Shree Warana Vibhag Shikshan Mandal's

Tatyasaheb Kore Institute of Engineering And Technology, Warananagar (An Autonomous Institute)

NBA Accredited Institute

Department of First Year B.Tech

F Y. B. Tech.

2024 - 2025

First Year B. Tech.

Curriculum Structure and Evaluation Scheme

Vision

To sustain a distinct identity for the institute by providing quality technical and management education, academic flexibility, innovation, and industry relevant skills with professional ethics.

Mission

- To persistently implement flexible curriculum for preparing technocratswith sound skills and professional ethics.
- To strengthen industry-institute interface for effective enhancement ofinternships, employability, and entrepreneurship.
- To facilitate an atmosphere that encourages faculty and students to engage in meaningful academic and research activities.
- To enhance educational opportunities for the rural and weaker sections ofthe society.
- To inculcate lifelong learning with human values and concern for thesociety and environment.

Quality Policy

To promote excellence in academics and training activities by inspiring students for becoming competent professionals to cater industrial andsocial needs.

Abbreviations

Sr. No.	Acronym	Definition
1	ISE	In-Semester Examination
2	ISE-I	In-Semester Examination-I
3	ISE-II	In-Semester Examination-II
4	ESE	End Semester Examination
5	ISA	In-Semester Assessment (Term Work)
6	L	Lecture
7	T	Tutorial
8	P	Practical
9	CH	Contact Hours
10	C	Credit

Course/ Subject Categories

Sr. No.	Acronym	Definition
1	AEC	Ability Enhancement Course
2	BSC	Basic Science Course
3	CC	Co-curricular Courses
4	ESC	Engineering Science Course
5	HSSM	Humanities Social Science and Management
6	IKS	Indian Knowledge System
7	MAC	Mandatory Audit Course
8	PCC	Programme Core Course
9	VSEC	Vocational and Skill Enhancement Course

Course/ Subject Code for theory and practical

2	**4**	**UG**	**BSC/ ESC/ AEC/ CC/ HSSM/ IKS/ MAS/ PCC/ VSEC**	**FY**	**1**	**0**	**1**	**T / P / A**
Course Introduced Year		Under Graduate	Course Category	First Year	Semester	Course Number		T- Term work P- POE A- Audit Course

Shree Warana Vibhag Shikshan Mandal's
Tatyasaheb Kore Institute of Engineering & Technology
Warananagar, Tal- Panhala, Dist- Kolhapur -416 113. Maharashtra
An Autonomous Institute, Affiliated to Shivaji University, Kolhapur

First Year B. Tech.

Curriculum Structure and Evaluation Scheme

(Common to all Programs)

To be implemented as per NEP 2020 (Revised) from AY 2024 – 25

INSTRUCTIONS

- **There are two groups in each semester:**
  1) Physics Group and
  2) Chemistry Group
- **Allotment of groups to students**
  1) In Semester-I, 50% of first year B.Tech students will be admitted in Physics group and remaining 50% will be in Chemistry Group.
  2) In Semester-II, students admitted in Physics group in semester-I will be transferred to Chemistry Group. The students admitted in Chemistry Group in semester-I will be transferred to Physics Group.
- **Eligibility criteria for End Semester Examination**
  1) As per Rules and Regulations for Examinations and Evaluation System of U.G. and P.G. Programs (5.1.3) A student shall secure a minimum 40% marks in ISE (Theory), ISA (Term work) of a particular course and attendance as per Shivaji University, Kolhapur norms otherwise he/she shall not be eligible for ESE.
- **Audit Course:**
  1) **Democracy, Election and Good Governance** is non-credit, self-study audit course. A separate examination of 50 marks will be conducted at the end of the semester. Student must score minimum 40% marks in the examination.

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First Year B. Tech. (Semester – I)

Physics Group

(Common to all Programs)

To be implemented as per NEP 2020 (Revised) from AY 2024 – 25

Curriculum Structure and Evaluation Scheme

Sr. No.	Category	Course Category	Course Code	Course Title	Teaching and Credit Scheme					Examination and Evaluation Scheme			
					L	T	P	CH	C	Component	Marks	Minimum for Passing	
1	Basic Science Course	BSC	24UGBSC- FY101	Engineering Physics	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
2		BSC	24UGBSC-FY102	Engineering Mathematics-I	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
3	Engineering Science Course	ESC	24UGESC-FY103	Basic Electrical and Electronics Engineering	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
4		ESC	24UGESC-FY104	Basic Civil Engineering	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
5		ESC	24UGESC-FY105	Computer Aided Engineering Drawing	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
6	Humanities Social Science and Management	HSSM	24UGHSSM-FY106	Communication Skills	1	-	-	1	1	ISE	50	20	
7	Basic Science Course	BSC	24UGBSC-FY101LP	Engineering Physics Lab	-	-	1	2	1	ISA	25	10	
8		BSC	24UGBSC-FY102LT	Engineering Mathematics-I Tut	-	1	-	1	1	ISA	25	10	
9	Engineering Science Course	ESC	24UGESC-FY103LP	Basic Electrical & Electronics Engineering Lab	-	-	1	2	1	ISA	25	10	
10		ESC	24UGESC-FY104LP	Basic Civil Engineering Lab	-	-	1	2	1	ISA	25	10	
11		ESC	24UGESC-FY105LP	Computer Aided Engineering Drawing Lab	-	-	1	2	1	ISA	25	10	
11	Humanities Social Science and Management	HSSM	24UGHSSM-FY106LP	Communication Skills lab	-	-	1	2	1	ISA	25	10	
12	Co-curricular Courses	CC	24UGCC- FY107T	Cyber Security Lab	-	-	1	2	1	ISA	50	20	
13	Vocational and Skill Enhancement Course	VSEC	24UGVSEC-FY108T	Manufacturing Techniques Lab	-	-	1	2	1	ISA	50	20	
14	Mandatory Audit Course	MAC	24UGMAC- FY109A	Mandatory Audit Course-I Democracy, Elections and Good Governance*	-	-	-	-	-	-	-	-	
		Total			**13**	**1**	**7**	**28**	**21**	--	**800**	--	

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Tatyasaheb Kore Institute of Engineering & Technology

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First Year B. Tech. (Semester – I)

Chemistry Group

(Common to all Programs)

To be implemented as per NEP 2020 (Revised) from AY 2024 – 25

Curriculum Structure and Evaluation Scheme

Sr. No.	Category	Course Category	Course Code	Course Title	Teaching and Credit Scheme (per week)					Examination and Evaluation Scheme			
					L	T	P	CH	C	Component	Marks	Minimum for Passing	
1	Basic Science Course	BSC	24UGBSC- FY110	Engineering Chemistry	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
2		BSC	24UGBSC-FY102	Engineering Mathematics-I	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
3	Programme Core Course	PCC	24UGPCC-FY111	Computer Programming in C	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
4	Engineering Science Course	ESC	24UGESC-FY112	Engineering Mechanics	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
5		ESC	24UGESC-FY113	Basic Mechanical Engineering	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
6	Humanities Social Science and Management	HSSM	24UGHSSM-FY114	Indian Knowledge System	1	-	-	1	1	ISA	50	20	
7		HSSM	24UGHSSM-FY106	Communication Skills	1	-	-	1	1	ISE	50	20	
8	Basic Science Course	BSC	24UGBSC- FY110LP	Engineering Chemistry Lab			1	2	1	ISA	25	10	
9		BSC	24UGBSC-FY102LT	Engineering Mathematics- I Tutorial	-	1	-	1	1	ISA	25	10	
10	Programme Core Course	PCC	24UGPCC-FY111LP	Computer Programming in C Lab	-	-	1	2	1	ISA	25	10	
11	Engineering Science Course	ESC	24UGESC-FY112LP	Engineering Mechanics Lab	-	-	1	2	1	ISA	25	10	
12		ESC	24UGESC-FY113LP	Basic Mechanical Engineering Lab	-	-	1	2	1	ISA	25	10	
13	Humanities Social Science and Management	HSSM	24UGHSSM-FY106LP	Communication Skills Lab	-	-	1	2	1	ISA	25	10	
14	Co-curricular Courses	CC	24UGCC- FY115T	Inquisitive Learning	-	-	1	2	1	ISA	50	20	
15	Mandatory Audit Course	MAC	24UGMAC- FY109A	Mandatory Audit Course-I Democracy, Elections and Good Governance*	-	-	-	-	-	-	-	-	
		Total			**14**	**1**	**6**	**27**	**21**	--	**800**	--	

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Tatyasaheb Kore Institute of Engineering & Technology

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First Year B. Tech. (Semester – II)

Physics Group

(Common to all Programs)

To be implemented as per NEP 2020 (Revised) from AY 2024 – 25

Curriculum Structure and Examination Scheme

Sr.No	Category	Course Category	Course Code	Course Title	Teaching and Credit Scheme					Examination and Evaluation Scheme			
					L	T	P	CH	C	Component	Marks	Minimum for Passing	
1	Basic Science Course	BSC	24UGBSC- FY101	Engineering Physics	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
2		BSC	24UGBSC- FY201	Engineering Mathematics-II	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
3	Engineering Science Course	ESC	24UGESC-FY103	Basic Electrical and Electronics Engineering	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
4		ESC	24UGESC-FY104	Basic Civil Engineering	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
5		ESC	24UGESC-FY105	Computer Aided Engineering Drawing	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
6	Humanities Social Science and Management	HSSM	24UGHSSM-FY202	Employability Enhancement Skills	1	-	-	1	1	ISE	50	20	
7	Basic Science Course	BSC	24UGBSC- FY101LP	Engineering Physics Lab	-	-	1	2	1	ISA	25	10	
8		BSC	24UGBSC-FY201LT	Engineering Mathematics-II Tut	-	1	-	1	1	ISA	25	10	
9	Engineering Science Course	ESC	24UGESC-FY103LP	Basic Electrical & Electronics Engineering Lab	-	-	1	2	1	ISA	25	10	
10		ESC	24UGESC-FY104LP	Basic Civil Engineering Lab	-	-	1	2	1	ISA	25	10	
11		ESC	24UGESC-FY105LP	Computer Aided Engineering Drawing Lab	-	-	1	2	1	ISA	25	10	
12	Humanities Social Science and Management	HSSM	24UGHSSM-FY202LP	Employability Enhancement Skills Lab	-	-	1	2	1	ISA	25	10	
13	Co-curricular Courses	CC	24UGCC-FY107T	Cyber Security Lab	-	-	1	2	1	ISA	50	20	
14	Vocational and Skill Enhancement Course	VSEC	24UGVSEC-FY108T	Manufacturing Techniques Lab	-	-	1	2	1	ISA	50	20	
		Total			**13**	**1**	**7**	**28**	**21**	--	**800**	--	

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First Year B. Tech. (Semester – II)

Chemistry Group

(Common to all Programs)

To be implemented as per NEP 2020 (Revised) from AY 2024 – 25

Curriculum Structure and Evaluation Scheme

Sr. No.	Category	Course Category	Course Code	Course Title	Teaching and Credit Scheme (per week)					Examination and Evaluation Scheme			
					L	T	P	CH	C	Component	Mark	Minimum for Passing	
1	Basic Science Course	BSC	24UGBSC- FY110	Engineering Chemistry	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
2		BSC	24UGBSC- FY201	Engineering Mathematics-II	3	-	-	3	3	ISE	40	16	40
										ESE	60	24	
3	Programme Core Course	PCC	24UGPCC-FY111	Computer Programming in C	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
4	Engineering Science Course	ESC	24UGESC-FY112	Engineering Mechanics	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
5		ESC	24UGESC-FY113	Basic Mechanical Engineering	2	-	-	2	2	ISE	40	16	40
										ESE	60	24	
6	Humanities Social Science and Management	HSSM	24UGHSSM-FY114	Indian Knowledge System	1	-	-	1	1	ISA	50	20	
7		HSSM	24UGHSSM-FY202	Employability Enhancement Skills	1	-	-	1	1	ISE	50	20	
8	Basic Science Course	BSC	24UGBSC- FY110LP	Engineering Chemistry Lab			1	2	1	ISA	25	10	
9		BSC	24UGBSC- FY201LT	Engineering Mathematics- II Tutorial	-	1	-	1	1	ISA	25	10	
10	Programme Core Course	PCC	24UGPCC-FY111LP	Computer Programming in C Lab	-	-	1	2	1	ISA	25	10	
11	Engineering Science Course	ESC	24UGESC-FY112LP	Engineering Mechanics Lab	-	-	1	2	1	ISA	25	10	
12		ESC	24UGESC-FY113LP	Basic Mechanical Engineering Lab	-	-	1	2	1	ISA	25	10	
13	Humanities Social Science and Management	HSSM	24UGHSSM FY202LP	Employability Enhancement Skills Lab	-	-	1	2	1	ISA	25	10	
14	Co-curricular Courses	CC	24UGCC-FY115T	Inquisitive Learning	-	-	1	2	1	ISA	50	20	
		Total			**14**	**1**	**6**	**27**	**21**	--	**800**	--	

Academic Coordinator
First Year, B.Tech

Chairman
BoS F. Y. B. Tech

Dean Academics

Chairman
Academic Council

Physics Group (Sem-I)

COURSE WISE DETAILED CURRICULUM

24UG BSC-FY101 Engineering Physics

Lectures : 3 Hrs/Week

Evaluation Scheme

ISE : 40 Marks

ESE : 60 Marks

Course Objectives: The objective of the course is to
1) Provide the useful fundamental concepts of Physics to all Engineering disciplines. 2) Make the student aware of new techniques in Physics applicable to engineering practices. 3) Encourage them to understand engineering and technical development.

Course Outcomes:

COs	At the end of successful completion of the course, the student will beable to
CO1	**Summarize** the knowledge of basic quantum mechanics to understand Wave particle dualism and uncertainty principle.
CO2	**Demonstrate** the different crystal structure and their properties by Understanding crystal physics.
CO3	**Apply** the theory and phenomenon of nanophysics to produce nanomaterials.
CO4	**Define** the basic requirements of Architectural Acoustics.
CO5	**Illustrate** the diffraction and polarization phenomenon of light.
CO6	**Explain** the concepts and applications of LASER and necessary tools for Nuclear power plant.

Description:

Engineering Physics course is offered as the basic science course. This course contains crystal structures and their properties, Approaches and techniques of nanomaterial and nanotechnology, Basic concepts of Architectural acoustics, Different phenomenon's of light, wave –particle dualism and uncertainty principle and nuclear energy. These are useful fundamental concepts of Physics to all Engineering disciplines and to make the student aware of new techniques in Physics applicable to engineering practices.

Prerequisites:	1:	Fundamentals of properties of wave and particle and types of the solid.
	2:	Different phenomenon of light and sound.

	3:	Basics of Atomic Physics and Nuclear energy
Section – I		
Unit 1	**Wave Mechanics**	
	Introduction, Wave-particle dualism (De-Broglie's Hypothesis -light and matter), De-Broglie's wavelength in terms of Kinetic Energy, Potential Difference and Temperature, Properties of matter waves, Heisenberg's uncertainty principle for position and momentum, Compton Effect (statement, explanation and formula), Photoelectric Effect, Numerical.	**06 Hrs**
Unit 2	**Crystallography**	
	Introduction, Basics of crystal structure -Space Lattice, Basis, crystalline solid and Unit cell (geometry and types), Seven crystal system, Properties of unit cell for SC, BCC and FCC (number of atoms per unit cell, coordination number, atomic radius and packing density), Relation between density and lattice constant, Miller indices (procedure and sketches for planes), Bragg's x-ray spectrometer, Numerical.	**07 Hrs**
Unit 3	**Nanoscience and Nanotechnology**	
	Introduction, Nanomaterials, Nanoscience and Nanotechnology, Top down and bottom up approaches, Production techniques - Ball milling and Colloidal, Types of nanomaterial, Properties of material at nanoscale (Surface to Volume ratio and Quantum confinement effect), Applications of nanomaterials, Characterizations - Scanning Tunneling Microscope and Atomic Force Microscope.	**06 Hrs**
Section – II		
Unit 4	**Architectural Acoustics**	
	Introduction, Reverberation, Reverberation time, Absorption coefficient, Average absorption coefficient, Sabine's formula for reverberation time (no derivation), Factors affecting architectural acoustics and their remedy, Numerical.	**06 Hrs**
Unit 5	**Wave Optics**	
	Introduction, Theories of light, Interference of light and types, Diffraction of light and types, Construction of diffraction grating, Theory of fraunhofer diffraction by double slit, Resolving power of plane transmission grating, Polarization of light, double refraction, Huygens' theory of double refraction, Specific Rotation, Quarter wave plate and half wave plate, Laurent's half shade polarimeter, Numerical.	**07 Hrs**

Unit 6	**LASER and Nuclear Physics**	
	LASER: Introduction, Absorption, spontaneous emission and stimulated emission of radiations, Population inversion, Pumping energy, Characteristics of laser beams, Ruby laser. **Nuclear Physics:** Introduction, Nuclear Fission, Energy released by 1 Kg of U235, Nuclear fission reactor, Nuclear fusion, Thermonuclear reactions (proton-proton chain and Carbon Nitrogen cycle), Numerical.	**07 Hrs**

References:

Text Books	
1	M. N. Avadhanulu and P. G. Kshirsagar, "A Text book of Engineering Physics", S.Chand and Company, New Delhi.
2	R. K. Gaur and S. L. Gupta "Engineering Physics", Dhanpat Rai Publications, New Delhi.
Reference Books	
1	R. K. Gaur & Gupta S. L, Engineering Physics –Dhanapat Rai Publication
2	B. L. Theraja -Modern Physics - S. Chand & Company Ltd., Delhi
3	Subramanyam & BrijLal, A Text Book of Optics –S. Chand & Company (P.) Ltd.
4	M. N. Avadhanulu & P. G. Kshirsagar - A Text Book of Engineering Physics -S. Chand Publication.
5	B. K. Pandey and S. Chaturvedi- Engineering Physics, Cengage Learning

Web Links/ Video Lectures

Sr. No	Unit No./Topic	Web Links/ Video Lectures
1	Unit No. 1	https://nptel.ac.in/courses/115/101/115101010/
2	Unit No. 2	https://nptel.ac.in/courses/115/104/115104109/
3	Unit No. 2	https://nptel.ac.in/courses/115/105/115105099/
4	Unit No. 3	https://nptel.ac.in/courses/115/101/115101007/
5	Unit No. 5	https://nptel.ac.in/courses/115/105/115105083/
6	Unit No. 6	https://nptel.ac.in/courses/115/102/115102124/
7	Unit No. 6	https://nptel.ac.in/courses/115/104/115104043/
8	Physics	http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html
9	Physics	https://en.wikipedia.org/wiki/Fundamentals_of_Physics

24UG BSC-FY102 Engineering Mathematics-I

Lectures : 3 Hrs/Week

Credit : 3

Evaluation Scheme

ISE : 40 Marks

ESE : 60Marks

COs	At the end of successful completion of the course, the student will Be able to
CO1	**Find** rank of matrix and solve system of linear equations.
CO2	**Find** characteristic equation and use it to find eigen value, eigen vector, higher power and inverse (if it exists) of square matrix.
CO3	**Use** De Moivre's Theorem to find roots of complex numbers and express sinnθ and cosnθ in powers of sinθ and cosθ
CO4	**Estimating** the value of a function for the given value of the independent variable
CO5	**Solve** system of linear equations using numerical methods
CO6	**Calculate** partial derivative and apply it to find extreme values offunction of two variable

Description:

Engineering Mathematics-I course is offered as the basic science course. This course contains Mathematical methods and techniques that are typically used in engineering to solve complex engineering problems. This course has six units namely i) Matrices and Solution of Linear System Equations ii) Eigen Values and Eigen vectors, iii) Complex Numbers, iv) Numerical Solution of linear simultaneous equations, v) Finite Differences, vi) Partial Differentiation and its Application

Prerequisites:	1:	Determinant, Matrix algebra
	2:	Basic knowledge of complex numbers
	3:	Differentiation and integration formulae.

Section – I		
Unit 1	**Matrices and Solution of Linear System Equations**	
	Rank of matrix: Definition, Normal form and echelon form, System of linear homogeneous equations, System of linear Non-homogeneous equations	**06 Hrs**
Unit 2	**Eigen Values and Eigen vectors**	
	Eigen Values , Properties of Eigen Values, Eigen vectors, Properties of Eigen vectors, Cayley-Hamilton's theorem (Without proof)	**06 Hrs**
Unit 3	**Complex Numbers**	
	De Moivre's Theorem (Without proof), Roots of complex numbers by using De Moivre's Theorem, Expansion of $\sin n\theta$ and $\cos n\theta$ in powers of $\sin\theta$ and /or $\cos\theta$, Circular functions of a complex variable, Hyperbolic and Inverse Hyperbolic Functions- definitions .	**07Hrs**
Section – II		
Unit 4	**Finite Differences**	
	Forward & Backward difference operator, Shift operator, Interpolation & Extrapolation Methods , Newton's formulae (Equal intervals), Lagrange's formulae (Unequal intervals).	**06Hrs**
Unit 5	**Numerical Solution of linear simultaneous equations**	
	Gauss elimination method, Gauss-Jordan method, Jacobi's iteration method, Gauss-Seidel iteration method.	**06 Hrs**
Unit 6	**Partial Differentiation and its Application**	
	Partial derivatives: Introduction, Total derivatives, Euler's theorem on homogeneous function of two variables, Jacobian and its Properties, Maxima and Minima of functions of two variables	**08 Hrs**

Note-Minimum 06 Assignments should be given covering all units

References:

Text Books	
1	Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers, Delhi.
2	A text book of Engineering Mathematics by N. P. Bali, Iyengar, Laxmi Publications (P) Ltd., New Delhi.
3	Engineering Mathematics I , G. V. Kumbhojkar, H. V. Kumbhojkar, C. Jamnadas & Co.
Reference Books	
1	A text book of Applied Mathematics, Vol.I, Vol. II, Vol. III by P. N. Wartikar& J. N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.
2	Numerical methods by Dr. B. S. Grewal, Khanna Publishers, Delhi.
3	Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India Pvt. Ltd.
4	Advanced Engineering Mathematics by H. K. Dass, S. Chand, New Delhi.
5	A text book of Engineering Mathematics Volume I by Peter V. O'Neil and Santosh K.Sengar, Cengage Learning.

Web Links/ Video Lectures

Sr. No	Unit No.	Web Links/ Video Lectures
1	**1**	https://nptel.ac.in/courses/111/107/111107112/
2	**2**	https://nptel.ac.in/courses/111/105/111105121/
3	**5**	https://nptel.ac.in/courses/111/107/111107105/
4	**5**	https://nptel.ac.in/courses/111/106/111106101/
5	**6**	https://nptel.ac.in/courses/111/107/111107108/

24UG ESC-FY103 Basic Electrical and Electronics Engineering

Lectures : 2 Hrs/Week

Evaluation Scheme

ISE : 40 Marks

ESE : 60 Marks

Course Objectives: The objective of the course is to
Provide the Knowledge with an introductory and broad treatment in the field of Electrical and Electronics Engineering.

Course Outcomes:

COs	**At the end of successful completion of the course, the student willbe able to**
CO1	**Apply** the KCL and KVL to determine the current and voltage of DC circuits .
CO2	**Describe** the basic concepts of Magnetic circuits.
CO3	**Describe** the concepts of Basic Electronics components.
CO4	**Illustrate** the Nature of single phase AC series and parallel RLC circuits by calculating impedence power factor and power consumption.
CO5	**Explain** the concept of 3 phase supply Generation , transmission , Utilization and its advantages.
CO6	**Solve** the problems related to power losses to determine the efficiency of single phase transformer.

Description:

Basic Electrical & Electronics Engineering course is offered as the engineering science course. This course contains. Basic knowledge of Electrical & Electronics engineering and its advantages, applications. This course has six units namely i) Analysis of D.C. Circuits, ii) Magnetic circuits, iii) Fundamentals of electronics iv) Single phase AC circuits, v) Three phase AC circuits, vi). Single phase Transformer

Prerequisites:	1:	Battery, Potential difference and current flow concept.
	2:	Few basic electrical and Electronics components identification
	3:	Difference between AC & DC circuits

Section – I

Unit 1	**Analysis of D.C. Circuits**	
	Concept of EMF,Potential difference, current, Power, Energy, Resistance, Ohms law,	

	Kirchhoff's laws, Mesh & Node analysis. (Numerical treatment on Mesh & Node analysis of two loops)	**05 Hrs**
Unit 2	**Magnetic circuits**	
	Concept of MMF, reluctance, magnetic flux, Magnetic flux density, magnetic field strength, Comparison of Electric & magnetic circuit, , Analysis of Series magnetic circuits.	**04 Hrs**
Unit 3	**Fundamentals of Electronics**	
	Introduction of Diode and V-I characteristics, Rectifier configuration, Analysis of Half wave Rectifier ,Full wave Rectifier and Bridge Rectifier, Introduction of Transistor.	**05 Hrs**
Section – II		
Unit 4	**Single phase A.C Circuits**	
	Faradays laws, Lenz's Law, generation of sinusoidal voltage, Analysis of pure Resistive, Inductive, Capacitive circuits, Analysis of series R-L,R-C, R-L-C circuits. (Numerical treatment on series R-L, R-C, R-L-C circuits)	**05 Hrs**
Unit 5	**Three phase A.C. Circuits**	
	Advantages of three phase system**,** Generation of three phase AC supply, phase sequence, Balanced system, Relation between line & phase quantities in Balanced star and Delta connected circuits.	**04 Hrs**
Unit 6	**Single phase Transformer**	
	Construction, operating principle, types, EMF Equation, Turns Ratios, Ideal Transformer, Power losses. (Numerical treatment on EMF Equation)	**05 Hrs**

References:

Text Books	
1)	P.V.Prasad and S.Shivan Raju – Electrical Engineering Concepts and applications – cenagage learning.
2)	B.H.Deshmukh, Electrical Engineering Concepts and applications
3)	Robert L.Boysted and Louis Nashelsky ,Electronics devices and circuit theory – Pearson education
Reference Books	
1)	B.L.Theraja – Electrical Technology Vol.1.- S.Chand publications.
2)	Nagarath I.J. and D.P.Kothari – Basic Electrical Engineering (2001) – Tata McGraw Hill.
3)	Bharati Dwivedi and Anurasg Tripathi – Fundamentals of Electrical engineering – Willey Precise.

Web Links/ Video Lectures

Sr. No	Unit No.	Web Links/ Video Lectures
1	1	https://nptel.ac.in/courses/108/106/108106172/
2	2	https://nptel.ac.in/courses/108/106/108106172/
3	3	https://nptel.ac.in/courses/108/108/108108122/
4	4	https://nptel.ac.in/courses/108/105/108105053/
5	5	https://nptel.ac.in/courses/108/105/108105053/
6	6	https://nptel.ac.in/courses/108/105/108105017/

24UG ESC-FY104 Basic Civil Engineering

Lectures : 2 Hrs/Week

Evaluation Scheme

ISE : 40 Marks

ESE : 60 Marks

Course Objectives: The objective of the course is to
1. learn the brief introduction of all aspects under civil engineering 2. understand basic concepts of Surveying, Transportation Engineering

Course Outcomes:	
COs	**At the end of successful completion of the course, the student will be able to**
CO1	**Illustrate** linear and angular measurements by considering principles and significance of Surveying
CO2	**Identify** nature of ground by using methods of leveling
CO3	**List** components of pavements, railway track and water supply scheme
CO4	**Demonstrate** basic knowledge of Civil Engineering and explain principles of building planning and Bye laws.
CO5	**Explain** various components and it's uses of building.
CO6	**Study** various building materials and it's uses.

Description:		
This course include principles of building planning, building components and their functions, building materials, surveying and its principles, leveling transportation engineering, irrigation		
Prerequisites:	1:	Properties of materials
	2:	Measurements
	3:	Principles

Section – I

Unit 1	**Linear and Angular Measurements**	
	Principles of surveying, Linear measurements- Chain Surveying, Instruments used- Metric chain, errors in chaining, Ranging(Direct only)- Instruments Used, nominal scale and R.F., chaining, offsetting & numerical, Angular Measurements- Compass survey, Meridian, bearing and its types, system of bearing, Types of compass: prismatic and surveyor	**05Hrs**

	compass, Calculation of included angles, correction for local attraction, Numerical.	
Unit 2	**Leveling**	
	Terms used in leveling, use of Dumpy level and Auto Level, Temporary adjustments. Methods of reduction of levels, types of leveling, Numerical.	**04 Hrs**
Unit 3	**Introduction to Transportation, Environmental Engineering**	
	Components of rigid and flexible pavement, components of railway track (Broad Gauge), Water Treatment Plant- Components with Flow Diagram	**04 Hrs**
Section – II		
Unit 4	**Introduction to Civil Engineering and Building Planning**	
	Introduction, branches of civil engineering , Relevance of civil engineering in the overall development of the country, Principles of planning, Introduction to Bye-Laws regarding building line, height of building, open space requirements, F.S.I., setbacks, Ventilation, sanitation as per municipal corporation area requirement.	**05Hrs**
Unit 5	**Components of Building**	
	A) Sub-structure: Elements of sub-structures and their Functions of elements B) Super-structure: Elements of super-structures and their Functions of elements	**05Hrs**
Unit 6	**Building Materials and Design**	
	Building Materials- cement blocks- properties and specification, Cement- Types, grades, properties and uses in brief, Concrete-Plain and reinforced cement concrete and ready mix concrete and their grades, Use and properties of bricks, steel, timber, Use and properties of roofing materials etc**.**	**03Hrs**

References:

Text Books	
1	Basic Civil Engineeringby G. K. Hiraskar, DhanpatRai Publication
2	Basic Civil Engineering by S. S. Bhavikatti, New Age International Publications
3	Building Construction by S P Arora & S P Bindra, DhanpatRai Publications
Reference Books	
1	Surveying by N. Basak, Tata Mc-Graw Hill Publication
2	Surveying Vol.I, Vol.II, Vol.III by B.C. Punmia, Laxmi Publication
3	Civil Engineering Materials - Technical Teacher's Training Institute, Chandigarh
4	Irrigation Engineering by B. C. Punmia, DhanpatRai Publications

Web Links/ Video Lectures

Sr. No	Unit No.	Web Links/ Video Lectures
1	**1**	https://nptel.ac.in/courses/105/103/105103093/
2	**2**	https://nptel.ac.in/courses/105/102/105102088/
3	**3**	https://nptel.ac.in/courses/105/102/105102088/
4	**4**	https://nptel.ac.in/courses/105/107/105107122/
5	**5**	https://nptel.ac.in/courses/105/107/105107122/
6	**6**	https://nptel.ac.in/courses/105/101/105101087/

24UG ESC-FY105 Computer Aided Engineering Drawing

Lectures	**:** 2 Hrs/Week	**Evaluation Scheme**	
Credit	**:** 2	**ISE**	**:** 40 Marks
		ESE	**:** 60 Marks

Course Objectives: The objective of the course is to

1) Provide the basic knowledge of engineering drawing to visualize the objects.
2) Deliver the basic commands for drawing using AutoCAD.

Course Outcomes:

COs	At the end of successful completion of the course, the student will beable to
CO1	**Implement** the knowledge of engineering drawing fundamentals, dimensioning and AutoCAD to draw an object.
CO2	**Draw** the neat drawings of Projection of lines
CO3	**Construct** the neat drawings of Projection of planes
CO4	**Classify** Solids and Projection of solids at different Positions.
CO5	**Visualize and construct** orthographic projection to represent in two-dimensional views.
CO6	**Prepare** the objects by developing surfaces of solids with cutting planes.

Description:

Computer Aided Engineering Drawing Course consists of engineering drawing of Projections of Planes and Solids, Sections of solids & Development of surfaces, Orthographic Projections, Isometric projections along with introduction to computer aided sketching

Prerequisites:	1:	Knowledge of Geometry at SSC Level
	2:	Knowledge of free hand sketch and Computer

Section – I

Unit 1	**Fundamentals of Engineering Drawing and Introduction to Computer Aided Sketching** A) Introduction, Instruments for drawing, sheet sizes, Types of different types of lines, Dimensioning. Construction of regular polygons. Introduction about first and third angle projection method. B) Introduction to CAD & Graphical user interface of the AutoCAD software, standard tool bars/ menus, navigational tools. Study and use of drawing and modify commands.	**04Hrs**

Unit 2	**Projection of line (1st Angle Projection only)**	
	First angle projection methods, Concept of true line, apparent line, Concept of Projection of lines (Rotating line Method only)	**04Hrs**
Unit 3	**Projection of planes (1st Angle Projection only)**	
	Orthographic projection system, First angle projection methods, Concept of Projection –Projection of planes (regular polygons and circle).	**05Hrs**
Section – II		
Unit 4	**Projections of Solids**	
	Projection of Solids such as Prisms, pyramids, cylinder and cone with their axis inclined to one of the reference planes.(Only rest on HP)	**04Hrs**
Unit 5	**Orthographic Projections**	
	Orthographic views: Lines used, Selection of views, spacing of views, dimensioning and sections. Required views from given pictorial views (Conversion of pictorial view into orthographic view).Isometric Drawing (Theoretical Treatment only)	**05Hrs**
Unit 6	**Development of surfaces**	
	Development of Flat and curved lateral surfaces of Regular solids: Prisms, Pyramids, Cylinders and Cones.	**04Hrs**

References:

Text Books	
1	Engineering Drawing by N. D. Bhatt, Charotor Publication House, Bombay
2	Machine Drawing by N. D. Bhatt, Charotor Publication House, Bombay.
3	Engineering Drawing and Graphics Using AutoCAD by T. Jeyapoovan, Vikas Publication.
4	A text book of Engineering Drawing by R. K. Dhawan, S. Chand and Co.
Reference Books	
1	Engineering Graphics with AutoCAD - D. M. Kulkarni, A. P. Rastogi, A. K. Sarkar, (PHI) Publisher 2010.
2	Machine Drawing by K. L. Narayana, New Age Publication
3	Engineering Drawing by N. B. Shaha and B. C. Rana, Pearson Education.
4	Engineering Drawing by Prof. Amar Pathak, WIELY India Publication.

5	T. Jeyapoovan, “Engineering Drawing and Graphics Using AutoCAD” Vikas Publication. 9.
6	Ajeet Singh, “Machine Drawing includes AutoCAD”, Tata McGraw Hill Education

Web Links/ Video Lectures

Sr. No	Unit No.	Web Links/ Video Lectures
1	**1**	http://nptel.ac.in/courses/112/104/112104172/
2	**2**	http://nptel.ac.in/courses/112/104/112104172/
3	**3**	http://nptel.ac.in/courses/112/104/112104172/
4	**4**	http://nptel.ac.in/courses/112/104/112104172/
5	**5**	http://nptel.ac.in/courses/112/104/112104172/
6	**6**	http://nptel.ac.in/courses/112/104/112104172/
7	**4**	http://vlabs.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/egraphics_lab/labs/index.php

24UG HSSM-FY106 Communication Skills
(Sem - I)

Lectures	**:** 01 Hrs/Week	**Evaluation Scheme**	
Credit	**:** 1	**ISE**	**:** 50 Marks
		ESE	**:** NA

Course Objectives: The objective of the course is to

- To acquaint students with basic English Grammar and help students in improving language skills
- To familiarize students with concept, various types, barriers and filters of communication
- To assist students in developing Vocabulary
- To aid them in understanding corporate meetings
- To train the students to compose and write the business letters effectively

Course Outcomes:

COs	At the end of successful completion of the course, the student will be able to
CO1	Understand basic concepts of grammar in application letters
CO2	Understand communicative techniques to participate in several activities
CO3	Recall appropriate vocabulary for various contexts
CO4	Demonstrate interpersonal skills with precision and competence in different scenario.
CO5	Write business letters by using appropriate language tools

Description:

In the era of globalization, the most commonly used medium to express oneself is English language, especially in the industry, where almost all the service manuals, installation and commissioning manuals of the various equipment are in English and the technologist has to interpret them correctly. English is the dire need, not only for the Indian industry, but also worldwide, where the Engineering Graduates have the opportunity to take up jobs. Therefore, the basic English reading and writing skills have become almost mandatory for employment in the industry. Hence, English language has become quite a necessity for engineering students. This course is therefore designed to help the students to learn the correct grammatical structures and use the relevant vocabulary while reading and writing. Also introduce the communication theory, report writing & business correspondence to them.

Prerequisites:	1:	Basic Knowledge of English Grammar
	2:	Reading and Listening Comprehension
	3:	Basic knowledge of Writing Skills

Unit 1	**Ice Breaking and Rapid Review of Grammar**	
	• Knowing each other Self introduction • Basic application letters (Applications for various occasions etc.) • Parts of Speech • Types of Sentences, Tenses / Verbal forms	**03 Hrs**
Unit 2	**Introduction to Communication and it' s Organization**	
	• Nature, Importance and Process of Communication • Basic Types: Verbal- Non- verbal Communication • Nature of Communication.-Formal & Informal • Directions of Communication: • Levels of Communication • Barriers & Filters to Communication	**04 Hrs**
Unit 3	**Vocabulary Building**	
	• Synonyms & Antonyms, Prefixes and Suffixes • Words often Confused: Homonym & Homophone • Idioms and Phrases	**02 Hrs**
Unit 4	**Corporate Meetings**	
	• Significance and Types of Meeting • Strategies of Conducting and Attending Meeting Effectively • Record Keeping: Notice, Agenda and Minutes	**02 Hrs**
Unit 5	**Business Correspondence**	
	• Importance of Correspondence & Elements of Letter Writing • Structure or Layouts (American & British) • Letters: Inquiry, Order Placement, Complaint and its Adjustment, Invitation Letter	**03 Hrs**

References:

Recommended Books	
01	*Communication Skills by Meenakshi Raman and Sangeeta Sharma, Oxford University Press 2016 1st Edition.*
02	*Communication Skills for Engineers by S. Mishra & C. Muralikrishna (Pearson)*
03	*Basic Communication Skills for Technology by Rutherford, Andrea J. (2002).. Delhi: Pearson Education Asia*
04	*Mastering Communication by Nicky Stanton, Palgrave Master Series*
05	*Comfort, Jeremy, et al. (2011) Speaking Effectively: Developing Speaking Skills for Business English. Cambridge: Cambridge University Press. (Reprint)*
06	*Sharma, R. C. and Krishna Mohan, Basic Correspondence and Report Writing: A Practical Approach to Business and Technical Communication, Tata McGraw-Hill Publishing Company Limited, India ,5th Edition, 2017*
07	*Written Communication in English by Saran Freeman (Orient Longman)*
08	*Seely, J. The Oxford Guide to Writing and Speaking, Oxford University Press, India 3rd Edition , 2013*

09	*High School English Grammar and Composition by Wren and Martin, Blackie, 2000*
10	*Essential English Grammar (Elementary & Intermediate) Raymond Murphy (CUP)*
11	*Sethi, J. and Dhamija P.V. A Course in Phonetics and Spoken English Prentice-Hall of India 2nd Edition, 2006*
12	*English Language Laboratories, by Nira Konar, PHI Learning, 2014*
13	*Perspective of Communication and Communicative Competence, M.V. Rodriques, Concept Publishing Company, New Delhi-10059*
	www.buisnesscommunicationskills.com
	www.kcitraing.com
	www.mindtools.com

24UG BSC-FY101LP Engineering Physics Lab

Practical : 2 hr/week

Credit : 1

Evaluation Scheme

ISA : 25 Marks

POE : NA

COs	At the end of the successful completion of the course, the student will be able to
CO1	**Explain** the need for precise measurement practices for data recording.
CO2	**Interpret** the principle, concept, working and applications of wave optics, band gap energy as well as Crystal relevant experiments.
CO3	**Apply** the techniques and skills associated with modern scientific tools regarding LASER and Nuclear plants.
CO4	**Develop** scientific communication skills while performing the experiments and interpreting the results to communicate effectively the scientific activities

Description:		
This course aims to make the students gain practical knowledge to relate with the theoretical studies and to use the principle in the right way to implement modern technology. The experiments are selected from various areas of Physics like Measurements, Wave Optics, Lasers, Solid state physics and Basic Electronics. The Engineering Physics Laboratory manualis written in a simple scientific language with aim, apparatus, theory, diagrams, formula, graphs and questions. These experiments will help the students to expertise in the analysis of various concepts in Optics, measurements, crystallography andelectronics-related topics.		
Prerequisites:	1:	Higher secondary level Physics
	2:	Fundamentals of wave optics, Band theory and crystal.

Practical/Experiment Topic
(Minimum 8 experiments should be completed)

Number	Practical/Experiment/TutorialTopic	Hrs.
1	Measurements in Physics	02
2	Resistor and Capacitor Code	02
3	Measurement of Band Gap Energy	02
4	Study of seven Crystal Structure, Bravais Lattice and Properties of unit cell	02
5	Study of Symmetry Elements of Cubic Crystal	02

6	Determination of Interplaner distance using XRD pattern	02
7	Miller Indices	02
8	Divergence of LASER Beam	02
9	Resolving power of Telescope	02
10	Specific rotation by Polarimeter	02
11	Wavelength of different spectral lines of mercury using grating.	02
12	Determination of wavelength of LASER using diffraction grating.	02
13	The grating constant of the diffraction grating	02
14	Determination of e/m of an electron	02
15	Resolving power of diffraction grating	02

References:

TextBooks	
1	Engineering Physics Lab Manual, TKIET Warananagar
2	Madhusudhan Rao, Engineering Physics Lab Manual, Scitech Publication
3	O.P. Singh, Vipin Kumar, R.P. Singh,Engineering Physics Practical Manual, Ram Prasad Publication
ReferenceBooks	
1	Resnick Halliday, Physics Volume-I, Krane -John Wiley & Sons Pub.
2	Resnick Halliday, Physics Volume-II, Krane -John Wiley & Sons Pub.

Virtual Lab Link:

1. **Experiment name-** Diffraction Grating (**Lab Name-**Optics virtual lab)
http://vlab.amrita.edu/?sub=1&brch=281&sim=334&cnt=1

2. **Experiment name-** Crystal Structure (**Lab Name-**solid state physics virtual lab)
http://vlab.amrita.edu/?sub=1&brch=282&sim=370&cnt=1

3. **Experiment name-**Laser beam divergence and spot size (**Lab Name-**laser optics virtual lab)
http://vlab.amrita.edu/?sub=1&brch=189&sim=342&cnt=1

4. **Experiment name-** Numerical Aperture of Optical Fiber (**Lab Name-**laser optics virtual lab)
http://vlab.amrita.edu/?sub=1&brch=189&sim=343&cnt=1

5. **Experiment name-** B-H Curve (**Lab Name-**solid state physics virtual lab)
http://vlab.amrita.edu/?sub=1&brch=282&sim=1507&cnt=1

6. **Experiment name-** Photoelectric effect (**Lab Name-**modern physics virtual lab)
http://vlab.amrita.edu/?sub=1&brch=195&sim=840&cnt=1

7. Experiment name- Energy Band Gap of Semiconductor (**Lab Name-**Basics of Physics lab)
https://bop-iitk.vlabs.ac.in/exp/energy-band-gap/

24UG BSC-FY102LT Engineering Mathematics I

Teaching Scheme:
Tutorials: 1/week
Credit: 1

Evaluation Scheme:
ISA: 25 Marks

Course Objectives: The objective of the course is to

- To provide detailed of matrices which is applied for solving system of linear equations and useful in various fields of technology
- This course enables the students to learn the concept of imaginary numbers and gives awareness about algebra of complex numbers which helps in understanding of engineering subjects like electrical circuits, Electromagnetic wave theory, and complex analysis etc.
- To build ability to solve numerically system of linear equations, algebraic and transcendental equations. To provide an overview of the experimental aspect of applied mathematics.
- This course enables to provide an overview of partial derivatives and its applications which is used for solving optimization problems and concepts is needed in study of wave, heat equation of various orders and also in calculation of errors in various engineering subjects.

Course Outcomes:

Cos	**At the end of successful completion of the course the student will be able to**
CO1	**Find** rank of matrix and solve system of linear equation.
CO2	**Find** eigen values and eigen vectors and verifies cayley Hamilton's theorem
CO3	**Apply** De Moivre's Theorem to find roots of complex numbers, expand powers of $\sin n\theta$ and $\cos n\theta$
CO4	**Compute** forward and backward difference, Apply Newton's & Lagrange's interpolation Formulae.
CO5	**Solve** system of liner equations numerically
CO6	**Find** partial derivative and apply it to find maxima & Minima of function of two variable

Description:		
Engineering Mathematics-I course is offered as the basic science course. This course contains Mathematical methods and techniques that are typically used in engineering to solve complex engineering problems. This course has six units namely i) Matrices and Solution of Linear System Equations ii) Eigen Values and Eigen vectors, iii) Complex Numbers, iv) Numerical Solution of linear simultaneous equations, v) Finite Differences, vi) Partial Differentiation and its Application		
Prerequisites:	1:	Determinant, Matrix algebra
	2:	Basic knowledge of complex numbers
	3:	Differentiation and integration formulae.

Tutorials:

Number	Practical/Experiment/TutorialTopic	Hrs.
1	Rank by Normal form & Echelon form	**1**
2	Solution of system of linear equation	1
3	Eigen values & Eigen Vectors	1
4	Cayley Hamilton's Theorem	1
5	De Moivre's Theorem	1
6	Roots of complex number	1
7	Newton's Interpolation	1
8	Lagrange's Interpolation Formula	1
9	Gauss elimination method & Gauss Jordon method	1
10	Jacobi Iteration & Gauss Seidel Iteration Method	1
11	Partial Derivative, Euler's Theorem	
12	Jacobian, Maxima & minima	

24UG ESC-FY103LP Basic Electrical & Electronics Engineering Lab (Sem- I & II)

Tutorial/Practical : 2 hr/week
Credit : 1

Evaluation Scheme
ISA : 25 Marks

COs	At the end of successful completion of the course, the student will beable to
CO1	**Make** electrical connection for different circuits
CO2	**Apply** the different laws
CO3	**Analyze** V-I characteristics of Bridge circuits
CO4	**Determine** the efficiency of transformer

Description:

Basic Electrical Engineering course is offered as the engineering science course. This course contains basic knowledge of electrical engineering and its advantages, applications. This course has six units namely i) Analysis of D.C.Circuits, ii) Magnetic circuits, iii) Single phase AC circuits, iv) Three phase AC circuits, v) Single phase Transformer and vi). Fundamentals of electronics

Prerequisites:	1:	Battery , Potential difference and current flow concept.
	2:	Few basic electrical components identification
	3:	Difference between AC & DC circuits
	4:	Few basic electronics components identification

Experiment

Number	Practical/ Experiment/Tutorial Topic	Hrs
1	Laboratory sessions covering, general introduction toelectrical engineering laboratory, experimental setups, Instruments etc. Electrical symbols	2
2	Electric shocks & precautions against shocks	2
3	Study of Ohm's law	2
4	Verification of Kirchhoff's Voltage law & Kirchhoff's Current law	2

5	B-H Curve for magnetic material	2
6	Study of Half wave Rectifier	2
7	Study of Full wave Rectifier	2
8	Determination of Reactance's for series R-L-C circuit	2
9	Demonstration of Power factor Improvement by static capacitor	2
10	Polarity & Ratio test for Single phase Transformer	2
11	Load tests on single phase transformer	2
12	Study of Basic method of Earthing, Use of Fuse & MCB	2
13	Study of different luminaries including Mercury Vapour lamp, fluorescent tube, CFL & LED lamp	2

References:

Text Books:	
1)	P.V.Prasad and S.Shivan Raju – Electrical engineering concepts and applications – cenagage learning.
2)	B.H.Deshmukh, Electrical engineering concepts and applications
3)	Robert L.Boysted and Louis Nashelsky ,Electronics devices and circuit theory – Pearson education
Reference Books:	
1)	B.L.Theraja – Electrical Technology Vol.1.- S.Chand
2)	Nagarath I.J. and D.P.Kothari – Basic Electrical Engineering (2001) – Tata McGraw Hill.
3)	Bharati Dwivedi and Anurasg Tripathi – Fundamentals of Electrical engineering – Willey Precise.

24UG ESC-FY104LP-Basic Civil Engineering Lab

Tutorial/Practical : 2 hr/week
Credit : 1

Evaluation Scheme
ISA : 25 Marks
POE : NA

Course Objectives: The objective of the course is to
1. To learn the brief introduction of all aspects under civil engineering 2. To understand basic concepts of Surveying, Transportation Engineering

Course Outcomes:

COs	**At the end of successful completion of the course, the student will be able to**
CO1	**Identify** and apply different distance measurement tools.
CO2	**Determine** positions of an object by compass.
CO3	**Find** the elevations of given points.
CO4	**Illustrate** principle of planning

Description:

This course include principles of building planning,building components and their functions,building materials,surveying and its principles,leveling transportation engineering,irrigation

Prerequisites:	1:	Distance measurement
	2:	Directions with respect to North
	3:	Nature of ground

Number	**Practical/Experiment/TutorialTopic**	**Hrs.**
1	Measurement of Distances	2
2	Traversing by Compass	2
3	Reduction of levels by Collimation Plane Method	2
4	Finding out gradient of line by Rise &fall method	2
5	Site visit for study of various construction processes and Building planning	2
6	Drawing a line plan of residential building by applying Principles of planning	2
7	Drawing sheet showing various building components	2

References:

Text Books	
1	BasicCivilEngineeringbyG. K. Hiraskar,DhanpatRaiPublication
2	BasicCivilEngineeringbyS. S. Bhavikatti,NewAgeInternationalPublications
3	BuildingConstructionbySP Arora&S PBindra,DhanpatRaiPublications
ReferenceBooks	
1	SurveyingbyN.Basak,TataMc-GrawHillPublication
2	SurveyingVol.I,Vol.II,Vol.IIIbyB.C.Punmia,LaxmiPublication
3	CivilEngineeringMaterials-TechnicalTeacher'sTrainingInstitute,Chandigarh
4	IrrigationEngineeringbyB. C. Punmia,DhanpatRaiPublications

24UG ESC-FY105LP Computer Aided Engineering Drawing Lab

Tutorial/Practical : 2 hr/week **Evaluation Scheme**

Credit : 1 **ISA** : 25 Marks

Course Objectives: The objective of the course is to		
1. Communicate information by graphical means. 2. Understand and read drawing and present the same		
Course Outcomes:		
COs	**At the end of successful completion of the course, the student will be able to**	**Bloom's Taxonomy**
CO1	**Implement** the knowledge of engineering drawing fundamentals, dimensioning and AutoCAD to draw an object..	Remember
CO2	**Draw** the neat drawings of Projection of straight lines, Plane, Solid using AutoCAD	Understand, Apply
CO3	**Create** orthographic projection using AutoCAD	Understand, Create
CO4	**Visualize** and develop surfaces of solids using AutoCAD.	Understand, Apply

Description:		
Computer Aided Engineering Drawing Course consists of drawings line, plane and solids using AutoCAD software.		
Prerequisites:	1:	Knowledge of Geometry at SSC Level and Knowledge of Computer

Practical

Number	**Practical/ Experiment/Tutorial Topic**	**Hrs.**	**Bloom's Taxonnomy**
1	Draw the projections of lines using AutoCAD	10	Understand, Apply
2	Draw the projections of planes using AutoCAD	8	Understand, Apply
3	Draw the projections of solids using AutoCAD	8	Understand, Apply
4	Imagine and draw the orthographic views using AutoCAD	8	Understand, Apply
5	Draw development of the surfaces of the solids using AutoCAD.	6	Understand, Apply

References:

Text Books	
1	Engineering Drawingby N. D. Bhatt, Charotor Publication House, Bombay
2	Machine Drawing by N. D. Bhatt, Charotor Publication House, Bombay.
3	Engineering Drawing and Graphics Using AutoCAD by T. Jeyapoovan, Vikas Publication.
4	A text book of Engineering Drawing by R. K. Dhawan, S. Chand and Co.
Reference Books	
1	Engineering Graphics with AutoCAD - D. M. Kulkarni, A. P. Rastogi, A. K. Sarkar, (PHI) Publisher 2010.
2	Machine Drawing by K. L. Narayana, New Age Publication
3	Engineering Drawing by N. B. Shaha and B. C. Rana, Pearson Education.
4	Engineering Drawing by Prof. Amar Pathak, WIELY India Publication.
5	T. Jeyapoovan, “Engineering Drawing and Graphics Using AutoCAD” Vikas Publication. 9.
6	Ajeet Singh, “Machine Drawing includes AutoCAD”, Tata McGraw Hill Education

24UG HSSM-FY106LP Communication Skills (Sem - I) – PRACTICAL

Tutorial/Practical : 02 hr/week
Credit : 1

Evaluation Scheme
ISA : 25 Marks

Course Objectives: The objective of the course is to
•To acquaint students with basic English Grammar and help students in improving language skills •To assist students in developing Vocabulary and phonetic drill •To aid them in understanding corporate meetings •To train the students to compose and write the business letters effectively

Course Outcomes:

COs	At the end of successful completion of the course, the student will beable to
CO1	**To formulate** grammatical sentences correctly and apply communicative techniques effectively
CO2	**Understand** and use vocabulary effectively
CO3	**Display** standard writing skills while composing business letters and report preparation

Description:

This course is designed to help the students to practice the correct grammatical structures and use the relevant vocabulary while reading and writing. Also give them practical experience of corporate meetings, Phonetics, Intonation and articulation Drill. Similarly provide them with basic structure and lay out of report writing & business correspondence.

Prerequisites:	1:	Basic Knowledge of English Grammar
	2:	Reading and Listening Comprehension
	3:	Basic knowledge of Writing Skills

Practical

Number	Practical/ Experiment/Tutorial Topic	Hrs
01	Star of Life: Introducing Yourself	02
02	Vocabulary Building Exercises	02
03	Vocabulary Building Exercises	02
04	Grammar Activities – Irregular verb list	02
05	Conducting & Attending Meeting	02
06	Conducting & Attending Meeting	04
07	Practice on writing General Applications	02
08	Practice on Business Correspondence	02

References:

Recommended Books	
01	*Communication Skills by Meenakshi Raman and Sangeeta Sharma, Oxford University Press 2016 1st Edition.*
02	*Communication Skills for Engineers by S. Mishra & C. Muralikrishna (Pearson)*
03	*Basic Communication Skills for Technology by Rutherford, Andrea J. (2002).. Delhi: Pearson Education Asia*
04	*Mastering Communication by Nicky Stanton, Palgrave Master Series*
05	*Comfort, Jeremy, et al. (2011) Speaking Effectively: Developing Speaking Skills for Business English. Cambridge: Cambridge University Press. (Reprint)*
06	*Sharma, R. C. and Krishna Mohan, Basic Correspondence and Report Writing: A Practical Approach to Business and Technical Communication, Tata McGraw-Hill Publishing Company Limited, India ,5th Edition, 2017*
07	*Written Communication in English by Saran Freeman (Orient Longman)*
08	*Seely, J. The Oxford Guide to Writing and Speaking, Oxford University Press, India 3rd Edition , 2013*
09	*High School English Grammar and Composition by Wren and Martin, Blackie, 2000*
10	*Essential English Grammar (Elementary & Intermediate) Raymond Murphy (CUP)*
11	*Sethi, J. and Dhamija P.V. A Course in Phonetics and Spoken English Prentice-Hall of India 2nd Edition, 2006*
12	*English Language Laboratories, by Nira Konar, PHI Learning, 2014*
13	*Perspective of Communication and Communicative Competence, M.V. Rodriques, Concept Publishing Company, New Delhi-10059*
	www.buisnesscommunicationskills.com
	www.kcitraing.com
	www.mindtools.com

24UG CC-FY107T Cyber Security Lab

Tutorial/Practical : 02 hr/week

Credit : 1

Evaluation Scheme

ISA : 25 Marks

POE/OE : 25 Marks

COs	At the end of successful completion of the course, the student will beable to
CO1	**Understand** different cyber crime.
CO2	**Understand** phishing Emails.
CO3	**Apply** authentication methods.
CO4	**Understand** VAPT Audit.

Description:		
Course deals with understanding of different types of Cyber Security, Cyber Crime.		
Prerequisites:	1:	Fundamental knowledge of Computer.
	2:	Fundamental knowledge of Mobile Application.
	3:	Awareness of internet.

Practical

No's	Practical/ Experiment/Tutorial Topic	Hrs
01	Introduction to Cyber Security.	02
02	Checklist for reporting cyber crime at Cyber crime PoliceStation.	02
03	Checklist for reporting cyber crime online.	02
04	Reporting phishing emails. (Spoofing, Phishing)	02
05	Setting and configuring two factor authentications in theMobile phone.	02
06	Checklist for secure net banking.	02
07	Basic checklist, privacy and security settings for popularSocial media platforms.	02
08	Configuring security settings in Mobile Wallets and UPIs	02
09	Checklist for reporting Mobile stolen/ lost, file complaint on www.ceir.gov.in	02
10	VAPT Audit format.	02

References:

Recommended Books
1. Cyber Crime Impact in the New Millennium, by R. C Mishra , Auther Press. Edition 2010.
2. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
3. Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson , 13th November, 2001)
4. Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
5. Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
6. Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.
7. Fundamentals of Network Security by E. Maiwald, McGraw Hill.

24UG VSEC-FY108T Manufacturing Techniques Lab

Tutorial/Practical : 2 hr/week
Credit : 1

Evaluation Scheme
ISA : 50 Marks
POE : NA

Course Objectives: The objective of the course is to
1) Develop a skill in dignity of labour, precision, safety at work place, team working anddevelopment of right attitude 2) Acquire skills in basic engineering practice 3) Develop general machining skills in the students and develop small products

Course Outcomes:	
Cos	**At the end of successful completion of the course the studentwill be able to**
CO1	**Use** the techniques, skills, and modern engineering tools necessaryin smithy, welding and sheet metal working and apply them practically.
CO2	**Learn** the techniques, skills, and modern engineering tools necessary for fitting and carpentry operations and Possess knowledge ofmeasurement and measuring instrument.
CO3	**Demonstrate** proficiency in using various tools to complete small products , enhancing precision fitting & assembly skills for fabricating components.

Description:

Workshop practice is the backbone of the real industrial environment which helps to develop and enhance relevant technical hand skills required by the technician working in the various **engineering** industries and workshops.

Prerequisites:		
	1:	General safety Measures should be taken
	2:	Safety rules regarding each machine or equipment should be followed
	3:	Use of Personal protective equipment.

Number	Practical/ Experiment/Tutorial Topic	Hrs.
1	Safety precautions while working in workshop.Introduction to tools	02
2	Introduction to smithy operations like, bending, formingupsetting, drawing Smithy tools hammer, hot & cold chisel flatters, tongs, anvil etc, Preparation of job as per the drawing	02
3	Preparation of smithy job as per drawing	02
4	Types of welding likes Gas Welding, arc welding, Welding equipment's, welding of various metals electrode classification and coding, welding joints, andpreparation of welding component.	02
5	Preparation of welding job as per drawing	02
6	Specifications of metal sheets working tools, sheet metaland operations, and prepare the job as per drawing.	02
7	Preparation of sheet metal component as per drawing.	02
8	Preparation of sheet metal component as per drawing.	02
9	Study of various tools ,files, Drills, Taps, Die & Fittingoperations to complete small product in fitting shop	02
10	Operations to develop small product.	02
11	Introduction, Classifications of wood. carpentry joints.carpentry tools to develop carpentry product.	02

References:

TextBooks	
1	Elements of Workshop Technology, Vol – I by Hajara Chaudhari, Media Promoters.
ReferenceBooks	
1	Workshop Technology, Vol – I by Gupta and Kaushik, New Heights.
2	Workshop Technology, Vol – I by Chapman, The English Language Book Society
3	Workshop Technology, Vol.-I by H.S. Bawa, TMH Publications, New Delhi

Web Links/ Video Lectures are to be provided to Theory and Practical /Experiments

Practical 1. http://nptel.ac.in/courses/

24UG MAC-FY109A Democracy, Elections & Good Governance

Course Outcomes (CO's with Unit Numbers)

COs	At the end of successful completion of the course , the student will be able to	Unit No.
CO1	**Express** the different aspects of democracy and its implications in the overall development of the state.	**01**
CO2	**Explain** 73rd and 74th Constitutional Amendment Acts and Local Body Elections.	**02**
CO3	**Describe** the importance and role of the Good Governance.	**03**

Course Objectives: The objective of the course is to
The rationale of the study is to make the pupils aware of the importance of democracy. What constitute democracy, what is its importance from the point of view of the role of individual and what exactly can a individual get if he performs his role well in the society. This module also aims to make the individual understand the different aspects of democracy and its implications in the overall development of the state. The syllabus is introduced from the point of view that all students upon entering into the college, enroll themselves as voters and encourage and enthuse other members of the society to participate not only in election process but also electoral and political process in general.

Unit 1	**Democracy in India**
	Dimensions of Democracy: Social, Economic and Political, Decentralization: Grassroots Level Democracy – Challenges before, Challenges before Democracy: women and marginalized sections of the society
Unit 2	**Election to Local Self Government Bodies**
	73rd and 74th Constitutional Amendment Acts: Institutions at the local level and Role of State Election commission, Local Body Elections: Urban & Rural, Duties of an Individual towards electoral process
Unit 3	**Good Governance**
	Meaning and concept, Government and Governance, Good Governance initiatives in India.