



**List of Courses Focus on Employability/ Entrepreneurship/
Skill Development**

Department : Electronics and Communication Engineering

Programme Name : B.Tech.

Academic Year : 2018-19

List of Courses Focus on Employability/ Entrepreneurship/Skill Development

Sr. No.	Course Code	Name of the Course
01.	EC01TBS01	Mathematics-II
02.	EC01TBS02	Chemistry
03.	EC01TES01	Programming for Problem Solving
04.	EC01TES02	Engineering Mechanics
05.	EC01PBS01	Chemistry Lab
06.	EC01PES01	Programming for Problem Solving Lab
07.	EC01PES02	Workshop Manufacturing & Practices
08.	EC01PES03	Engineering Mechanics Lab
09.	EC01PMC01	Induction Training Programme
10.	EC02TBS03	Physics
11.	EC02TES01	Basic Electrical Engineering
12.	EC02TBS04	Mathematics-I
13.	EC02THS01	English
14.	EC02TMC01	Environment Sciences
15.	EC02PBS02	Physics Lab
16.	EC02PES04	Basic Electrical Engineering Lab
17.	EC02PES05	Engineering Graphics & Design Lab
18.	EC3THS03	Engineering Economics
19.	EC3TPC01	Signals and Systems
20.	EC3TBS01	Engineering Mathematics-III
21.	EC3TES01	Network Analysis And Synthesis
22.	EC3TES02	Electronic Devices
23.	EC3TPC02	Digital Logic Circuits
24.	EC3PES02	Electronics Devices Lab
25.	EC3PPC02	Digital Logic Circuits Lab
26.	EC4TBS02	Numerical Analysis



27	EC4TPC03	Automatic Control Systems
28	EC4TPC04	Analog Circuits
29	EC4TPC05	Communication System-I
30	EC4TPC06	Electronics Measurements & Instrumentation
31	EC4PPC04	Analog Circuits Lab
32	EC4PPC05	Communication System-I Lab
33	EC4PPC06	Electronic Measurements & Instrumentation Lab
34	EC5TPC07	Lic & Its Application
35	EC5TPC08	Communication System- II
36	EC5TPC09	Electromagnetic Field Theory
37	EC5TPE01	Microprocessor & Its Application
38	EC5TPE02	Data Structure & Operating System
39	EC5TOE11	Computer Architecture
40	EC5TOE12	OOP in C++
41	EC5TOE13	Introduction to Information Security
42	EC5TOE14	Project Management
43	EC5TOE15	Rural Technology and Community Development
44	EC5PPC07	LIC & ITS APPLICATION Lab
45	EC5PPE01	Microprocessor & Its Application Lab
46	EC5PPC08	Communication System -II Lab
47	EC6TPC10	Digital Signal Processing
48	EC6TPC11	Antenna & wave propagation
49	EC6TPE03	Data Communication & Computer Networking
50	EC6TPE04	Fundamental of VLSI Design
51	EC6T0E21	UNIX, Operating System
52	EC6T0E22	Probability & Stochastic Process
53	EC6T0E23	Advanced Instrumentation
54	EC6T0E24	Knowledge management
55	EC6T0E25	Engineering System Design Optimization
56	EC6PPE02	VHDL Lab
57	EC6PPC06	Digital Signal Processing Lab
58	EC6PSP01	Seminar
59	EC7TPC12	Microwave Engineering
60	EC7TPC13	Wireless Mobile Communication
61	EC7TPE05	Advance Hardware Design



62	EC7TPE06	Power Electronics
63	EC7TOE31	Wireless Sensor Network
64	EC7TOE32	Information theory and coding
65	EC7TOE33	Nanotechnology
66	EC7TOE34	Optical instrumentation and measurement
67	EC7TOE35	Neural Network and Fuzzy Logic
68	EC7TPPC12	Microwave Engineering Lab
69	EC7TPPE05	Comprehensive Viva
70	EC7PSP02	Project-I
71	EC8TPC14	Radar and Satellite Engineering
72	EC8TPC15	Optical Fiber Communication
73	EC8TPE07	VLSI Fabrication Methodology
74	EC8TOE41	Basic building block of Microwave Engineering
75	EC8TOE42	Principle of Management
76	EC8TOE43	Mobile Computing
77	EC8TOE44	Embedded System
78	EC8TOE45	Advanced Power Electronics
79	EC8TPPC15	Optical Fiber Communication Lab
80	EC8TPPC16	Advanced RF and Microwave Design lab
81	EC8TPSP03	Project-II
82	EC8TPSP04	Comprehensive Viva
83	IT7100	Research Methodology in engineering
84	ECE7102	Vacume Technology
85	ECE7103	Finite Element Method
86	ECE7104	Sensors Measurement Science & Technology
87	ECE7105	Artificial Intelligence

वर्षगाध्यक्ष (इले. एव संचार अभियंत्रिकी)
H.O.D. (Elect. & Comm. Engineering)
प्रौद्योगिकी संस्थान
Institute of Technology
गु. घा. वि., बिलासपुर (छ.ग.)
G. G. V. Bilaspur (C.G.)



Scheme and Syllabus

SCHEME FOR EXAMINATION												
BTECH (FOUR YEAR) DEGREE COURSE												
FIRST YEAR, ELECTRONICS AND COMMUNICATION ENGINEERING												
SEMESTER I (Course B)												
EFFECTIVE FROM SESSION 2018-19												
S. No	Subject Code	Subjects	Period/Week			Scheme of Evaluation				Grand Total	Credits	
			L	T	P	Internal Assessment (IA)			ESE			
		Theory				CT-I	CT-II	Total				
1	EC01TBS01	MATHEMATICS-II	3	1	0	15	15	30	70	100	4	
2	EC01TBS02	CHEMISTRY	3	1	0	15	15	30	70	100	4	
3	EC01TES01	PROGRAMMING FOR PROBLEM SOLVING	3	0	0	15	15	30	70	100	3	
4	EC01TES02	ENGINEERING MECHANICS	3	0	0	15	15	30	70	100	3	
Practical												
1	EC01PBS01	CHEMISTRY LAB	0	0	3	-	-	30	20	50	1.5	
2	EC01PES01	PROGRAMMING FOR PROBLEM SOLVING LAB	0	0	3	-	-	30	20	50	1.5	
3	EC01PES02	WORKSHOP & MANUFACTURING PRACTICES	1	0	3	-	-	30	20	50	2.5	
4	EC01PES03	ENGINEERING MECHANICS LAB	0	0	2	-	-	30	20	50	1	
5	EC01PMC01	INDUCTION TRAINING PROGRAMME*	-	-	2	-	-	-	-	-	-	
										Total Credits	20.5	

**L - Lecture Hours, T-Tutorial Hours, P - Practical Hours, CT - Class Test, ESE – End Semester Exam;
* Mandatory Training Programme**



SCHEME FOR EXAMINATION												
BTECH (FOUR YEAR) DEGREE COURSE												
FIRST YEAR, ELECTRONICS AND COMMUNICATION ENGINEERING												
SEMESTER II (Course A)												
EFFECTIVE FROM SESSION 2018-19												
S. No	Subject Code	Subjects	Period/Week			Scheme of Evaluation				Grand Total	Credits	
			L	T	P	Internal Assessment (IA)			ESE			
Theory	CT-I	CT-II				Total						
1	EC02TBS03	PHYSICS	3	1	0	15	15	30	70	100	4	
2	EC02TES03	BASIC ELECTRICAL ENGINEERING	3	1	0	15	15	30	70	100	4	
3	EC02TBS04	MATHEMATICS-I	3	0	0	15	15	30	70	100	4	
4	EC02THS01	ENGLISH	3	0	0	15	15	30	70	100	3	
5	EC02TMC01	ENVIRONMENTAL SCIENCES	3	0	0	-	-	-	-	-	0	
Practical												
1	EC02PBS02	PHYSICS LAB	0	0	3	-	-	30	20	50	1.5	
2	EC02PES04	BASIC ELECTRICAL ENGINEERING LABORATORY	0	0	2	-	-	30	20	50	1	
3	EC02PES05	ENGINEERING GRAPHICS & DESIGN	1	0	3	-	-	30	20	50	2.5	
										Total Credits	20	
L - Lecture Hours, T-Tutorial Hours, P - Practical Hours, CT - Class Test, ESE – End Semester Exam; * Mandatory Course												



INSTITUTE OF TECHNOLOGY
GURU GHASIDAS CENTRAL UNIVERSITY BILASPUR
SCHEME OF B.Tech.IIIrd SEMESTER (CBCS)
ELECTRONICS & COMMUNICATION ENGINEERING

IIIrd SEMESTER

S. No	Subject Code	Subject	Periods			Evaluation Scheme			Credit
			L	T	P	IA	ESE	Sub Total	
1	EC3THS03	Engineering Economics	3	0	0	40	60	100	3
2	EC3TPC01	Signals & Systems	3	1	0	40	60	100	4
3	EC3TBS01	Engineering Mathematics - III	3	1	0	40	60	100	4
4	EC3TES01	Network Analysis And Synthesis	3	1	0	40	60	100	4
5	EC3TES02	Electronic Devices	3	1	0	40	60	100	4
6	EC3TPC02	Digital Logic Circuits	3	1	0	40	60	100	4
7	EC3PES02	Electronic Devices Lab	-	-	3	30	20	50	2
8	EC3PPC02	Digital Logic Circuits Lab	-	-	3	30	20	50	2
			18	5	6	300	400	700	27

L: Lecture, T: Tutorial, P: Practical, IA: Internal Assessment, MSE: Mid Semester Exam, ESE: End Semester Exam

Handwritten signatures:
Nishu
Pranav Th



INSTITUTE OF TECHNOLOGY
GURU GHASIDAS CENTRAL UNIVERSITY, BILASPUR
SCHEME OF B.Tech. IVth SEMESTER (CBCS)
ELECTRONICS & COMMUNICATION ENGINEERING

S. No :	Subject Code	Subject	Periods			Evaluation Scheme			Credit
			L	T	P	IA	ESE	Sub Total	
1.	EC4TBS02	Numerical Analysis	3	1	0	40	60	100	4
2.	EC4TPC03	Automatic Control Systems	3	1	0	40	60	100	4
3.	EC4TPC04	Analog Circuits	3	1	0	40	60	100	4
4.	EC4TPC05	Communication System-I	3	1	0	40	60	100	4
5.	EC4TPC06	Electronic Measurements & Instrumentation	3	0	0	40	60	100	3
6.	EC4PPC04	Analog Circuits Lab	0	0	3	30	20	50	2
7.	EC4PPC05	Communication System-I Lab	0	0	3	30	20	50	2
8.	EC4PPC06	Electronic Measurements & Instrumentation Lab	0	0	3	30	20	50	2
			15	5	9	290	360	650	25

Handwritten signatures and initials:
A signature that appears to be "Ravi" and another signature that appears to be "Ramesh".



ELECTRONICS & COMMUNICATION ENGINEERING

Effective From 2017-18 (CBCS)

INSTITUTE OF TECHNOLOGY
GURU GHASIDAS CENTRAL UNIVERSITY BILASPUR

SCHEME OF B.Tech. Vth SEMESTER (CBCS)
ELECTRONICS & COMMUNICATION ENGINEERING

Vth SEMESTER

S. No.	Sub Code	Subject	Periods			Evaluation Scheme			Credit
			L	T	P	IA	ESE	Sub Total	
1.	ECSTPC07	LIC & its Application	3	1		40	60	100	4
2.	ECSTPC08	Communication System – II	3	1		40	60	100	4
3.	ECSTPC09	Electromagnetic Field Theory	3	1		40	60	100	4
4.	ECSTPE01	Microprocessor & Its Applications	3			40	60	100	3
5.	ECSTPE02	DS & OS	3			40	60	100	3
6.	ECSTOE11 - ECSTOE15	Open Elective	3			40	60	100	3
7.	ECSPPC07	LIC & its Application Lab			3	30	20	50	2
8.	ECSPPE01	Microprocessors & Its Applications Lab			3	30	20	50	2
9.	ECSPPC08	Communication System –II Lab			3	30	20	50	2
			18	3	9	330	420	750	27

L: Lecture, T: Tutorial, P: Practical, IA: Internal Assessment, MSE: Mid Semester Exam, ESE: End Semester Exam.



INSTITUTE OF TECHNOLOGY
GURU GHASIDAS CENTRAL UNIVERSITY BILASPUR
SCHEME OF B.Tech. VIth SEMESTER (CBCS)
ELECTRONICS & COMMUNICATION ENGINEERING

VIth SEMESTER

S. No:	Sub Code	Subject	Periods			Evaluation Scheme			Credit
			L	T	P	IA	ESE	Sub Total	
1.	EC6TPC10	Digital Signal Processing	3	1		40	60	100	4
2.	EC6TPC11	Antenna & Wave Propagation	3	1		40	60	100	4
3.	EC6TPE03	Data Communication & Computer Networking	3			40	60	100	3
4.	EC6TPE04	Fundamental of VLSI Design	3			40	60	100	3
5.	EC6TOE21-25	Open Elective	3			40	60	100	3
6.	EC6PPE02	VHDL Lab			3	30	20	50	2
7.	EC6PPC06	Digital Signal Processing Lab			3	30	20	50	2
8.	EC6PSP01	Seminar				30	20	50	2
			15	2	6	290	360	650	23

L: Lecture, T: Tutorial, P: Practical, IA: Internal Assessment, MSE: Mid Semester Exam, ESE: End Semester Exam.



ELECTRONICS & COMMUNICATION ENGINEERING

Effective From 2018-19 (CBCS)

INSTITUTE OF TECHNOLOGY

GURU GHASIDAS CENTRAL UNIVERSITY BILASPUR

SCHEME OF B.Tech. VIIth SEMESTER (CBCS)

ELECTRONICS & COMMUNICATION ENGINEERING

VIIth SEMESTER

S.No :	Sub Code	Subject	Periods			Evaluation Scheme			Credit
			L	T	P	IA	ESE	Sub Total	
1.	EC7TPC12	Microwave Engineering	3	1	1	40	60	100	4
2.	EC7TPC13	Wireless Mobile Communication	3	1	1	40	60	100	4
3.	EC7TPE05	Advance Hardware Design	3	0	1	40	60	100	3
4.	EC7TPE06	Power Electronics	3	0	1	40	60	100	3
5.	EC7TOE31- EC5TOE35	1. Wireless sensor network , 2. Information theory and coding 3. Nanotechnology 4. Optical instrumentation and measurement, 5. Neural network and fuzzy logic	3	0	1	40	60	100	3
		PRACTICAL							
6.	EC7TPPC12	Microwave Engineering			3	30	20	50	2
7.	EC7TPPE05	Comprehensive Viva			3	30	20	50	2
8.	EC7PSP02	Project-I			6	30	20	50	3
			15	2	12	290	360	650	24

L: Lecture, T: Tutorial, P: Practical, IA: Internal Assessment, MSE: Mid Semester Exam, ESE: End Semester Exam.



ELECTRONICS & COMMUNICATION ENGINEERING

Effective From 2018-19 (CBCS)

GURU GHASIDAS CENTRAL UNIVERSITY BILASPUR

SCHEME OF B.Tech. VIIIth SEMESTER (CBCS)

ELECTRONICS & COMMUNICATION ENGINEERING

VIIIth SEMESTER

S.No :	Sub Code	Subject	Periods			Evaluation Scheme			Credit
			L	T	P	IA	ESE	Sub Total	
1.	EC8TPC14	Radar and Satellite Engineering	3	1	1	40	60	100	4
2.	EC8TPC15	Optical Fiber Communication	3	1	1	40	60	100	4
3.	EC8TPE07	VLSI Fabrication Methodology	3	0	1	40	60	100	3
5.	EC8TOE41- EC8TOE45	41. Basic building block of Microwave Engineering 42.Principle of Management 43 Mobile Computing 44.Embedded System 45. Advanced Power Electronics	3	0	1	40	60	100	3
		PRACTICAL							
6.	EC8TPPC15	Optical Fiber Communication			3	30	20	50	2
7.	EC8TPPC16	Advanced RF and Microwave Design lab			3	30	20	50	2
8.	EC8TPSP03	Project-II			8	30	20	50	4
9	EC8TPSP04	Comprehensive Viva				30	20	50	2
			12	2	14	280	320	600	24

L: Lecture, T: Tutorial, P: Practical, IA: Internal Assessment, MSE: Mid Semester Exam, ESE: End Semester Exam.



**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING,
INSTITUTE OF TECHNOLOGY, GURU GHASIDAS VISHWAVIDYALAYA,
BILASPUR (C.G.)**

EVALUATION SCHEME OF Pre-Ph.D. COURSE WORK

EFFECTIVE FROM SESSION 2012-13

S.N.	Name of the subject	Subject code	Periods / Week L- T- P	ESE Duration	ESE MARKS		Credits
					Max.	Min.	
1	Research Methodology in Engineering	IT7100	3-1-0	3 Hrs.	100	50	4
2	Elective -I		3-1-0	3 Hrs.	100	50	4
3	Elective -II		3-1-0	3 Hrs.	100	50	4
4	Seminar	IT7101	-	--	100	50	2
	Total		9-3-0	-	400	200*	14
	LIST OF ELECTIVES	**	Duration of the semester will be 6 months.				
SN	Name of the subject	Subject code	<ul style="list-style-type: none"> • Candidate has to score minimum 60% of the aggregate marks to qualify in ESE . • Two core subjects as Electives (4 credits each) to be decided by the DRC . 				
1	Vacuum Technology	ECE7102					
2	Finite Element Method	ECE7103					
3	Sensors & Measurement Science and Technology	ECE7104					
4	Artificial Intelligence	ECE7105					

ESE : End Semester Examination , L: Lecture, T: Theory P: Practical

Max : Maximum marks in ESE ;

Min : Minimum pass marks in each subject as 50%



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EC01TBS01									
Subject:	MATHEMATICS-II	3	1	0	15	15	30	70	100	4

Course Content:

Probability and Statistics

Module 1: Basic Probability: (12 lectures)

Probability spaces, conditional probability, independence; Discrete random variables, Independent random variables, the multinomial distribution, Poisson approximation to the binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables; Expectation of Discrete Random Variables, Moments, Variance of a sum, Correlation coefficient, Chebyshev's Inequality.

Module 2: Continuous Probability Distributions: (4 lectures)

Continuous random variables and their properties, distribution functions and densities, normal, exponential and gamma densities.

Module 3: Bivariate Distributions: (4 lectures)

Bivariate distributions and their properties, distribution of sums and quotients, conditional densities, Bayes' rule.

Module 4: Basic Statistics: (8 lectures)

Measures of Central tendency: Moments, skewness and Kurtosis - Probability distributions: Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions, Correlation and regression - Rank correlation.

Module 5: Applied Statistics: (8 lectures)

Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations.

Module 6: Small samples: (4 lectures)

Test for single mean, difference of means and correlation coefficients, test for ratio of variances- Chi-square test for goodness of fit and independence of attributes.

Suggested Text/Reference Books

- (i) Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
- (ii) P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003 (Reprint).
- (iii) S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.
- (iv) W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, 3rd Ed., Wiley, 1968.



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EC01TBS02									
Subject:	CHEMISTRY	3	1	0	15	15	30	70	100	04

Course Learning Objectives:

The objective of this Course is to:

- To make aware and enrich the students about the basic concept and understanding of chemical concepts of basic Chemistry and spectroscopic techniques.

Course Content:

UNIT-1: Concept of Quantum Energy and Spectroscopy: Quantization of Energy, Regions of spectrum. Electronic Spectroscopy: Electronic Transition, Woodward Fiesher rules for calculating λ_{max} of conjugated dienes & α , β -unsaturated carbonyl compound, various shifts in λ_{max} and intensities. Infra-Red Spectroscopy: Conditions for Infra-Red Spectroscopy, Molecular vibrations & factors affecting Infra-Red frequencies. [8L]

UNIT-2: Chemical Bonding in Molecules: Introduction of chemical bonding, VSEPER Theory, V.B.Theory and Molecular Orbital Theory. Energy level diagrams of diatomic molecules and ions. . [16L]

UNIT-3: Concept of Chirality, Enantiomers, Diastereomers, Meso-compounds and Racemic mixtures. Conformation of Acyclic hydrocarbons (Ethane, Propane & n-Butane) and cyclic hydrocarbon (Cyclohexane), Plane of symmetry, Centre of symmetry, Absolute and Relative Configuration (R & S, D & L and E & Z). [8L]

UNIT -4: Reactivity of Organic Molecules, Factors influencing acidity, basicity and nucleophilicity of molecules, kinetic vs thermodynamic control of reactions. . [12L]

UNIT -5: Strategy for Synthesis of Organic Compounds: Reaction intermediates: Stability of Free Radicle, Carbocation and Carbanion. Introduction to reaction involving Addition, Elimination, Substitution and Ring opening and Cyclization. . [16L]

Text Books:

- Engineering Chemistry by Jain and Jain; Dhanpat Rai Publication Co.
- Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.
- Engineering Chemistry of Wiley India Pvt. Ltd., Vairam and others, 2014 edition (second).
- Engineering Chemistry by Prasanth Rath, Cengage Learning, 2015 edition.
- A textbook of Engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition
- Applied Chemistry by H.D. Gesser, Springer Publishers
- Textbook of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press, IIM
- B. Siva Shankar, "Engineering Chemistry", Tata Mc Graw Hill Publishing Limited, 3rd Edition, 2015.
- S. S. Dara, Mukkanti, "Text of Engineering Chemistry", S. Chand & Co, New Delhi, 12th Edition, 2006.
- C. V. Agarwal, C. P. Murthy, A. Naidu, "Chemistry of Engineering Materials", Wiley India, 5th Edition, 2013.



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EC01TES01									
Subject:	PROGRAMMING FOR PROBLEM SOLVING	3	0	0	15	15	30	70	100	03

Course Learning Objectives:

- To understand the basic of Idea of Algorithm.
- To understand the programing concept of Arithmetic expressions and Basic Algorithms
- To learn the Functions and Structure of array.

Course Content:

UNIT-1: Introduction to Programming (3 lectures)

Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.) -

Idea of Algorithm (3 lectures): steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudo code with examples.

From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code.

UNIT-2: Arithmetic expressions and precedence (12 lectures)

Conditional Branching and Loops

Writing and evaluation of conditionals and consequent branching

Iteration and loops

Arrays (6 lectures) Arrays (1-D, 2-D), Character arrays and strings

UNIT-3: Basic Algorithms (6 lectures)

Searching, concept of binary search etc, Basic Sorting Algorithms Bubble sort etc, Finding roots of equations, introduction of Algorithm complexity

UNIT-4: Function (5 lectures)

Functions (including using built in libraries), Parameter passing in functions, call by value, passing arrays to functions: idea of call by reference binary search etc

Recursion functions (5 lectures) Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, etc.

UNIT -5: Structure (4 lectures)

Structures, Defining structures and Array of Structures

Pointers (3 lectures) Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation)

Suggested Text Books

- Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
- E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill

Suggested Reference Books

- Brian W. Kernighan and Dennis M. Ritchie, the C Programming Language, Prentice Hall of India



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EC01TES02									
Subject:	ENGINEERING MECHANICS	3	0	0	15	15	30	70	100	03

Course Learning Objectives:

To learn about

- The concepts Force systems, free body diagrams, resultant of forces and equations of equilibrium, Supports and support reactions and calculation of Centroid
- The Concept of moment of inertia of plane figures, Laws and applications of friction
- The Analysis of the truss and determination of axial forces by Method of Joints
- Motion of a body and their relationships and application of D'Alembert's principle in rectilinear and curvilinear motions

Course Content:

UNIT- 1: Introduction to Engineering Mechanics covering, Force Systems Basic concepts, Particle equilibrium in 2-D & 3-D; Rigid Body equilibrium; System of Forces, Coplanar Concurrent Forces, Components in Space – Resultant- Moment of Forces and its Application; Couples and Resultant of Force System, Equilibrium of System of Forces, Free body diagrams, Equations of Equilibrium of Coplanar Systems and Spatial Systems

UNIT-2: Friction covering, Types of friction, Limiting friction, Laws of Friction, Static and Dynamic Friction; Motion of Bodies.

Basic Structural Analysis covering, Equilibrium in three dimensions; Method of Sections; Method of Joints; Simple Trusses; Zero force members.

UNIT 3: Centroid and Centre of Gravity covering, Centroid of simple figures from first principle, centroid of composite sections; Centre of Gravity and its implications; Area moment of inertia- Definition, Moment of inertia of plane sections from first principles, Theorems of moment of inertia, Moment of inertia of standard sections and composite sections.

UNIT-4: Virtual Work and Energy Method-Virtual displacements, principle of virtual work for particle and ideal system of rigid bodies, degrees of freedom. Active force diagram, systems with friction, mechanical efficiency.

Review of particle dynamics- Rectilinear motion; Newton's 2nd law (rectangular, path, and polar coordinates). Work-kinetic energy, power, potential energy. Impulse-momentum (linear, angular); Impact (Direct and oblique).

UNIT-5: Introduction to Kinetics of Rigid Bodies covering, Basic terms, general principles in dynamics; Types of motion, Instantaneous centre of rotation in plane motion and simple problems; D'Alembert's principle and its applications in plane motion and connected bodies; Work energy principle and its application in plane motion of connected bodies; Kinetics of rigid body rotation;

Text/Reference Books:

1. Irving H. Shames (2006), Engineering Mechanics, 4th Edition, Prentice Hall



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	CREDITS: 1.5			INTERNAL ASSESSMENT (IA)			ESE
		L	T	P	IA	MSE	TOTAL	
Subject Code:	EC01PBSOI							
Subject:	CHEMISTRY LAB	0	0	3	30	-	30	20

Course Learning Objectives:

The Lab sessions would help in learning:

- Application of iodimetrically & titration in lab.
- Recognition of different chemical reaction.
- Advanced lab methods like spectrophotometry and chromatography

Course Content:

LIST OF EXPERIMENTS

Group – A:

1. Standardization of sodium thiosulphate solution by standard potassium dichromate 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 with given Iodine (N/50) solution.
4. Find out the Temporary hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator.
5. To determine chloride ion in a given water sample by Argentometric method (Mohr's method)

Group – B:

6. Preparation of Urea Formaldehyde resin.
7. Acetylation of Primary Amine: Preparation of Acetanilide.
8. Base Catalyzed Aldol Condensation: Synthesis of Dibenzalpropanone.
9. [4+2] Cycloaddition Reaction: Diels-Alder reaction.
10. Preparation of Aspirin and calculate its yield.

Group – C:

11. To calculate the λ_{max} of a given compound using UV-visible spectrophotometer.
12. To separate the metallic ions by paper chromatography.
13. To determine the surface tension of a liquid by stalagmometer.
14. To determine the percentage composition of the given mixture consisting of two liquids A and B (non- interacting system) by viscosity method.
15. To determine the relative viscosity of given liquids by Ostwald's viscometer.

Note: At least two Experiments from each group must be performed.

Course Outcomes-On completion of the course, the students will be able to handle the chemicals of synthesis as well as titration that will ultimately make them efficient and develop their future chemistry laboratory skills



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	CREDITS: 1.5			INTERNAL ASSESSMENT (IA)			ESE
		L	T	P	IA	MSE	TOTAL	
Subject Code:	EC01PES01							
Subject:	PROGRAMMING FOR PROBLEM SOLVING LAB	0	0	3	30	-	30	20

Course Learning Objectives:

- To learn the Branching and logical expressions and Loops
- To learn the Arrays and Function
- To understand the Numerical methods and Recursion

Course Content:

The laboratory should be preceded or followed by a tutorial to explain the approach or Algorithm to be implemented for the problem given.]

Tutorial 1: Problem solving using computers:

Lab 1: Familiarization with programming environment

Tutorial 2: Variable types and type conversions:

Lab 2: Simple computational problems using arithmetic expressions

Tutorial 3: Branching and logical expressions:

Lab 3: Problems involving if-then-else structures

Tutorial 4: Loops, while and for loops:

Lab 4: Iterative problems e.g., sum of series

Tutorial 5: 1D Arrays: searching, sorting:

Lab 5: 1D Array manipulation

Tutorial 6: 2D arrays and Strings

Lab 6: Matrix problems, String operations

Tutorial 7: Functions, call by value:

Lab 7: Simple functions

Tutorial 8 & 9: Numerical methods (Root finding, numerical differentiation, numerical Integration):

Lab 8 and 9: Programming for solving Numerical methods problems

Tutorial 10: Recursion, structure of recursive calls

Lab 10: Recursive functions

Tutorial 11: Pointers, structures and dynamic memory allocation

Lab 11: Pointers and structures

Course Outcomes-At the end of the course students will be able to

- Utilization of Branching and logical expressions and Loops, Arrays and Function and Numerical methods and Recursion for writing the programmes for various engineering applications



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	CREDITS: 2.5			INTERNAL ASSESSMENT (IA)			ESE
		L	T	P	IA	MSE	TOTAL	
Subject Code:	EC01PES02							
Subject:	WORKSHOP & MANUFACTURING PRACTICES	1	0	3	30	0	30	20

Course objectives:

- To impart student knowledge on various hand tools for usage in engineering applications.
- Be able to use analytical skills for the production of components.
- Design and model different prototypes using carpentry, sheet metal and welding.
- Make electrical connections for daily applications.
- To make student aware of safety rules in working environments.

Course Content:

Lectures & videos: (10 hours)

1. Manufacturing Methods- casting, forming, machining, joining, advanced manufacturing methods (3 lectures)
2. CNC machining, Additive manufacturing (1 lecture)
3. Fitting operations & power tools (1 lecture)
4. Electrical & Electronics (1 lecture)
5. Carpentry (1 lecture)
6. Plastic moulding, glass cutting (1 lecture)
7. Metal casting (1 lecture)
8. Welding (arc welding & gas welding), brazing (1 lecture)

Suggested Text/Reference Books:

- (i) Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
- (ii) Kalpakjian S. and Steven S. Schmid, "Manufacturing Engineering and Technology", 4th edition, Pearson Education India Edition, 2002.
- (iii) Gowri P. Hariharan and A. Suresh Babu, "Manufacturing Technology - I" Pearson Education, 2008.
- (iv) Roy A. Lindberg, "Processes and Materials of Manufacture", 4th edition, Prentice Hall India, 1998.
- (v) Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata Mc-GrawHill House, 2017.

Course Outcome: At the end of the course students will be able to:

- Make half lap joint, Dovetail joint and Mortise & Tenon joint
- Produce Lap joint, Tee joint and Butt joint using Gas welding
- Prepare trapezoidal tray, Funnel and T-joint using sheet metal tools
- Make connections for controlling one lamp by a single switch, controlling two lamps by a single switch and stair case wiring



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-I)	CREDITS: 1			INTERNAL ASSESSMENT (IA)			ESE
		L	T	P	IA	MSE	TOTAL	
Subject Code:	EC01PES03							
Subject:	ENGG MECHANICS LAB	0	0	2	30	0	30	20

Course objectives:

- To perform the practical giving basic understanding to fundamental principles of mechanics like parallelogram of forces, triangle of forces and polygon of forces by universal force table
- To perform the practical giving basic understanding to fundamental application of mechanics like screw jack, winch crab and simple wheel and axle

Course Content:

List of Experiments

1. Verification of law of parallelogram of forces.
2. Verification of law of triangle of forces.
3. Verification of law of polygon of forces by universal force table.
4. Verification of law of moment by parallel forces apparatus.
5. Practical verification of forces in the member of jib crane.
6. Practical verification of forces in the member of the truss.
7. Determination of coefficient of friction between two given surfaces by inclined plane method.
8. Determination of efficiency of simple screw jack.
9. Determination of efficiency of single purchase winch crab.
10. Determination of efficiency of double purchase winch crab.
11. Determination of efficiency of simple wheel and axle.

Course Outcomes: At the end of the course students will be able to:

- Verify the fundamental principles of mechanics like parallelogram of forces, triangle of forces and polygon of forces by universal force table
- Analyse the friction coefficient between two surfaces
- Calculate the efficiency of screw jack, winch crab and wheel and axle



DEPARTMENT OF ECE ENGINEERING B.TECH. FIRST YEAR SYLLABUS W.E.F 2018-19

SYLLABUS	(SEMESTER-II)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EC02TBS03	3	1	0	15	15	30	70	100	04
Subject:	PHYSICS									

Course Learning Objectives:

- To know the basic principles, effects and applications such as physical, optical parameters used for Engineering applications.
- To learn about various laws and applications of electromagnetic theory.
- To know the basic structure, working principles and applications of lasers and optical fibre communication.
- To know the basics of semiconductor physics, semiconductor materials and devices and its characterization for advance technological applications
- To familiarize the basis of quantum theory and to make students to solve the physical problems for advancement of the technology.

Course Content:

Unit-1: Optics: Interference and Diffraction

Introduction, Young's experiment theory of interference, Coherent and non-coherent sources, Fresnel's Bi-prism and Newton's ring experiment.

Diffraction of light, Fresnel and Fraunhofer's diffraction, diffraction due to plane diffraction grating.

Unit-2 Electromagnetic Theory

Coulomb's law electrostatics field and potential, electric flux, Gauss' law, Poisson's and Laplace's equation. Equation of continuity for charge conservation, Ampere's and Faraday's laws, Maxwell's Electromagnetic equations.

Unit-3 Laser and Fiber optics

Introduction, elementary idea of spontaneous and stimulated emission, active medium population inversion, Einstein's coefficients, Types of lasers and important applications of lasers.

Introduction to optical fibers, basic principles of optical fiber, critical angle numerical aperture, maximum acceptance angle, classification of optical fiber.

Unit-4 Semiconductor physics and Devices

Formation of energy in solids, Energy band gap of metals, insulators and semiconductors, classification of semiconductor: Intrinsic and Extrinsic semiconductors, Fermi levels in intrinsic and extrinsic semiconductors, Electrical conductivity in conductors and semiconductors, working of P-N junction diodes and Bipolar junction transistor.

Unit-5 Introduction to Quantum Mechanics

Introduction to QuantumMechanics, photoelectric effect, Compton effect, wave-particle duality, uncertainty principle, wave function, De-Broglie waves, phase and Group velocity, Davisson and Germer experiment, Schrodinger wave equation, particle in a box (I-Dimensional)

Text Books and References

- Applied physics-I and II By Navneet Gupta, Dhanpat Rai & Co.
- Engg. Physics by S.K.Srivastava and R.A. Yadav, New Age Pub. New Delhi