g. Exchange of answer sheets or relevant materilas.

h. Writing some other candidate's register number in the main answer paper.

i. Insertion of pre-written answer sheets (Main sheets or Additional sheets)

j. Threatening the invigilator or insubordinate behavior as reported by the Chief Superintendent and / or Hall Superintendent.

k. Consulting the invigilator for answering the questions in the examination.

l. Cases of impersonation

m.   Mass copying

n. Using electronic devices for the purpose of malpractice.

The Executive Council may declare any other act of omission or commission to be unfair means in respect of any or all the examination.

2. If the Vice-Chancellor is satisfied that there has been mass-scale copying or use or unfair means on a mass-scale at particular center(s), he may cancel the examination of all the candidates concerned and order re-examination.

3. Where the invigilator incharge is satisfied that one third (1/3) or more students were involved in using unfair-means or copying in a particular Examination Hall. It shall be deemed to be a case of mass copying.

a)   The Chief Superintendent of the examination centre shall report to the Controller of Examinations without delay and on the day of the occurrence if possible, each case where use of unfair means in the examination is suspected or discovered with full details of the evidence in support thereof and the statement of the candidate concerned, if any, on the forms supplied by the Controller of Examination for the purpose.

b)   A candidate shall not be forced to give a statement but the fact of his /her having refused to make a statement shall be recorded by the Chief Superintendent and shall be got attested by two other members of the supervisory staff on duty at the time of occurrence of the incident.

c)   A candidate detected or suspected of using unfair means in the examination may be permitted to answer the question paper, but on separate answer-book. The answer-book in which the use of unfair means is suspected shall be seized by the Chief Superintendent, who shall send both the answer-books to the Controller of Exami9nation with his report. This will not affect the concerned candidate appearing in the rest of the examinations.

d)   All cases of use of unfair means shall be reported immediately to the Controller of the Examination by the Centre Superintendent, examiner, paper-setter, evaluator, moderator, tabulator or the person connected with the University examination as the case may be, with all the relevant material.

4. Examination Discipline Committee

a)   All the cases of alleged use of unfair means shall be referred to a committee called the Examination Discipline Committee to be appointed by the Vice-Chancellor.

b) The Committee shall consists of five members drawn from amongst the teachers and officers of the university. One member will be nominated as Chairman from amongstthem by the Vice Chancellor.

c) A member shall be appointed for a term of two years, and shall be eligible for re-appointment.

d) Three members present shall constitute the quorum.

e) Ordinarily, all decisions shall be taken by the Committee by simple majority. If the members cannot reach a consensus, the case shall be referred to the Vice-Chancellor, whose decision shall be final.

f) All decisions taken by the examination discipline committee will be placed before the Vice-Chancellor for approval

g) A candidate within one month of the receipt of the decision of the university may appeal to the Vice-Chancellor, in writing for a review of the case. If the Vice-Chancellor is satisfied that the representation merits consideration, he/she may refer the case back to the Examination Discipline Committee for reconsideration.

5 The Examination Discipline Committee may recommend one of the following punishments for cases of unfair means

Nature of unfair means	Scale of Punishment
If the candidate has used unfair means specified in sub-clause (a) to (g) of clause 3	Cancel all the University Examinations registered by the candidate in that session.
If the candidate has repeated the unfair means shown at 3(a) to (g) a second time	Cancel the University Examination of all subjects registered by the candidate in that session and debar him/her for the next examination session (i.e. all university Examinations in the subsequent session)
If the candidate has repeated the unfair means shown at 3(a) to (g) third time	Cancel the University Examination of all subjects registered by the candidate for that session and debar him/her for two years from registering and appearing for the university Examination
If the candidate has used unfair means specified in sub-clause (h) of clause	Cancel the University Examination of all subjects registered by the candidate during that semester only.
If the candidate has used unfair means specified in sub-clause (i) of clause	Cancel the University Examination of all subjects registered by the candidate for that session and debar him/her for two subsequent Examination sessions.
If the candidate has used unfair means specified in sub-clause (j) of clause 3	Cancel the University Examination of all subjects registered by the candidate for that session and debar him/her for two years from registering and appearing for the university Examination
If the candidate has used	Cancel the University Examination of all subjects

unfair means specified in sub-clause (k) of clause	registered by the candidate for that session
If the candidate has used unfair means specified in sub-clause (l) of clause	Cancel the University Examination of all subjects registered by the candidate for that session and debar him/her for two years from registering and appearing for the examination sessions. Moreover, relevant legal action shall be initiated if an outsider is involved.
If the candidate used unfair means in sub-clause (m) of clause 3	ix) a) In the single Hall: Cancel the relevant examination taken by the students of that Hall. Debar the concerned Hall superintendent and other involved directly or indirectly from the examination work such as invigilation, question paper-setting, valuation, etc. for the next six examination sessions. b) In a Centre: Cancel the relevant examination taken by the students of the center. Debare the Hall Superintendents and the Chief Superintendent and other involved directly or indirectly from the examination work such as invigilation, question paper-setting, valuation, etc. for the next six examination sessions and cancel the examination center for two years

Important Phone No.s

S. No.	POSITION	NAME	Mb. No. & PHONE NO. (07752)
01.	Vice Chancellor (Acting)	Prof. M.S.K. Khokhar	260283, 260353
02.	Registrar (Acting)	Prof. I. D. Tiwari	260209
03.	Controller of Exam	Dr. A. S. Randive	260044
04.	Dean Student Welfare (DSW)	Dr. S.V.S. Chouhan	260204
05.	Proctor	Prof. Pradeep Schukla	09425227219 07752-260206
06.	Chief, Warden Hostel	Prof. S. S. Singh	094241-63260
07.	Vishvesvaraiya Chair Professor	Dr. P.C. Upadhyay	09425280200
08.	Librarian (Central Library)	Dr. U.N. Singh	07752-260041
09.	Media In charge	Prof. Anupama Saxena	09406304040
10.	N.S.S. Coordinator	Prof. Pratibha J Mishra	94137-60046, 78694-22622, 07752-260484
11.	Professor In charge Campus security Management	Prof. B. S. Rathore	07587472651
12.	Dean, School of Studies in Engineering & Technology	Dr. Shailendra Kumar	260429
13.	Director, Institute of Technology	Dr. Shailendra Kumar	260429
14.	Deputy Registrar (Administration)	Mr. R. K. Soni	260036
15.	Deputy Registrar (Exam)	Dr. Sampoornanand Jha	260490 / 260003 / 260000
16.	Deputy Registrar (Store)	Mr. Suraj Mehar	07752-260381, 0 9301010198
17.	HOD (Civil Engineering)	Dr. Shailendra Kumar	260429
18.	HOD (Computer Science and Engineering)	Dr. Manish Shrivastava	260456
19.	HOD (Information Technology)	Dr. Amit Khaskalam	260454
20.	HOD (Electronics & Comm. Engineering)	Mrs. Bhawana Shukla	260458
21.	HOD (Industrial & Production Engineering)	Dr. Mukesh Singh	260453
22.	HOD (Chemical Engineering)	Mr. Neeraj Chandraker (In-Charge)	260457
23.	HOD (Mechanical Engineering)	Dr. Rajesh Kumar Bhushan	086024-03633

24.	Adm. warden , Girl's Hostel	Dr. Rashmi Agrawal	09179444732
25.	Warden-1, Girl's Hostel	Dr. Seema Rai	09406211523
26.	Warden-2, Girl's Hostel	Dr. Renu Bhatt	07389451727
27	Warden-3, Girl's Hostel	Dr. Arti Srivastava	07489965977
28	Matron- 1, Girl's Hostel	Ms. Geeta Sahu	08234003308 Girls Hostel office 07752-260462
29	Matron- 2, Girl's Hostel	Mrs. Janaki Sahu	09009146267
30	Warden -1 (Resident warden S.V.B.H) Boy's Hostel	Mr. T.R. Ratre	090981-46109, 07752-260466
31	Warden - 2 Boy's Hostel (S.V.B.H)	Mr. Abhishek Awasthi	094252-30525, 07752-260466
32	Warden - 2 Boy's Hostel (S.V.B.H)	Mr. Saurabh Meshram	07828245128
33	Warden - 3 Boy's Hostel (B.H. Type-II IV)	Mr. Agnivesh Pandey	096912-85190, 07752-213203 07752-213204
34	Warden - 4 Boy's Hostel (B.H. Type-II IV)	Mr. Shrawan Patel	094241-33622, 07752-213203 07752-213204
35	Boy's Hostel Office	--	07752-260466
36	Boy's Hostel Main Gate	--	07752-260479
37	Medical doctor	Dr. A. Mandal	094255-46165 07752-260427
38	Ambulance	Mr. Yogeshwar Tiwari	094255-42612
39	Health Centre University -	---	07752-260427
40	University Guest House	---	07752-260024
41	Assistant Workshop superintendent	Anulal Mahato	09425535122
42	Training and Placement officer	Mr. Premnath Kamlesh	09479218765 (Mob)
43	University Engineer	Er. Md. A. Hussain	07752-260491, 094790-01658
44	Public Relation Officer	Dr. Satyesh Bhatt	09971085666
45	Asstt. Librarian (Institute of Technology)	Mr. Afsa Ansari	07752-260007
46	Sports Officer (Institute of Technology)	Mr. Ratin Jogi	09827923220

47	Assistant Security Officer	Mr. Suraj Singh	09302408561
48	SC / ST Cell	-	07752-260053
49	DSW (Office)	-	07752-260204, 260013
50	Bank of India	-	07752-260073
51	Punjab National Bank	-	07752-260034

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4	Assistant Professor	Mr. Abhishek Jain	89626-96827
5	Assistant Professor	Mr. Agnivesh Pandey	96912-85190
6	Assistant Professor	Mr. Pankaj Chandra	99811-11983
7	Assistant Professor	Mr. Suhel Ahmad	91656-78692
8	Assistant Professor	Mr. Deepak Kant Netam	97554-46005
9	Assistant Professor	Mr. Anand Prakash Rawal	94076-55455
10	Assistant Professor	Ms. Akanksha Gupta	97701-47322

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2	Lab Attendant	Mr. Vinod Dewangan	09691415699
3	M.T.S	Mr. F. Jospeh	08109928513

Other Useful Numbers

S. No.	POSITION		PHONE NO.
1	Police Station, Koni		07752-260039
2	Post Office, Koni		07752-260032
3	Punjab National Bank, Koni		07752-260034

WELL EQUIPPED LABS

DEPARTMENT OF INFORMATION TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

DEPARTMENT OF IT ENGINEERING