



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

Department : Electronics and Communication Engineering

Programme Name : B.Tech.

Academic Year : 2020-21

List of Courses Focus on Employability/ Entrepreneurship/Skill Development

Sr. No.	Course Code	Name of the Course
01.	MA201TBS01	Mathematics-I
02.	PH201TBS02	Physics
03.	EC201TES01	Basic Electrical & Electronics Engineering
04.	IT201TES02	Introduction to Information Technologies
05.	EN201THS01	English Communication
06.	PH201PBS01	Physics Lab
07.	ME201PES01	Engineering Graphics
08.	ME201PES02	Workshop Technology & Practices
09.	EC201PES03	Basic Electrical Engineering Lab
10.	MA202TBS03	Mathematics-II
11.	CY202TBS04	Chemistry
12.	CE202TES03	Engineering Mechanics
13.	CS202TES04	Computer Programming
14.	CM202TES05	Basic Civil & Mechanical Engineering
15.	CY202PBS02	Chemistry Lab
16.	CE202PES04	Engineering Mechanics Lab
17.	CS202PES05	Computer Programming 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.	EC03PPC01	Electronics Devices Lab
25.	EC03PPC02	Digital System Design Lab
26.	EC04TPC05	Analog and Digital Communication



27	EC04TPC06	Analog Circuits
28	EC04TPC07	Microcontrollers
29	EC04TBS06	Numerical Methods
30	EC04TES05	Electronics Measurement & Instrumentation
31	EC04THS03	Effective Technical Communication
32	EC04PPC03	Analog and Digital Communication Lab
33	EC04PPC04	Analog Circuits Lab
34	EC04PPC05	Microcontrollers Lab
35	EC05TPC08	Electromagnetic Waves
36	EC05TPC09	Computer Network
37	EC05TPC10	LIC and its Application
38	EC05TPC11	Control Systems
39	EC05TPE01	Information Theory & Coding
40	EC05TPE02	CMOS Design
41	EC05TPE03	Introduction to MEMS
42	EC05TPE04	Computer Architecture
43	EC05TOE01	Data Structure and Algorithms
44	EC05TOE02	Operating Systems
45	EC05PPC06	Electromagnetic Waves Lab
46	EC05PPC07	Computer Networks Lab
47	EC05PPC08	LIC and its Application Lab
48	EC06TPC12	Digital Signal Processing
49	EC06TPC13	Probability Theory and Stochastic Processes
50	EC06TPE05	Antenna & Wave Propagation
51	EC06TPE06	Power Electronics
52	EC06TPE07	High Speed Devices & Circuits
53	EC06TPE08	Nanoelectronics
54	EC06TOE03	Cryptography & network Security
55	EC06TOE04	Artificial Intelligence
56	EC06TBS07	Life Science
57	EC06PPC09	Digital Signal Processing Lab
58	EC06PPC10	Electronic Measurement Lab
59	EC06PPC11	Mini Project/Electronic Design Workshop
60	EC5TPC07	Lic & Its Application
61	EC5TPC08	Communication System- II



62	EC5TPC09	Electromagnetic Field Theory
63	EC5TPE01	Microprocessor & Its Application
64	EC5TPE02	Data Structure & Operating System
65	EC5TOE11	Computer Architecture
66	EC5TOE12	OOP in C++
67	EC5TOE13	Introduction to Information Security
68	EC5TOE14	Project Management
69	EC5TOE15	Rural Technology and Community Development
70	EC5PPC07	Lic & Its Application Lab
71	EC5PPE01	Microprocessor & Its Application Lab
72	EC5PPC08	Communication System -II Lab
73	EC6TPC10	Digital Signal Processing
74	EC6TPC11	Antenna & wave propagation
75	EC6TPE03	Data Communication & Computer Networking
76	EC6TPE04	Fundamental of VLSI Design
77	EC6T0E21	UNIX, Operating System
78	EC6T0E22	Probability & Stochastic Process
79	EC6TOE23	Advanced Instrumentation
80	EC6T0E24	Knowledge management
81	EC6T0E25	Engineering System Design Optimization
82	EC6PPE02	VHDL Lab
83	EC6PPC06	Digital Signal Processing Lab
84	EC6PSP01	Seminar
85	EC7TPC12	Microwave Engineering
86	EC7TPC13	Wireless Mobile Communication
87	EC7TPE05	Advance Hardware Design
88	EC7TPE06	Power Electronics
89	EC7TOE31	Wireless Sensor Network
90	EC7TOE32	Information theory and coding
91	EC7TOE33	Nanotechnology
92	EC7TOE34	Optical instrumentation and measurement
93	EC7TOE35	Neural Network and Fuzzy Logic
94	EC7TPPC12	Microwave Engineering Lab
95	EC7TPPE05	Comprehensive Viva
96	EC7PSP02	Project-I



97	EC8TPC14	Radar and Satellite Engineering
98	EC8TPC15	Optical Fiber Communication
99	EC8TPE07	VLSI Fabrication Methodology
100	EC8TOE41	Basic building block of Microwave Engineering
101	EC8TOE42	Principle of Management
102	EC8TOE43	Mobile Computing
103	EC8TOE44	Embedded System
104	EC8TOE45	Advanced Power Electronics
105	EC8TPPC15	Optical Fiber Communication Lab
106	EC8TPPC16	Advanced RF and Microwave Design lab
107	EC8TPSP03	Project-II
108	EC8TPSP04	Comprehensive Viva
109	ET7100	Research Methodology in engineering
110	EC102	Vacume Technology
111	EC103	Finite Element Method
112	EC104	Sensors Measurement Science & Technology
113	EC105	Artificial Intelligence
114	EC106	Optimization Techniques
115	EC107	Antenna for Modern Wireless Communication
116	EC108	Wireless and Computer Network

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

SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA(A CENTRAL UNIVERSITY)
CBCS-NEW, STUDY & EVALUATION SCHEME
PROPOSED W.E.F. SESSION 2020-2021
B.Tech. I Year (SEMESTER I)
(Common for CSE, ECE and IT)

SN	Course No.	SUBJECT	PERIODS			EVALUATION SCHEME			CRED ITS
			L	T	P	IA	ESE	SUB-TOTAL	
1.	MA201TBS01	MATHEMATICS-I	3	1	-	30	70	100	4
2.	PH201TBS02	PHYSICS	3	1	-	30	70	100	4
3.	EC201TES01	BASIC ELECTRICAL & ELECTRONICS ENGINEERING	3	1	-	30	70	100	4
4.	IT201TES02	INTRODUCTION TO INFORMATION TECHNOLOGIES	2	0	0	30	70	100	2
5.	EN201THS01	ENGLISH COMMUNICATION	3	0	-	30	70	100	3
Total			14	3	0	150	350	500	17
PRACTICALS									
1.	PH201PBS01	PHYSICS LAB	-	-	2	30	20	50	1
2.	ME201PES01	ENGINEERING GRAPHICS	1	-	3	30	20	50	3
3.	ME201PES02	WORKSHOP TECHNOLOGY & PRACTICES	1	-	2	30	20	50	1
4.	EC201PES03	BASIC ELECTRICAL ENGINEERING LAB	-	-	2	30	20	50	1
Total			2	-	9	120	80	200	7
GRAND TOTAL			16	3	9	270	430	700	24

Total Credits : 24
Total Contact Hour : 28
Total Marks : 700

*INTERNAL ASSESSMENT- Two Class Test of 15 Marks each will be conducted.

L-LECTURE, T-TUTORIAL, P-PRACTICAL, ESE –END SEMESTER EXAMINATION



SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA(A CENTRAL UNIVERSITY)
CBCS-NEW, STUDY & EVALUATION SCHEME
PROPOSED W.E.F. SESSION 2020-2021
B.Tech. I Year (SEMESTER II)
(Common for CSE, ECE and IT)

SN	Course No.	SUBJECT	PERIODS			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	SUB-TOTAL	
1.	MA202TBS03	MATHEMATICS-II	3	1	-	30	70	100	4
2.	CY202TBS04	CHEMISTRY	3	1	-	30	70	100	4
3.	CE202TES03	ENGINEERING MECHANICS	3	1	-	30	70	100	4
4.	CS202TES04	COMPUTER PROGRAMMING	3	0	-	30	70	100	3
5.	CM202TES05	BASIC CIVIL & MECHANICAL ENGINEERING	3	0	0	30	70	100	3
6.	LW202TMC01	INDIAN CONSTITUTION	2	0	0	-	-	-	-
Total			17	3	0	150	350	500	18
PRACTICALS									
1.	CY202PBS02	CHEMISTRY LAB	-	-	2	30	20	50	1
2.	CE202PES04	ENGINEERING MECHANICS LAB	-	-	2	30	20	50	1
3.	CS202PES05	COMPUTER PROGRAMMING LAB	-	-	2	30	20	50	1
Total			-	-	6	90	60	150	3
GRAND TOTAL			17	3	6	240	410	650	21

Total Credits : 21
Total Contact Hour : 26
Total Marks : 650

*INTERNAL ASSESSMENT- Two Class Test of 15 Marks each will be conducted.
L-LECTURE,T-TUTORIAL,P-PRACTICAL, ESE –END SEMESTER EXAMINATION



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	
Theory										
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
Practical										
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
									Total Credits	21

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	
Theory										
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
Practical										
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
									Total Credits	23

L: LECTURE T: TUTORIAL P: PRACTICALIA: INTERNAL ASSESSMENT ESE: END SEMESTER EXAM



SCHEME OF EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
THIRD YEAR, ELECTRONICS & COMMUNICATION ENGINEERING
SCHOOL OF ENGINEERING & TECHNOLOGY, GGVV BILASPUR (CG) 495009
EFFECTIVE FROM SESSION 2020-21
SEMESTER V (THIRD YEAR)

Sr. No.	Course Code	Course Title	L	T	P	Periods/week	Evaluation Scheme			Credit
							IA	ESE	Total	
Theory										
1	EC05TPC08	Electromagnetic Waves	3	1	0	4	30	70	100	4
2	EC05TPC09	Computer Network	3	0	0	3	30	70	100	3
3	EC05TPC10	LIC and its Application	3	0	0	3	30	70	100	3
4	EC05TPC11	Control Systems	3	1	0	4	30	70	100	4
5	EC05TPE01	Program Elective - 1 • Information Theory & Coding • CMOS Design • Introduction to MEMS • Computer Architecture	3	0	0	3	30	70	100	3
	EC05TPE02									
	EC05TPE03									
	EC05TPE04									
6	EC05TOE01	Open Elective-1 • Data Structure & Algorithms • Operating Systems	3	0	0	3	30	70	100	3
	EC05TOE02									
Practical										
1	EC05PPC06	Electromagnetic Waves Lab	0	0	2	2	30	20	50	1
2	EC05PPC07	Computer Networks Lab	0	0	2	2	30	20	50	1
3	EC05PPC08	LIC and its Application Lab	0	0	2	2	30	20	50	1
									Total Credits	23

SEMESTER VI (THIRD YEAR)

Sr. No.	Course Code	Course Title	L	T	P	Periods/week	Evaluation Scheme			Credit
							IA	ESE	Total	
Theory										
1	EC06TPC12	Digital Signal Processing	3	1	0	4	30	70	100	4
2	EC06TPC13	Probability Theory and Stochastic Processes	3	0	0	3	30	70	100	3
3	EC06TPE05	Program Elective - 2 • Antenna & Wave Propagation • Power Electronics • High Speed Devices & Circuits • Nanoelectronics	3	1	0	4	30	70	100	4
	EC06TPE06									
	EC06TPE07									
	EC06TPE08									
4	EC06TOE03	Open Elective-2 • Cryptography & Network Security • Artificial Intelligence	3	0	0	3	30	70	100	3
	EC06TOE04									
5	EC06TBS07	Life Science	3	0	0	3	30	70	100	3
Practical										
1	EC06PPC09	Digital Signal Processing Lab	0	0	2	2	30	20	50	1
2	EC06PPC10	Electronic Measurement Lab	0	0	2	2	30	20	50	1
3	EC06PPC11	Mini Project/Electronic Design workshop	0	0	4	4	30	20	50	2
									Total Credits	21

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. 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.	EC5TPC07	LIC & its Application	3	1		40	60	100	4
2.	EC5TPC08	Communication System – II	3	1		40	60	100	4
3.	EC5TPC09	Electromagnetic Field Theory	3	1		40	60	100	4
4.	EC5TPE01	Microprocessor & Its Applications	3			40	60	100	3
5.	EC5TPE02	DS & OS	3			40	60	100	3
6.	EC5TOE11 - EC5TOE15	Open Elective	3			40	60	100	3
7.	EC5PPC07	LIC & its Application Lab			3	30	20	50	2
8.	EC5PPE01	Microprocessors & Its Applications Lab			3	30	20	50	2
9.	EC5PPC08	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. 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		40	60	100	4
2.	EC7TPC13	Wireless Mobile Communication	3	1		40	60	100	4
3.	EC7TPE05	Advance Hardware Design	3	0		40	60	100	3
4.	EC7TPE06	Power Electronics	3	0		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		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 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
	Total		9-3-0	9 hrs	300		12
	LIST OF ELECTIVES	**					
S.NO.	NAME OF SUBJECT	SUBJECT CODE	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 ELECTRONICS AND COMMUNICATION ENGINEERING,
SoS, ENGINEERING & TECHNOLOGY, GGV
B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)**

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
<i>Subject Code:</i>	MA201TBS01							70	100	04
<i>Subject:</i>	MATHEMATICS-I	3	1	-	15	15	30			

Course Content

Calculus (Single Variable)

Unit 1: Calculus:

Evolutes and involutes; Evaluation of definite and improper integrals; Beta and Gamma functions and their properties; Applications of definite integrals to evaluate surface areas and volumes of revolutions. Asymptotes: definition, properties and problems. Rolle's Theorem, Mean value theorems, Taylor's and Maclaurin theorems with remainders; Indeterminate forms and L'Hospital's rule; Maxima and minima.

Unit 2: Sequences and series:

Convergence of sequence and series, tests for convergence, power series, and Taylor's series. Series for exponential, trigonometric and logarithmic functions; Fourier series: Half range sine and cosine series, Parseval's theorem.

Unit-3: (A): Multivariable Calculus (Differentiation): Limit, continuity and partial derivatives, directional Derivatives, total Derivative; Tangent plane and normal line; Maxima, minima and saddle points; Method of Lagrange multipliers; Gradient, curl and divergence.

(B): Multivariable Calculus (Integration)

Multiple Integration: double and triple integrals (Cartesian and polar), change of order of integration in double integrals, Change of variables (Cartesian to polar), Applications: areas and volumes by (double integration) Center of mass and Gravity (constant and variable densities). Theorems of Green, Gauss and Stokes, orthogonal curvilinear coordinates, Simple applications involving cubes, sphere and rectangular parallelepipeds.

Unit – 4 (A): Matrices (in case vector spaces is not to be taught)

Algebra of matrices, Inverse and rank of a matrix, rank-nullity theorem; System of linear equations; Symmetric, skew-symmetric and orthogonal matrices; Determinants; Eigenvalues and eigenvectors; Diagonalization of matrices; Cayley-Hamilton Theorem, Orthogonal transformation and quadratic to canonical forms.

(B) Matrices (in case vector spaces is to be taught)

Matrices, vectors: addition and scalar multiplication, matrix multiplication; linear systems of Equations, linear Independence, rank of a matrix, determinants, Cramer's Rule, inverse of a matrix, Gauss elimination and Gauss-Jordan elimination.

Unit-5 (A): Vector spaces

Vector Space, linear dependence of vectors, basis, dimension; Linear transformations (maps), range and kernel of a linear map, rank and nullity, Inverse of a linear transformation, rank nullity theorem, composition of linear maps, Matrix associated with a linear map.



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING,
SoS, ENGINEERING & TECHNOLOGY, GGV
B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)**

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
<i>Subject Code:</i>	PH201TBS02 / PH202TBS04							70	100	04
<i>Subject:</i>	PHYSICS	3	1	-	15	15	30			

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:

Unit1: 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.

Unit2 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.

Unit3 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.

Unit4 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.

Unit5 Introduction to Quantum Mechanics

Introduction to Quantum Mechanics, 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 (1-Dimensional)

Textbooks/References:



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B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)**

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EC201TES01 / EC202TES04							70	100	04
Subject:	BASIC ELCETRICAL ENGINEERING	3	1	-	15	15	30			

Basic Electrical and Electronics Engineering

Course Learning Objectives:

- To impart a basic knowledge of electrical quantities such as current, voltage, power, energy and To provide working knowledge for the analysis of basic DC circuits used in electrical and electronic devices.
- To provide working knowledge for the analysis of basic AC circuits used in electrical and electronic devices and measuring instruments
- To explain the working principle, construction, applications of Transformer, DC machines and AC machines.
- To make students understand basics of Diodes and Transistors.
- To impart knowledge about basics of Digital Electronics

Unit-I: DC CIRCUITS (8 hours)

Electrical circuit elements (R, L and C), voltage and current sources, Ohm's Law, Kirchoff's current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits. Mesh & nodal analysis, Star- Delta transformation and circuits.

Unit-II: AC CIRCUITS (8 hours)

Representation of sinusoidal waveforms, average and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three-phase balanced circuits, voltage and current relations in star and delta connections. Three-phase power measurement- Two- Wattmeter method.

Construction and working principle of single-phase wattmeter and energy meter. Introduction to Sensors and Transducers.

UNIT-III: ELECTRICAL MACHINES (8 hours)

Construction, classification, ideal and practical transformer, equivalent circuit, losses in transformers, tests, voltage regulation and efficiency.

Construction, Working Principle, losses and efficiency of DC Machines and three phase Induction Machine, DC motor.

Unit-IV: SEMICONDUCTOR DEVICES AND APPLICATION (8 hours)

Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its Characteristics – Half wave and Full wave Rectifiers – Voltage Regulation. Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics.



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SYLLAUS	(SEMESTER-II)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	IT201TES02/ IT202TES05							70	100	02
Subject:	INTRODUCTION TO INFORMATION TECHNOLOGIES	2	0	-	15	15	30			

Course Objective

1. To illustrate the concepts of cyber security and familiar and aware with various cybercrimes attack and their prevention.
2. To describe the different services model of Cloud Computing and understand Understanding of different evaluating computer model of cloud computing.
3. To relate theoretical concepts with problem solving approach in IoT and assess the comparative advantages and disadvantages of Virtualization technology.
4. To provides the basic knowledge of use appropriate storage and access structures. the student must be able to analyse familiar with the machine learning algorithms and applications of various data science.
5. To integrate classroom learning into an everyday communicative activity in distributed system. Familiar with various web services activity.

Unit 1: -Cyber Security Fundamentals Security Concepts: Authentication, Authorization, Non-repudiation, Confidentiality, Integrity, availability. Cyber Crimes and Criminals: Definition of cyber-crime, types of cyber-crimes and types of cyber-criminals.

Unit 2: -Cloud Computing Fundamentals: Motivation for Cloud Computing, The Need for Cloud Computing, Defining Cloud Computing, Definition of Cloud computing, Cloud Computing Is a Service, Cloud Computing Is a Platform, Principles of Cloud computing, Five Essential Characteristics, Four Cloud Deployment Models.

Unit 3: -Internet of Things–Definition and Characteristics of IoT, Physical Design of IoT – IoT Protocols, IoT communication models, IOT Communication APIs IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Big data analytics, Communication protocols, Embedded Systems, IoT Levels and Templates Domain Specific IoTs – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle.

Unit 4. Data Science: -Introduction and Importance of Data Science, Statistics, Information Visualisation, Data Mining, Data Structures, and Data Manipulation, Algorithms used in Machine Learning, Data Scientist Roles and Responsibilities. Data Acquisition and Data Science Life Cycle.

Unit 5: -Evaluation and Emergence of Web Services – Evaluation of Distributed Computing, Core Distributed Technologies, Challenges in Distributed System, and Introduction to web services, Web Services Architecture, Basic steps of implementing web services

Textbooks/References:

1. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Nina Godbole and Sunil Belapure, Wiley INDIA.
2. Introduction to Cyber Security, Chwan-Hwa(john) Wu,J.DavidIrwin.CRC Press T&F Group
3. Cloud Computing Principles and Paradigm by RajashekarBuyya, James Broberg, Andhrz M. Wiley 2011.



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SYLLABUS	(SEMESTER-II)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EN202THS01							70	100	03
Subject:	ENGLISH COMMUNICATION	3	0	-	15	15	30			

Course Learning Objectives

- To build up word power, to brush up the knowledge of English grammar, to develop good writing and speaking skills in the students

Course Content:

Unit 1: -Vocabulary Building

The concept of Word Formation, Root words from foreign languages and their use in English, Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives. Synonyms, antonyms, and standard abbreviations.

Unit 2: -Basic Writing Skills

Sentence Structures, Use of phrases and clauses in sentences, Importance of proper punctuation, Creating coherence, Organizing principles of paragraphs in documents, Techniques for writing precisely

Unit 3: -Identifying Common Errors in Writing

Subject-verb agreement, Noun-pronoun agreement, Misplaced modifiers, Articles, Prepositions, Redundancies, Clichés

Unit 4: -Nature and Style of sensible Writing

Describing, Defining, Classifying, Providing examples or evidence, Writing introduction and conclusion.

Unit 5: -Writing Practices

Comprehension, Précis Writing, Essay Writing.

Oral Communication (This unit involves interactive practice sessions in Language Lab)

Listening Comprehension

Pronunciation, Intonation, Stress and Rhythm

Common Everyday Situations: Conversations and Dialogues

Communication at Workplace

Interviews

Formal Presentations

Textbooks/References:

1. Practical English Usage. Michael Swan. OUP.1995.
2. Remedial English Grammar. F.T. Wood. Macmillan.2007 (iii) On Writing Well. William Zinsser. Harper Resource Book.2001
3. Study Writing. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press.2006.
4. Communication Skills. Sanjay Kumar and Pushp Lata. Oxford University Press.2011.
5. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

Course Outcome:

At the end of the course students will be able to learn a lot of new words. They also learnt the particularities and peculiarities of English grammar. As a result, they could speak and write English with the least possible error



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SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
		L	T	P	IA	MSE	TOTAL			
<i>Subject Code:</i>	PH201PBS01/ PH202PBS02							20	50	01
<i>Subject:</i>	PHYSICS LAB	-	-	2	30	--	30			

Course Learning Objectives:

- To learn and perform the various practical related to optical components characterization, semiconductor material and devices characterization and know their applications in advance areas such as communication, industries, defence, navigation etc.

Course Content:

LIST OF PRACTICALS:

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 sodium light by Newton's ring method.
4. To determine the wavelength of sodium light by plane diffraction grating using spectrometer.
5. To demonstrate the diffraction pattern and determine the wavelength of different colours of mercury (white) light using plane diffraction grating and spectrometer.
6. To determine the wavelength and number of line 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 (E_g) of a semiconductor material using P-N junction diode.
10. To determine the e/m ratio by the Thomson's method.
11. To study the P-N junction diode characteristics, in forward 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. Determine the Planck's constant.

Course Outcomes: On completion of the course, the students would be able to:

- Know about basic optical facts and phenomenon, characterization of optical components and devices
- To know the basic semiconductor materials and devices and their applications
- To know how the performance of semiconductor devices can be improved.