



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

**Department : Electronics and Communication Engineering**

**Programme Name : B.Tech.**

**Academic Year : 2019-20**

**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.	EC03TPC01	Electronic Devices
19.	EC03TPC02	Digital System Design
20.	EC03TPC03	Signals and Systems
21.	EC03TPC04	Network Theory
22.	EC03TBS05	Mathematics-III
23.	EC03THS02	Engineering Economics
24.	EC03TMC02	Constitution of India
25.	EC03PPC01	Electronics Devices Lab
26.	EC03PPC02	Digital System Design Lab



27	EC04TPC05	Analog and Digital Communication
28	EC04TPC06	Analog Circuits
29	EC04TPC07	Microcontrollers
30	EC04TBS06	Numerical Methods
31	EC04TES05	Electronics Measurement & Instrumentation
32	EC04THS03	Effective Technical Communication
33	EC04PPC03	Analog and Digital Communication Lab
34	EC04PPC04	Analog Circuits Lab
35	EC04PPC05	Microcontrollers Lab
36	EC5TPC07	Lic & Its Application
37	EC5TPC08	Communication System- II
38	EC5TPC09	Electromagnetic Field Theory
39	EC5TPE01	Microprocessor & Its Application
40	EC5TPE02	Data Structure & Operating System
41	EC5TOE11	Computer Architecture
42	EC5TOE12	OOP in C++
43	EC5TOE13	Introduction to Information Security
44	EC5TOE14	Project Management
45	EC5TOE15	Rural Technology and Community Development
46	EC5PPC07	LIC & ITS APPLICATION Lab
47	EC5PPE01	Microprocessor & Its Application Lab
48	EC5PPC08	Communication System -II Lab
49	EC6TPC10	Digital Signal Processing
50	EC6TPC11	Antenna & wave propagation
51	EC6TPE03	Data Communication & Computer Networking
52	EC6TPE04	Fundamental of VLSI Design
53	EC6T0E21	UNIX, Operating System
54	EC6T0E22	Probability & Stochastic Process
55	EC6T0E23	Advanced Instrumentation
56	EC6T0E24	Knowledge management
57	EC6T0E25	Engineering System Design Optimization
58	EC6PPE02	VHDL Lab
59	EC6PPC06	Digital Signal Processing Lab
60	EC6PSP01	Seminar
61	EC7TPC12	Microwave Engineering



62	EC7TPC13	Wireless Mobile Communication
63	EC7TPE05	Advance Hardware Design
64	EC7TPE06	Power Electronics
65	EC7TOE31	Wireless Sensor Network
66	EC7TOE32	Information theory and coding
67	EC7TOE33	Nanotechnology
68	EC7TOE34	Optical instrumentation and measurement
69	EC7TOE35	Neural Network and Fuzzy Logic
70	EC7TPPC12	Microwave Engineering Lab
71	EC7TPPE05	Comprehensive Viva
72	EC7PSP02	Project-I
73	EC8TPC14	Radar and Satellite Engineering
74	EC8TPC15	Optical Fiber Communication
75	EC8TPE07	VLSI Fabrication Methodology
76	EC8TOE41	Basic building block of Microwave Engineering
77	EC8TOE42	Principle of Management
78	EC8TOE43	Mobile Computing
79	EC8TOE44	Embedded System
80	EC8TOE45	Advanced Power Electronics
81	EC8TPPC15	Optical Fiber Communication Lab
82	EC8TPPC16	Advanced RF and Microwave Design lab
83	EC8TPSP03	Project-II
84	EC8TPSP04	Comprehensive Viva
85	ET7100	Research Methodology in engineering
86	EC102	Vacume Technology
87	EC103	Finite Element Method
88	EC104	Sensors Measurement Science & Technology
89	EC105	Artificial Intelligence
90	EC106	Optimization Techniques
91	EC107	Antenna for Modern Wireless Communication
92	EC108	Wireless and Computer Network

  
 वलभगाध्यक्ष (इले. एव सचार 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	
<b>Practical</b>												
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	-	-	-	-	-	-	
										<b>Total Credits</b>	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	
<b>Practical</b>												
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	
										<b>Total Credits</b>	<b>20</b>	
<b>L - Lecture Hours, T-Tutorial Hours, P - Practical Hours, CT - Class Test, ESE – End Semester Exam; * Mandatory Course</b>												



**SCHEME OF EXAMINATION**  
**B.TECH (FOUR YEAR) DEGREE COURSE**  
**SECOND YEAR, ELECTRONICS & COMMUNICATION ENGINEERING**  
**SCHOOL OF ENGINEERING & TECHNOLOGY, GGVV BILASPUR (CG) 495009**  
**SEMESTER III (SECOND YEAR)**  
**EFFECTIVE FROM SESSION 2019-20**

Sr. No.	Course Code	Course Title	L	T	P	Periods/ week	Evaluation Scheme			Credit
							IA	ESE	Total	
<b>Theory</b>										
1	EC03TPC01	Electronic Devices	3	0	0	3	30	70	100	3
2	EC03TPC02	Digital System Design	3	0	0	3	30	70	100	3
3	EC03TPC03	Signals and Systems	3	0	0	3	30	70	100	3
4	EC03TPC04	Network Theory	3	0	0	3	30	70	100	3
5	EC03TBS05	Mathematics-III	3	1	0	4	30	70	100	4
6	EC03THS02	Engineering Economics	3	0	0	3	30	70	100	3
7	EC03TMC02	Constitution of India	2	0	0	2	0	0	0	0
<b>Practical</b>										
1	EC03PPC01	Electronics Devices Lab	0	0	3	3	30	20	50	1
2	EC03PPC02	Digital System Design Lab	0	0	3	3	30	20	50	1
									<b>Total Credits</b>	<b>21</b>

**SEMESTER IV (SECOND YEAR)**  
**EFFECTIVE FROM SESSION 2019-20**

Sr. No.	Course Code	Course Title	L	T	P	Periods/ week	Evaluation Scheme			Credit
							IA	ESE	Total	
<b>Theory</b>										
1	EC04TPC05	Analog and Digital Communication	3	1	0	4	30	70	100	4
2	EC04TPC06	Analog Circuits	3	0	0	3	30	70	100	3
3	EC04TPC07	Microcontrollers	3	0	0	3	30	70	100	3
4	EC04TBS06	Numerical Methods	3	1	0	4	30	70	100	4
5	EC04TES05	Electronics Measurement & Instrumentation	3	0	0	3	30	70	100	3
6	EC04THS03	Effective Technical Communication	3	0	0	3	30	70	100	3
<b>Practical</b>										
1	EC04PPC03	Analog and Digital Communication Lab	0	0	2	2	30	20	50	1
2	EC04PPC04	Analog Circuits Lab	0	0	2	2	30	20	50	1
3	EC04PPC05	Microcontrollers Lab	0	0	2	2	30	20	50	1
									<b>Total Credits</b>	<b>23</b>

**L: LECTURE T: TUTORIAL P: PRACTICAL IA: INTERNAL ASSESSMENT ESE: END SEMESTER EXAM**



**ELECTRONICS & COMMUNICATION ENGINEERING**

Effective From 2017-18 (CBCS)

**INSTITUTE OF TECHNOLOGY**

**GURU GHASIDAS CENTRAL UNIVERSITY BILASPUR**

**SCHEME OF B.Tech. V<sup>th</sup> SEMESTER (CBCS)**

**ELECTRONICS & COMMUNICATION ENGINEERING**

**V<sup>th</sup> 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.



ELECTRONICS & COMMUNICATION ENGINEERING

Effective From 2017-18 (CBCS)

**INSTITUTE OF TECHNOLOGY**  
**GURU GHASIDAS CENTRAL UNIVERSITY BILASPUR**  
**SCHEME OF B.Tech. VI<sup>th</sup> SEMESTER (CBCS)**  
**ELECTRONICS & COMMUNICATION ENGINEERING**

**VI<sup>th</sup> 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. VII<sup>th</sup> SEMESTER (CBCS)**

**ELECTRONICS & COMMUNICATION ENGINEERING**

**VII<sup>th</sup> 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
		<b>PRACTICAL</b>							
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. VIII<sup>th</sup> SEMESTER (CBCS)**

**ELECTRONICS & COMMUNICATION ENGINEERING**

**VIII<sup>th</sup> 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 System45. 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 G HASIDAS VISHWAVIDYALAYA  
BILASPUR (C.G.)**

**EVALUATION SCHEME OF Pre-PhD, COURSE WORK  
EFFECTIVE FROM 2018-19**

S.NO.	NAME OF SUBJECT	SUBJECT CODE	PERIODS/ WEEK L-T-P	ESE DURATION	ESE MARKS		CREDIT
					MAX	MIN	
1.	Research Methodology in engineering	ET 7100	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
	<b>Total</b>		9-3-0	9 hrs	300		12
	<b>LIST OF ELECTIVES</b>	<b>**</b>					
<b>S.NO.</b>	<b>NAME OF SUBJECT</b>	<b>SUBJECT CODE</b>	Duration of the semester will be 6 months. • Candidate has to score minimum 55% of aggregate marks to qualify in ESE. • Two subjects as Electives (4 credits each) can be taken from the list of Electives				
1.	VACCUME TECHNOLOGY	ECE 102					
2.	FINITE ELEMENT METHOD	ECE 103					
3.	SENSORS MEASUREMENT SCIENCE & TECHNOLOGY	ECE 104					
4.	ARTIFICIAL INTELLIGENCE	ECE 105					
5.	OPTIMIZATION TECHNIQUES	ECE 106					
6.	ANTENNA FOR MODERN WIRELESS COMMUNICATION	ECE 107					
7.	WIRELESS AND COMPUTER NETWORK	ECE 108					

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, 9<sup>th</sup> 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, 6<sup>th</sup> Ed., Pearson Education India, 2002.
- (iv) W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, 3<sup>rd</sup> 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  $\lambda_{max}$  of conjugated dienes &  $\alpha$ ,  $\beta$ -unsaturated carbonyl compound, various shifts in  $\lambda_{max}$  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			
<b>Subject Code:</b>	EC01TES01									
<b>Subject:</b>	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			
<b>Subject Code:</b>	EC01TES02									
<b>Subject:</b>	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, 4<sup>th</sup> 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 KMnO<sub>4</sub> solution as an intermediate.
3. To determine the concentration of hypo solution (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>·5H<sub>2</sub>O) 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  $\lambda_{max}$  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	
<b>Subject Code:</b>	EC01PES01							
<b>Subject:</b>	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	
<b>Subject Code:</b>	EC01PES02							
<b>Subject:</b>	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", 4<sup>th</sup> 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", 4<sup>th</sup> 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	
<b>Subject Code:</b>	EC01PES03							
<b>Subject:</b>	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