

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

Scheme of Teaching and Evaluation 2025-2029 (As per NEP-2020)
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
(Effective from the Academic year 2025-2026)

I-SEMESTER B.Tech. Animation & VFX

I-SEMESTER B.Tech. Animation & VFX										
S.N.	Course Code	Course Title	Teaching Hours/Week			Examination in Hours	Examination			Credits
			Theory Lectures	Tutorial	Practical/ Drawing		CIA Marks	SEA Marks	Total Marks	
			L	T	P					
1	AMUATB4	Engineering Mathematics – B	3	1	-	03	40	60	100	4
2	PPUATB2	Engineering Physics	3	1	-	03	40	60	100	4
3	ITUATL1	Design Fundamentals & Sketching	3	-	-	03	40	60	100	3
4	EEUATE1	Introduction to Electrical Engineering	3	-	-	03	40	60	100	3
5	ELUATH1	English for Communication	3	-	-	03	40	60	100	3
6	ECUATH2 / CSUATH2 / ITUATH2	Human Values & Ethics	1	-	-	02	50	-	50	1
7	PPUALB2	Engineering Physics Laboratory	-	-	2	03	25	25	50	1
8	MEUALL1	Engineering Graphics	1	-	3	03	25	25	50	3
9	ITUATLL1	Visual Sketching & Cinematic Basics Lab	-	-	2	03	25	25	50	1
10	NSUALS1	NSS	-	-	2	01	25	25	50	1
Total			17	2	9	27 hrs.	350	400	750	24
Note: AM: Mathematics, PP: Physics, ME: Mechanical Engineering, IP: Industrial & Production Engineering, CE: Civil Engineering, CS: Computer Sc. & Engg., IT: Information Technology, PE: Physical Education, NS: NSS, U: Undergraduate, T: Theory, L: Laboratory										
BASIC SCIENCE (B) 1. Engineering Mathematics – B 2. Engineering Physics 3. Engineering Physics Laboratory		ENGINEERING SCIENCE (E) 1. Introduction to Electrical Engineering		SKILL ENHANCEMENT COURSE (L) 1. Engineering Graphics 2. Design Fundamentals & Sketching 3. Visual Sketching & Cinematic Basics Lab		HUMANITIES SCIENCE (H) 1. Human Values & Ethics 2. English for Communication		MANDATORY COURSE (C)		EXTRA-CURRICULAR ACTIVITIES (S) 1. NSS
Credit Definition: > 1-hour lecture (L) per week per semester = 1Credit > 1-hour tutorial (T) per week per semester = 1Credit > 2-hour Practical/Drawing(P) per week per semester = 1 Credit				> Four credit courses are to be designed for 50 hours of Teaching-Learning process. > Three credit courses are to be designed for 40 hours of Teaching-Learning process. > Two credit courses are to be designed for 30 hours of Teaching-Learning process. > One credit courses are to be designed for 15 hours of Teaching-Learning process Note: The above is applicable only to THEORY courses						
AICTE Activity Points to be earned by students admitted to B.Tech. programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines): Over and above the academic grades, every regular student admitted to the 4 years Degree program and every student entering 4years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, any time during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression.										

Eligibility for UG Certificate:

A. Undergraduate Certificate course will be offered by all departments of SoS(E&T), GGV.

B. For applicability of UG Certificate, the candidate who wants to exit after completing 1st year (02 semesters) BTech degree with 10 credits of skill-based courses lasting two months, including at least 06 credits job specific internship/apprenticeship with NHEQF level 5/UCF level 4.5.

C. A student shall report to the concerned Head on or before the date notified by the Department/School/University, if he/she is interested to exit with UG Certificate

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

Scheme of Teaching and Evaluation 2025-2029 (As per NEP-2020)

Choice Based Credit System (CBCS) and Outcome Based Education (OBE)

(Effective from the Academic year 2025-2026)

II-SEMESTER B.Tech. Animation & VFX										
S.N.	Course Code	Course Title	Teaching Hours/Week			Examination				Credits
			Theory Lectures	Tutorial	Practical/ Drawing	Examination in Hours	CIA Marks	SEA Marks	Total Marks	
			L	T	P					
1	AMUBTB1	Engineering Mathematics - A	3	1	-	03	40	60	100	4
2	CYUBTB3	Engineering Chemistry	3	-	-	03	40	60	100	3
3	ITUBTL1	Storyboarding & Script Writing	3	-	-	03	40	60	100	3
4	ECUBTE7	Introduction to Electronics & Communication Engineering	3	-	-	03	40	60	100	3
5	LAUBTC1	Indian Constitution	1	-	-	01	50	-	50	1
6	FOUBTC2	Environmental Science and Ecology	2	-	-	03	40	60	100	2
7	CYUBLB3	Engineering Chemistry Laboratory	-	-	2	03	25	25	50	1
8	IPUBLL2	Engineering Workshop Practices	-	-	2	03	25	25	50	1
9	ITUBLL1	Storyboarding & Script Writing Lab	-	-	2	03	25	25	50	1
10	PEUBLS2	Sports and Yoga	-	-	2	-	25	25	50	1
Total			15	1	8	25	350	400	750	20
Note: AM: Mathematics, PP: Physics, ME: Mechanical Engineering, IP: Industrial & Production Engineering, CE: Civil Engineering, CS: Computer Sc. & Engg., IT: Information Technology, PE: Physical Education, NS: NSS, U: Undergraduate, T: Theory, L: Laboratory										
BASIC SCIENCE (B) 1. Engineering Mathematics - A 2. Engineering Chemistry 3. Engineering Chemistry Laboratory		ENGINEERING SCIENCE (E) 1. Introduction to Electronics & Communication Engineering	SKILL ENHANCEMENT COURSE (L) 1. Engineering Workshop Practices 2. Storyboarding & Script Writing 3. Storyboarding & Script Writing Lab		HUMANITIES SCIENCE (H)	MANDATORY COURSE (C) 1. Environmental Science and Ecology 2. Indian Constitution			EXTRA-CURRICULAR ACTIVITIES (S) 1. Sports and Yoga	
Credit Definition: ➤ 1-hour lecture (L) per week per semester = 1Credit ➤ 1-hour tutorial (T) per week per semester = 1Credit ➤ 2-hour Practical/Drawing(P) per week per semester = 1 Credit			➤ Four credit courses are to be designed for 50 hours of Teaching-Learning process. ➤ Three credit courses are to be designed for 40 hours of Teaching-Learning process. ➤ Two credit courses are to be designed for 30 hours of Teaching-Learning process. ➤ One credit courses are to be designed for 15 hours of Teaching-Learning process Note: The above is applicable only to THEORY courses							
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Eligibility for UG Certificate:

A. Undergraduate Certificate course will be offered by all departments of SoS(E&T), GGV.

B. For applicability of UG Certificate, the candidate who wants to exit after completing 1st year (02 semesters) BTech degree with 10 credits of skill-based courses lasting two months, including at least 06 credits job specific internship/apprenticeship with NHEQF level 5/UCF level 4.5.

C. A student shall report to the concerned Head on or before the date notified by the Department/School/University, if he/she is interested to exit with UG Certificate

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
<i>Subject Code:</i>	AMUBTB4	L	T	P	CT - I	CT - II	Attendance & Assignments	TOTAL	60	100	04
<i>Subject:</i>	ENGINEERING MATHEMATICS - B	3	1	-	15	15	10	40			

Course Objectives:

- 1.To study the concepts of vector space, linear transformation, matrices and system of linear equations.
- 2.To find the roots of equations i.e. quadratic and bi-quadratic equations.
- 3.To study the concept of gradient, divergence, curl, Green's theorem, Gauss's theorem and Stokes's theorem and their applications.
- 4.To study the properties of complex numbers and to establish the relation between exponential, hyperbolic and logarithm functions.
- 5.To test the nature of infinite series i.e. convergence, divergence and oscillatory.

UNIT-1: Linear Algebra

Vector space, linear dependence and linear independence of vectors, linear transformations, rank and inverse by elementary transformations, system of linear equations – consistency and inconsistency, eigen value and eigen vectors, Caley-Hamilton theorem and its application to find the inverse.

UNIT-2: Theory of Equations

Polynomial and polynomial equations, division algorithms, roots of equations, remainder theorem, factor theorem, synthetic division, fundamental theorem of algebra, multiplication of roots, Descarte's rule of sign, Descarte's method.

UNIT-3: Vector Calculus

Vector functions, differentiation of vectors, velocity and acceleration, scalar and vector field gradient of scalar field, directional derivative, properties of gradient, divergence of vector, curl of vector, point function, properties of divergence and curl, integration of vector function, line integral, surface integral, Green's theorem, gauss theorem, Stoke's theorem (without proof) and their simple applications,

UNIT-4: Complex Number

Complex numbers and its properties, conjugate complex numbers, standard form of complex numbers, De-Moivre's theorem, Roots of complex numbers, exponential function of complex variable, circular form of complex variable, Hyperbolic function of complex numbers, Logarithmic function of complex numbers.

UNIT-5: Infinite Series

Sequence, convergent, divergent, oscillating sequence, infinite series, behavior of infinite series, ratio test, root test, comparison test, Raabe's test, Logarithmic test.

Recommended Books:

- 1.N.P. Bali, A Textbook of Engineering Mathematics, Laxmi publications, 10th edition, 2016.
2. H.K. Das, Higher Engineering Mathematics, S. Chand, 2014

Course Outcomes: After completion of this course, the students will be able:

- 1.To know the concept of vector space, matrices and their various properties and also be able to solve the system of linear equations.
2. To solve the quadratic and bi-quadratic equations.
- 3.To solve the problems of gradients, divergent, curl and the applications of vector calculus.
- 4.To find the roots of complex numbers with the help of De-Moivre's theorem.
5. To know the convergence and divergence of infinite series using various type of tests.

**Course Outcomes and their Mapping with Programme Outcomes: ENGINEERING
MATHEMATICS – B (AMUBTB4)**

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2		1	1				1	2		2	1	1	2
CO2	3	2		1	1				1	2		2	1	1	2
CO3	2	2		1	1				1	2		2	1	1	2
CO4	2	2		1	1				1	2		2	1	1	2
CO5	2	2		1	1				1	2		2	1	1	2

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
<i>Subject Code:</i>	PPUATB2	L	T	P	CT - I	CT - II	Attendance & Assignmen ts	TOTAL	60	100	04
<i>Subject:</i>	ENGINEERING PHYSICS	3	1	-	15	15	10	40			

Course Objectives:

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

Unit 1: Optics: Interference and Diffraction

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

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

Unit 2 Electromagnetic Theory

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

Unit 3 Laser and Fiber optics

Introduction, elementary idea of spontaneous and stimulated emission, active medium population inversion, Einstein's coefficients, Types of lasers and important applications of lasers. Introduction to optical fibers, basic principles of optical fiber, critical angle numerical aperture, maximum acceptance angle, classification of optical fiber.

Unit 4 Semiconductor physics and Devices

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

Unit 5 Introduction to Quantum Mechanics

Introduction to 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 (I-Dimensional)

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

1. Student's ability to understand the basic principles and applications of physical optics for

physical parameters measurements such as length, thickness, aperture size etc.

2. Student's will be able to design, characterized the lasers and optical fibers and their effective utilization in optical communications, imaging etc.
3. Students demonstrate appropriate competence and working knowledge of laws of electromagnetic theory and semiconductor physics and devices for their advance applications

Textbooks/References:

1. Applied physics-I and II By Navneet Gupta, Dhanpat Rai &Co.
2. Engg. Physics by S.K. Srivastava and R.A. Yadav, New Age Pub. New Delhi
3. Engg. Physics by Uma Mukherjee, Narosa Publication.
4. Engg. Physics by M.N. Avadhanulu, S. Chand Pub.
5. Electricity and Magnetism by Rangwala and Mahajan, Tata McGraw Hill.1998
6. Concepts of Physics Part-II by H.C. Verma, Bharati Bhawan (P&D),1998
7. Modern physics by Beiser, McGraw Hill Inc. New York, Publication1995
8. Modern physics by Mani and Mehta, East-West PressPvt.Ltd.1998
9. Introduction to Electrodynamics, David Griffith
- 10.J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc. (1995).
- 11.B.E.A. Saleh and M.C. Teich, Fundamentals of Photonics, John Wiley & Sons.Inc.2007).
- 12.S.M. Sze, Semiconductor Devices: physics and Technology, Wiley (2008)
- 13.Yariv and P. yeh, Photonics Optical Electronics in Modern Communications, Oxford University press, New York(2007)
- 14.P. Bhattacharya, Semiconductor Optoelectronic Devices, prentice Hall of India(1997)
15. Online course: "Semiconductor Optoelectronics" by M. R. Shenoy on NPTEL.
16. Online course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak on NPTEL.

Course Outcomes and their Mapping with Programme Outcomes: ENGINEERING PHYSICS (PPUATB2)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2				1					1	3	2	1
CO2	1	1											3	2	1
CO3	3	3	2	3	3	2	2			1		1	3	2	1

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code:	ITUATL1	L	T	P	CT- I	CT- II	Attendance & Assignments	TOTAL	60	100	03
Subject:	Design Fundamentals & Sketching	3	-	-	15	15	10	40			

COURSE OBJECTIVE:

1. To introduce the basic principles and elements of design
2. To develop observational and manual drawing skills for visual communication
3. To understand form, proportion, and composition through sketching practices
4. To foster creative thinking and conceptual ideation through design exercises
5. To build a strong foundation for further study in design disciplines

COURSE OUTCOME:

By the end of this course, students will be able to:

1. Understand and apply core elements and principles of design.
2. Demonstrate foundational sketching techniques for visual representation.
3. Observe, analyze, and represent objects, nature, and human forms accurately.
4. Conceptualize and communicate design ideas through sketches.
5. Use manual and digital tools for ideation and design visualization.

UNIT I: Elements and Principles of Design

Definition and scope of design, Elements of design: Line, shape, form, space, texture, color, value, Principles of design: Balance, rhythm, contrast, emphasis, unity, proportion, harmony, Symmetry and asymmetry, Positive and negative space, Composition basics, Visual hierarchy, Introduction to design thinking.

UNIT II: Fundamentals of Sketching and Drawing

Sketching tools and materials, Holding and control techniques, Freehand sketching: Lines, curves, ellipses, and grids, Contour drawing and gesture drawing, Perspective drawing: One-point, two-point, and three-point perspectives, Proportions and scale, Observation drawing and shading techniques, Tonal value and light source rendering.

UNIT III: Object and Nature Study

Study of everyday objects through sketching, still life composition, Organic and geometric forms, Texture rendering (wood, metal, glass, fabric, etc.), Sketching natural forms: Leaves, flowers, rocks, trees, and landscapes, Light and shadow application, Cross-sectional views, Transparency and reflections in sketching.

UNIT IV: Human and Animal Form Sketching

Human body proportions and anatomy basics, Head, face, and expression sketching, Gesture drawing for posture and movement, Simplified skeleton and muscle structures, Animal forms: Motion, anatomy, and expression, Live sketching and rapid visualization, Sequential movement drawing, Stylization and abstraction.

UNIT V: Design Visualization and Conceptual Sketching

Thumbnail sketching and ideation techniques, Concept development through sketching, Storyboarding and narrative sketching, Environment and spatial sketches, Product and interface visualization, Mood boards and composition layouts, Use of sketchbooks and visual journals, Integration of digital sketching tools (e.g., Procreate, Adobe Fresco).

TEXT / REFERENCE BOOKS:**Text Books:**

1. David Lauer & Stephen Pentak, *Design Basics*, Cengage Learning, 9th Edition, 2015.
2. Barrington Barber, *The Complete Book of Drawing: Essential Skills for Every Artist*, Arcturus Publishing, 2014.
3. Bert Dodson, *Keys to Drawing*, North Light Books, 1990.

Reference Books:

1. Victor Perard, *Anatomy and Drawing*, Dover Publications, 2006.
2. Steven Heller & Gail Anderson, *The Elements of Graphic Design*, Allworth Press, 2016.
3. Thomas C. Wang, *Pencil Techniques in Drawing*, Van Nostrand Reinhold, 1986.
4. Koos Eissen & Roselien Steur, *Sketching: The Basics*, BIS Publishers, 2011.
5. Scott Robertson & Thomas Bertling, *How to Draw: Drawing and Sketching Objects and Environments from Your Imagination*, Design Studio Press, 2013.

Course Outcomes and their mapping with Programme Outcomes: Design Fundamentals & Sketching

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	1		1						3	3		2
CO2	3	2	2	1		1						3	3		2
CO3	3	2	2	1		1						3	3		2
CO4	3	2	2	1		1						3	3		2
CO5	3	2	2	1		1						3	3		2

Weightage: **1-Sightly; 2-Moderately; 3-Strongly**

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code:	EEUATE1	L	T	P	CT- 1	CT - II	Attendance & Assignments	TOT AL	60	100	03
Subject:	INTRODUCTION TO ELECTRICAL ENGINEERING	3	-	-	15	15	10	40			

Course Objective:

- To analyze basic concepts of DC and AC circuits.
- To explain construction and operation of transformers,
- To explain the concept and working of DC machines and Induction motor.
- To explain electric installation, wiring, billing and safety measures.

UNIT I: DC CIRCUITS: Electrical circuit elements (R, L and C), voltage and current sources, Ohms Law, Kirchhoff'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: 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.

UNIT III: ELECTROMAGNETISM: Concept of Magnetic effect of electric current, Faraday's law of electromagnetism. BH curve, Analogy of Electric and magnetic Circuits. Concept of flux flow in magnetic circuits. TRANSFORMERS Construction, classification, ideal and practical transformer, equivalent circuit, losses in transformers, tests, voltage regulation and efficiency. Introduction to three phase transformers.

UNIT IV: DC AND AC MACHINES: Construction, Working Principle, losses and efficiency of DC Machines and three phase Induction Machine, Torque Equations, DC motor: Principle of operation, speed control.

UNIT V: ELECTRICAL INSTALLATIONS& SAFETY: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, Earthing – Types of earthing and its importance. Electrical wiring: Conduit and concealed wiring, Two way and Three-way control of lamps. Safety precautions for electrical appliances. Calculations for energy consumption and billing.

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

CO1: Analyse basic DC and AC electric circuits.

CO2: Explain the working principles of transformers and its tests.

CO3: Explain the concepts of DC and AC machines and their applications

CO4: Understand the wiring methods, working principles of circuit protective devices, electrical billing and safety measures.

TEXT/ REFERENCE BOOKS:

- 1.D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
- 2.D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
- 3.B L Theraja and AK Theraja," A Textbook of Electrical Technology- Vol-I & II, S. CHAND &Co Ltd, 2013.

4.E. Hughes, “Electrical and Electronics Technology”, Pearson, 2010.

5.P.V. Prasad et al., Basic Electrical Engineering, Cengage 2019

Course Outcomes and their Mapping with Programme Outcomes: INTRODUCTION TO ELECTRICAL ENGINEERING (EEUATE1)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2									3	2	1
CO2	2	2	3	1									3	2	1
CO3	2	3	3	2	1								3	2	2
CO4	1	2	2	2		3	3	2					2	3	2

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
<i>Subject Code:</i>	ELUATH1	L	T	P	CT - I	CT - II	Attendance & Assignments	TOTAL	60	100	03
<i>Subject:</i>	ENGLISH FOR COMMUNICATION	3	0	-	15	15	10	40			

Course Objectives

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

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

Course Outcome:

1. At the end of the course students will be able 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

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 Outcomes and their Mapping with Programme Outcomes: ENGLISH FOR
COMMUNICATION (ELUBTH1)**

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		1	1	1	2	1		1	3	3	2	3			1

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)				ES E	Grand Total	Credits
<i>Subject Code:</i>	ECUATH2 (for ECE) CSUATH2 (for CSE) ITUATH2 (for IT)	L	T	P	CT-I	CT-II	Attendance & Assignments	TOTAL	-	50	1
<i>Subject:</i>	HUMAN VALUES & ETHICS	1	0	-	20	20	10	50			

Course Objective:

- 1.To create an awareness on Engineering Ethics and Human Values.
- 2.To understand social responsibility of an engineer.
- 3.To appreciate ethical dilemma while discharging duties in professional life.

COURSE OUTCOME:

On completion of this course, the students will be able to

- 1.Understand the significance of value inputs in a classroom and start applying them in their life and profession
- 2.Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
- 3.Understand the role of a human being in ensuring harmony in society and nature.
- 4.Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

UNIT I: Introduction to Value Education

1. Value Education, Definition, Concept and Need for Value Education.
2. The Content and Process of Value Education.
3. Basic Guidelines for Value Education.
4. Self-exploration as a means of Value Education.
5. Happiness and Prosperity as parts of Value Education.

UNIT II: Harmony in the Human Being

1. Human Being is more than just the Body.
2. Harmony of the Self ('I') with the Body.
3. Understanding Myself as Co-existence of the Self and the Body.
4. Understanding Needs of the Self and the needs of the Body.
5. Understanding the activities in the Self and the activities in the Body.

UNIT III: Harmony in the Family and Society and Harmony in the Nature

1. Family as a basic unit of Human Interaction and Values in Relationships.
2. The Basics for Respect and today's Crisis: Affection, e, Guidance, Reverence, Glory, Gratitude and Love.
3. Comprehensive Human Goal: The Five Dimensions of Human Endeavour.
4. Harmony in Nature: The Four Orders in Nature.
5. The Holistic Perception of Harmony in Existence.

UNIT IV: Social Ethics

1. The Basics for Ethical Human Conduct.
2. Defects in Ethical Human Conduct.
3. Holistic Alternative and Universal Order.
4. Universal Human Order and Ethical Conduct.
5. Human Rights violation and Social Disparities.

UNIT V: Professional Ethics

1. Value based Life and Profession.
2. Professional Ethics and Right Understanding.
3. Competence in Professional Ethics.
4. Issues in Professional Ethics – The Current Scenario.
5. Vision for Holistic Technologies, Production System and Management Models.

COURSE OUTCOME:

On completion of this course, the students will be able to

1. Understand the significance of value inputs in a classroom and start applying them in their life and profession
2. Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
3. Understand the role of a human being in ensuring harmony in society and nature.
4. Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

TEXT BOOKS

1. A. N. Tripathy, New Age International Publishers, 2003.
2. Bajpai. B. L. , , New Royal Book Co, Lucknow, Reprinted, 2004
3. Bertrand Russell Human Society in Ethics & Politics

REFERENCE BOOKS

1. Corliss Lamont, Philosophy of Humanism
2. Gaur. R.R., Sangal. R, Bagaria. G.P, A Foundation Course in Value Education, Excel Books, 2009.
3. Gaur. R.R., Sangal. R, Bagaria. G.P, Teachers Manual Excel Books, 2009.
4. I.C. Sharma. Ethical Philosophy of India Nagin & co Julundhar
5. Mortimer. J. Adler, – Whatman has made of man
6. William Lilly Introduction to Ethic Allied Publisher

Course Outcomes and their Mapping with Programme Outcomes: HUMAN VALUES AND ETHIC ITUATH2 (for IT)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1								3	3						
CO2								3	3						
CO3								3	3						
CO4								3	3						

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
<i>Subject Code:</i>	PPUALB2	L	T	P	IA	MSE	TOTAL	25	50	01
<i>Subject:</i>	ENGINEERING PHYSICS LABORATORY	-	-	2	25	--	25			

Course Objectives:

1. To learn and perform the various practical related to optics and its related phenomena's like interference, diffraction and polarization.
2. To apply basic optical phenomena's for measurements such as thickness, refractive index, dispersive power, aperture size etc.
3. To characterized various optical sources such as laser, mercury light, sodium light, gratings, prism and lens.
4. To characterize various semiconductor materials and devices (PN Jn., Transistor, LED and Solar Cell) for their energy band gap, resistivity and IV characteristics.

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:

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

Course Outcomes and their Mapping with Programme Outcomes: ENGINEERING PHYSICS LABORATORY (PPUBLB2)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	2	2	1			2			2	2	2	1
CO2	2	2	3	2	2	1			2			2	2	2	1
CO3	2	2	3	2	2	1			2			2	2	2	1

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-I)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
<i>Subject Code:</i>	MEUALL1	L	T	P	IA	MSE	TOTAL	25	50	03
<i>Subject:</i>	ENGINEERING GRAPHICS	1	-	3	25	--	25			

Course Objectives:

1. To learn the basic of Engineering Drawing and Orthographic Projections
2. To learn the Sections and Sectional Views of Right Angular Solids
3. To learn the Isometric Projections covering and overview of Computer Graphics

UNIT 1: Introduction Engineering Graphics and Engineering Curves: Principles of engineering graphics and their significance – drawing instruments and their use – conventions in drawing – lettering – BIS conventions. Dimensioning rules, geometrical construction. Engineering Curves - Conic Sections, Special Curves-Cycloids, Epicycloids, Hypocycloids, Involute and trochoid.

UNIT 2: Projection of Points, Straight lines and Planes: Principles of orthographic projections – conventions – first and third angle projections. Projections of points and lines inclined to both the planes. Projections of regular planes, inclined to both planes

UNIT 3: Projections Solids: Introduction, Type of solid, Projections of solids in simple position, Projection of solids with axes inclined to one of the reference planes and parallel to the other, Projections of solids with axes inclined to both H.P. and the V.P.

UNIT 4: Section of Solids and Development of Surfaces: Sectioning of regular solids - Section planes perpendicular to one plane and parallel or inclined to other plane - Development of surfaces of right, regular solids – development of prisms, cylinders, pyramids, cones and their parts.

UNIT 5: Isometric Projections and Orthographic Views: Principles of Isometric Projections-Isometric Scale- Isometric Views Conventions-Plane Figures, Simple and Compound Solids. Conversion of isometric views to orthographic views. Conversion of orthographic views to isometric projections, vice- versa. Introduction to perspective projection.

Computer Aided Drafting: Introduction to computer aided drafting package to make 2-D drawings. Demonstration purpose only - not to be included in examinations.

Textbooks/References:

1. Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House
2. Shah, M.B. & Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education
3. Agrawal B. & Agrawal C. M. (2012), Engineering Graphics, TMH Publication
4. Narayana, K.L. & P Kanniah (2008), Text book on Engineering Drawing, Scitech Publishers
5. CAD Software Theory and User Manuals

Course Outcomes:

At the end of the course, the student shall be able to

1. Describe the fundamentals of engineering drawing and construct basic engineering curves.
2. Enhance visualization skill using projections of points, lines and planes.
3. Enhance visualization skill using projections of solids.
4. Enhance visualization skill using construction of sections of solids and development of surfaces.
5. Comprehend the theory of Orthographic and Isometric projections and views

**Course Outcomes and their Mapping with Programme Outcomes: ENGINEERING GRAPHICS
(MEUBLL1)**

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2									2					
CO2	1									1					
CO3	3									3					
CO4	3									3				1	
CO5	1									1				1	

Weightage: 1-Sightly; 2-Moderately; 3-Strongly

SYLLABUS	(SEMESTER-I)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
Subject Code:	ITUATLL1	L	T	P	IA	MSE	TOTAL	25	50	01
Subject:	Visual Sketching & Cinematic Basics Lab	-	-	2	25	--	25			

COURSE OBJECTIVE:

1. To familiarize students with fundamental design tools, materials, and safety practices
2. To develop hands-on proficiency in sketching and rendering techniques
3. To strengthen observational skills through object, nature, and form studies
4. To explore the application of design principles through studio-based exercises
5. To enhance creativity and visual communication through conceptual sketches

COURSE OUTCOME:

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

1. Identify and use fundamental drawing tools safely and effectively
2. Demonstrate freehand sketching of geometric and organic forms with proportion and accuracy
3. Render realistic objects using light, shadow, and texture
4. Observe and translate visual details from natural and manmade subjects
5. Create conceptual sketches for basic design problems and communicate ideas visually

List of Experiments/Demonstrations:

- Introduction to drawing tools and studio safety measures; familiarization with sketchbooks, pencils, pens, markers, erasers, fixatives, and cutting tools
- Line and shape exercises: straight lines, curved lines, contour lines, geometric and organic shapes
- Freehand sketching of basic 2D and 3D forms: cubes, cylinders, spheres, cones, and pyramids
- Perspective drawing exercises: one-point and two-point perspective with objects and interiors
- Tonal rendering: application of light and shadow using hatching, cross-hatching, and smudging techniques
- Still-life drawing of simple objects and arrangements under various lighting conditions
- Texture study: sketching and rendering of materials such as wood, metal, glass, fabric, and stone
- Nature sketching: observation and drawing of leaves, flowers, and natural compositions
- Human figure basics: sketching head, face, hand, and body posture using live references or mannequins
- Gesture drawing and motion studies: capturing dynamic postures in time-limited exercises
- Conceptual visualization: thumbnail sketching and idea generation for a given design prompt
- Introduction to digital sketching tools (optional): demonstration using tablets and basic digital brushes

Course Outcomes and their mapping with Programmed Outcomes: Design Fundamentals & Sketching

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	1		1						3	3		2
CO2	3	2	2	1		1						3	3		2
CO3	3	2	2	1		1						3	3		2

Weightage: **1-Slightly; 2-Moderately; 3-Strongly**

SYLLABUS	(SEMESTER-I)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE Viva/ Assessment	Grand total	Credits
<i>Subject Code:</i>	NSUALS1	L	T	P	Attendance	Activities	TOTAL	25	50	01
<i>Subject:</i>	NSS	-	-	2	5	20	25			

Course Objectives:

- 1.To develop Personality
- 2.To do Community Service
- 3.To do social Awareness and Empowerment
- 4.To enhance Skill
5. To work for National Integration

Program Head 1: Cleaning Program **(06 Hours/ Semester)**

Program Head 2: Plantation **(06 Hours/ Semester) Program Head**

3: Health Camp/Special Days celebration **(10 Hours/ Semester) Program**

Head 4: Awareness program/Ralley **(06 Hours/ Semester)**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

- 1.Observe his/her internal ability and develop own personality.
- 2.Apply knowledge of the importance of cleanliness and hygiene in their surroundings and develop skills in waste management and recycling.
- 3.Apply knowledge towards the significance of greenery and environmental conservation, participate in tree plantation drives, and understand the process of nurturing and caring for plants.
- 4.Apply knowledge of health issues prevalent in the community and methods of prevention and organizing health camps and awareness programs on special days like World Health Day or World AIDS Day.
- 5.Express social issues and their impact on the community. Actively participate in awareness programs and rallies to create awareness about social problems like gender inequality, or environmental degradation.

Course Outcomes and their Mapping with Programme Outcomes: NSS (NSUALS1)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1									1						
CO2			1			1	2								
CO3			1			1	2								
CO4			1			1	2								
CO5			1			1	2								

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ES E	Grand Total	Credits
<i>Subject Code:</i>	AMUBTB1	L	T	P	CT - I	CT - II	Attendance & Assignments	TOTAL	60	100	04
<i>Subject:</i>	ENGINEERING MATHEMATIC S - A	3	1	-	15	15	10	40			

Course Objectives:

- 1.To study the mean value theorem and nth derivative.
- 2.To study the indeterminate forms, partial and total differentiation.
- 3.To study the various concepts of integral calculus such as reduction formula, area, volume and length.
- 4.To study the ordinary and partial differential equations.
- 5.To study the applications of ordinary and partial differential equations

Differential Calculus

UNIT-1:

Leibnitz theorem, Roll's theorem, Lagrange's theorem, Mean value theorem, Expansions of functions by McLaurian and Taylor's series, Tangents and normal, Maxima and minima.

UNIT-2:

Indeterminate forms, Asymptotes, Radius of curvature, Partial differentiation, Total differentiation.

Integral Calculus

UNIT-3:

Reduction formulae, Curve tracing, Area, Volume, Length, Surface area, Double and triple integrals, Gamma and beta function.

Differential Equations

UNIT-4:

Differential equations of first order, Linear differential equation of higher order with constant coefficient, Equations reducible to linear equations with constant coefficients, Cauchy's homogeneous linear equations, Application of linear differential equations, Simultaneous differential equations.

UNIT-5:

Series solution of differential equations about ordinary point, Partial differential equations, linear homogeneous partial differential equations, application of partial differential equations: One dimensional heat equation and wave equation.

Recommended Books:

- 1.N.P. Bali, A Textbook of Engineering Mathematics, Laxmi publications, 10th edition, 2016.
- 2.H.K. Das, Higher Engineering Mathematics, S. Chand, 2014

3.B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th edition

Course Outcomes: After completing the course, the students will be able to:

1. Expand the function in Maclaurin's and Taylor's series.
2. Find the limit of some indeterminate forms and solve the problems of partial and total differentiation.
3. Solve the problems related to area, volume and length.
4. Solve the ordinary and partial differential equations.
5. Solve the engineering problems using differential equations.

Course Outcomes and their Mapping with Programme Outcomes: **ENGINEERING**

MATHEMATICS – A (AMUATB1)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2		1	1				1	2		2	1	1	2
CO2	3	2		1	1				1	2		2	1	1	2
CO3	3	2		1	1				1	2		2	1	1	2
CO4	3	3		1	1				1	2		2	1	1	2
CO5	3	3		1	1				1	2		2	1	1	2

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
<i>Subject Code:</i>	CYUATB3	L	T	P	CT - I	CT - II	Attendance & Assignments	TOTAL	60	100	03
<i>Subject:</i>	ENGINEERING CHEMISTRY	3	-	-	15	15	10	40			

Course Objectives:

The objective of this Course is to:

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

Course Content:

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

UNIT 2: Chemical Bonding in Molecules: Introduction of Chemical Bonding, VSEPER Theory, V.B. Theory and Molecular Orbital Theory. Energy level diagrams of diatomic molecules and ions.

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

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

UNIT 5: Strategy for Synthesis of Organic Compounds: Reaction intermediates: Stability of Free Radicle, Carbocation and Carbanion. Introduction to reaction eg. Elimination and Substitution, Mechanisms of some named reactions.

Course Outcomes: After completing the course, the students will be able to:

- Understand about quantum energy, spectroscopy and spectroscopic analysis of molecules.
- Have adequate knowledge regarding bonding in molecules and different theories for the same. The students will be able to predict the hybridization and geometry of any molecules.
- Understand the concept of organic molecules with respect to chirality and stereo chemistry.
- Predict organic reactions influencing parameters and develop some knowledge regarding kinetic vs thermodynamic control of reactions.
- Design the strategy for performing organic reactions. They will have developed a now how regarding the reaction intermediate and their stability.

Textbooks/References:

- Engineering Chemistry by Jain and Jain; Dhanpat Rai Publication Co.
- Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.
- Engineering Chemistry of Wiley India Pvt. Ltd., Vairam and others, 2014 edition (second).
- Engineering Chemistry by Prasanth Rath, Cengage Learning, 2015 edition.
- A textbook of Engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition
- Applied Chemistry by H.D. Gesser, Springer Publishers

7. Textbook of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press, IIM
8. B. Siva Shankar, "Engineering Chemistry", Tata Mc Graw Hill Publishing Limited, 3rd Edition, 2015.
9. S. S. Dara, Mukkanti, "Text of Engineering Chemistry", S. Chand & Co, New Delhi, 12th Edition, 2006.
10. C. V. Agarwal, C. P. Murthy, A. Naidu, "Chemistry of Engineering Materials", Wiley India, 5th Edition, 2013.
11. R. P. Mani, K. N. Mishra, "Chemistry of Engineering Materials", Cengage Learning, 3rd Edition, 2015.

Course Outcomes and their Mapping with Programme Outcomes: ENGINEERING CHEMISTRY (CYUATB3)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2			1						1	1		
CO2	2	1	1									1	1		
CO3	2	1	1									1	1		
CO4	2	1	1									1	1		
CO5	2	1	1									1	1		

Weightage: 1-Slightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code:	ITUBTL1	L	T	P	CT- 1	CT- II	Attendance & Assignments	TOTAL	60	100	03
Subject:	Storyboarding & Script Writing	3	-	-	15	15	10	40			

COURSE OBJECTIVE:

1. To develop an in-depth understanding of the visual storytelling process through the fundamentals of storyboarding and script writing.
2. To enable students to conceptualize, visualize, and structure compelling narratives across various media formats including animation, film, games, and interactive design.

COURSE OUTCOME:

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

1. Understand fundamental concepts and structures of storytelling and narrative design.
2. Write professional-quality scripts for various media formats.
3. Create detailed and visually coherent storyboards.
4. Translate written scripts into visual sequences for production planning.
5. Apply storytelling techniques to interactive and emerging media environments.

UNIT I: Introduction to Storytelling and Narrative Structure

Definition and importance of storytelling, Evolution of narratives in media, Types of narratives: linear, non-linear, and interactive, Basic elements of a story: character, setting, plot, conflict, and resolution, Three-act structure, Hero's Journey, Premise, theme, and tone, Writing loglines and synopses.

UNIT II: Fundamentals of Script Writing

Script formats: film, television, animation, and interactive media, Scene structure and transitions, Dialogue writing techniques, Character development and motivation arcs, Visual vs. verbal storytelling, writing action and description, Screenplay formatting standards using software (e.g., Celtx, Final Draft), Writing short scripts and pitching ideas.

UNIT III: Principles of Storyboarding

Introduction to storyboarding: purpose and scope, Visual grammar: framing, shot types, camera angles, and transitions, Sequencing of shots, Continuity and flow, Time and motion representation, Composition and blocking of action, Using thumbnails, animatics, and mood boards, Storyboarding software tools (e.g., Storyboarder, Photoshop, Toon Boom).

UNIT IV: Application in Media Production

Script-to-screen workflow, Role of storyboard artists and scriptwriters in production teams, Animatics and pre-visualization, storyboarding for animation, advertising, video games, and UX storytelling, Integration with sound and dialogue, Budgeting and scheduling based on storyboards, Case studies from film, animation, and digital media industries.

UNIT V: Advanced Techniques and Collaborative Story Development

Genre-specific storytelling (e.g., comedy, thriller, sci-fi, drama), Writing for non-linear and interactive platforms (AR/VR/Games), Collaborative writing and iterative storyboarding, Feedback and critique techniques, Ethical storytelling and inclusive narratives, Adapting stories across cultures and media, Capstone project: development of a complete storyboard and script for a short film or animation.

TEXT / REFERENCE BOOKS:

1. Robert McKee, *Story: Substance, Structure, Style and the Principles of Screenwriting*, HarperCollins, 1997.
2. Syd Field, *Screenplay: The Foundations of Screenwriting*, Delta Publishing, 2005.
3. David Harland Rousseau & Benjamin Reid Phillips, *Storyboarding Essentials*, Watson-Guptill, 2013.
4. Christopher Vogler, *The Writer's Journey: Mythic Structure for Writers*, Michael Wiese Productions, 3rd Edition, 2007.
5. Mark Simon, *Storyboards: Motion in Art*, Focal Press, 3rd Edition, 2006.
6. John Hart, *The Art of the Storyboard*, Focal Press, 2nd Edition, 2007.
7. Michael Rabiger & Mick Hurbis-Cherrier, *Directing: Film Techniques and Aesthetics*, Routledge, 6th Edition, 2020.
8. Ken Dancyger, *Alternative Scriptwriting: Beyond the Hollywood Formula*, Focal Press, 5th Edition, 2013.
9. Andrew Glassner, *Interactive Storytelling: Techniques for 21st Century Fiction*, A K Peters/CRC Press, 2004. Will Eisner, *Graphic*

Course Outcomes and their mapping with Programmed Outcomes: Storyboarding & Script Writing

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1							3		1			1			
CO2							3		1			1			
CO3							3		1			1			

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
<i>Subject Code:</i>	ECUBTE7	L	T	P	CT-I	CT-II	Attendance & Assignments	TO TA L	60	100	03
<i>Subject:</i>	INTRODUCTION TO ELECTRONICS & COMMUNICATION ENGINEERING	3	-	-	15	15	10	40			

Course Objective:

- To equip students with foundational knowledge and a comprehensive overview in the field of electronics and communication engineering.
- To provide students with a fundamental grounding in electronic engineering principles essential for understanding the functionality and utilization of electronic devices, circuits, logic design, and communication systems.
- To cultivate ethical and professional attitudes in first-year engineering students, creating an academic environment that encourages teamwork, the ability to contextualize engineering issues within a broader social framework, and the pursuit of lifelong learning essential for a successful professional career.

UNIT I: Introduction to Electronics Engineering: Outline, Scope and goal of learning electronics engineering, **Introduction to semiconductor devices:** Energy bands in solids, Semiconductor & its classification, Energy band model of semiconductor, Equilibrium carrier concentration inside the energy bands, Basic principle and operation of semiconductor devices-diode, bipolar junction transistor, field effect transistors, Introduction to VLSI.

UNIT II: Applications of Semiconductor Devices: Basic concepts of rectifiers, Filters, Voltage regulators, Amplifiers and Oscillators.

UNIT III: Introduction to Digital Systems: Numbers systems, Number base conversion, Complements, Basic theorems and properties of Boolean algebra, Boolean functions, Logic gates, Logic circuit implementation using diodes and transistors, Reduction of Boolean expressions and implementation with logic gates, Karnaugh's Map and Combinational circuits.

UNIT IV: Transducers and Sensors: Introduction, Passive Electrical Transducers, Resistive Transducers, Resistance Thermometers, Thermistor. Active Electrical Transducers, Piezoelectric Transducer, Photoelectric Transducer.

UNIT V: Basics of Communication System: Definition of signal, Standard test signals, Signals operations and its representation: shifting, folding and scaling, Classification of signals, Definition of system, System classification, System properties: additivity and homogeneity, Causality, Stability, Invertibility. Electromagnetic spectrum used for communication, Fourier transform, Elements of a communication system-transmitter and receiver, Need of modulation, Introduction to analog and digital communication systems, Examples of telecommunication systems-telephone, radio, television, mobile communication and satellite communication.

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

CO1 Describe the overview of electronics and illustrate the concepts of semiconductor devices.

CO2 Elucidate and analyze the application of semiconductor device.

CO3 Develop competence knowledge to construct basic digital circuit by use of basic gate & its

function.

CO4 Illustrates the principle of Transducers and sensors.

CO5 Comprehend the need of communication & explain the different modes of communications from wired to wireless and the computing involved.

TEXT/ REFERENCE BOOKS:

1. M. S. Tyagi, "Introduction to Semiconductor Materials and Devices" Wiley, 2008.
2. D. A. Neamen, "Electronic Circuits," Tata McGrawHill Education, 2006.
3. S. C. Lee, "Digital Circuits and Logic Design," PHI Learning, 2009.
4. J. G. Proakis and M. Salehi, "Fundamentals of Communication Systems," Prentice Hall, 2004.
5. G. Kennedy, B. Davis, "Electronic Communication Systems", TMH, 4th ed., 2008.
6. W. Tomasi, "Advanced Electronic Communication Systems", Pearson/Prentice-Hall, 6th ed., 2004.
7. A. K. Sawhney, "A Course in Electrical and Electronics Measurements and Instrumentation", 18th ed., Dhanpat Rai & Company Private Limited, 2007.

Course Outcomes and their Mapping with Programme Outcomes: INTRODUCTION TO ELECTRONICS & COMMUNICATION ENGINEERING (ECUBTE7)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2									3	2	1
CO2	3	3	3	2									3	2	2
CO3	2	2	3	2									3	2	2
CO4	2	2	3	2									3	2	2
CO5	2	2	2	1									2	3	2
CO6	3	3	3	3									3	3	3

Weightage: 1-Slightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code:	LAUBTC1	L	T	P	CT - I	CT - II	Attendance & Assignments	TOTAL	-	50	01
Subject:	INDIAN CONSTITUTION	1	-	-	20	20	10	50			

COURSE OBJECTIVE:

1. To the importance of preamble of the constitution of India.
2. To understand the fundamental rights and duty as a citizen of India.
3. To understand the functioning of union and state government and their inter-relationship.

COURSE OUTCOME: At the end of the course students will be able to:

- Describe the salient features of the Indian Constitution
- List the Fundamental Rights and Fundamental Duties of Indian citizens
- Describe the Directive Principles of State Policy and their significance

UNIT I: Introduction: Constitution-meaning of the term, Sources and constitutional theory, Features, Citizenship. Preamble.

UNIT II: Fundamental Rights and Duties: Fundamental Rights, Fundamental Duties, Directive Principles of State Policy

UNIT III: Union Government: Structure of Indian Union: Federalism, Centre-State relationship President: Role. Power and position, Prime Minister and council of ministers, Cabinet and Central Secretariat, Lok Sabha. Rajya Sabha

UNIT IV: State Government: Governor: Role and position, Chief Minister and council of ministers, State Secretariat

UNIT V: Relationship between Centre and States: Distribution of Legislative Powers, Administrative Relations, Coordination between States

TEXT/ REFERENCE BOOKS:

1. Constitution of India, V.N. Shukla
2. The Constitutional Law of India, J.N. Pandey
3. Indian Constitutional Law. M.P. Jain

Course Outcomes and their mapping with Programme Outcomes: Indian Constitution (Lauatc1)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						2		3				1			
CO2						2		3				1			
CO3						2		3				1			

Weightage: 1-Sightly; 2-Moderately; 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
<i>Subject Code:</i>	FOUBTC2	L	T	P	CT - I	CT - II	Attendance & Assignments	TOT AL	60	100	02
<i>Subject:</i>	ENVIRONMENTAL SCIENCE AND ECOLOGY	2	-	-	15	15	10	40			

Course Objective:

- To understand the concept of ecosystem and environment and its importance for sustaining life on earth.
- To be aware of the various natural resources and different types of pollution and its management.
- To gain knowledge on the sources and different types of energy for meeting daily human needs.

Course Content

UNIT – I

Introduction: Environment - Components of Environment Ecosystem: Types & Structure of Ecosystem, Balanced ecosystem Human Activities – Food, Shelter, Economic & Social Security. Definition, Scope and basic principles of ecology and environment, Fundamentals of Ecology and Ecosystem – Structural and Functional Components. Food chain & Food webs. Ecological pyramids; Energy flow.

UNIT – II

Air Pollution & Automobile Pollution: Definition, Effects – Global Warming, Acid rain & Ozone layer depletion, controlling measures.

UNIT-III

Solid Waste Management, E- Waste Management & Biomedical Waste Management- Sources, Characteristics & Disposal methods.

UNIT – IV

Natural Resources, Water resources – Availability & Quality aspects, Water borne diseases & water induced diseases, Fluoride problem in drinking water, Mineral resources, Forest Wealth, Material Cycles
– Carbon Cycle, Nitrogen Cycle & Sulphur Cycle.

UNIT-V

Energy – Different types of energy, Conventional sources & Non-Conventional sources of energy: solar energy, Hydro-electric energy, Wind Energy, Nuclear energy, Biomass & Biogas Fossil Fuels, Hydrogen as an alternative energy.

Text Books

1. Fundamentals of Ecology (3rd Ed.) 2001- MC Dash, Tata - McGraw Hill, New Delhi.
2. Introduction to Environmental Engg. (1991). - GM Masters, Prentice Hall of India.
3. Benny Joseph (2005), “Environmental Studies”, Tata McGraw – Hill Publishing

Company Limited.

4. R.J.Ranjit Daniels and Jagadish Krishnaswamy, (2009), "Environmental Studies", Wiley India Private Ltd., New Delhi.
5. R Rajagopalan, "Environmental Studies – From Crisis to Cure", Oxford University Press, 2005,
6. Aloka Debi, "Environmental Science and Engineering", Universities Press (India) Pvt. Ltd. 2012

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

1. Acquainted with different types, needs and importance of ecosystem and environmental components on earth.
2. Aware of and able to sustainably manage the natural resources and different types of pollution caused by anthropogenic activities.
3. Able to identify and know the different types and sources of energy and the strategies to conserve the conventional energy.

Course Outcomes and their Mapping with Programme Outcomes: ENVIRONMENTAL SCIENCE AND ECOLOGY (FOUATC2)

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1							3		1			1			
CO2							3		1			1			
CO3							3		1			1			

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
<i>Subject Code:</i>	CYUBLB3	L	T	P	IA	MSE	TOTAL	25	50	01
<i>Subject:</i>	ENGINEERING CHEMISTRY LABORATORY	-	-	2	25	--	25			

Course Objectives:

The Lab sessions would help in learning:

1. Application of iodometrically & titration in lab.
2. Recognition of different chemical reaction.
3. Advanced lab methods like Spectrophotometry and chromatography

Course Content:

Group – A:

1. Standardization of sodium thiosulphate solution by standard potassium dichromate solution.
2. To determine the Normality and Strength (g/L) of given Ferrous Ammonium Sulphate solution 'A' using standard Ferrous Ammonium Sulphate (N/30) solution 'B' taking KMnO₄ solution as an intermediate.
3. To determine the concentration of hypo solution (Na₂S₂O₃.5H₂O) iodometrically with given Iodine (N/50) solution.
4. Find out the Temporary hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator.
5. To determine chloride ion in a given water sample by Argentometric method (Mohr's method)

Group – B:

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

Group – C:

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

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

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

1. Have develop basics of volumetric analysis and required calculation ability.

2. Develop ability to perform organic reactions calculate their yields etc.
3. Develop knowledge regarding analytical tools and colligative properties of molecules.

**Course Outcomes and their Mapping with Programme Outcomes: ENGINEERING CHEMISTRY
LABORATORY (CYUBLB3)**

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1						1			1	1		1
CO2	2	2	1						1			1			1
CO3	2	2	1	1	1				1			1	1		1

Weightage: 1-Sightly, 2-Moderately, 3-Strongly

SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNALASSESSMENT (IA)			ESE	Grand total	Credits
<i>Subject Code:</i>	IPUBLL2	L	T	P	IA	MSE	TOTAL	25	50	01
<i>Subject:</i>	ENGINEERING WORKSHOP PRACTICES	-	-	2	25	--	25			

Course Objectives:

- To impart student knowledge on various hand tools for usage in engineering applications.
- Be able to use analytical skills for the production of components, electrical switch board wiring and logic gate.

Course Content:

1. Study of M/C tools in lathe machine

Demonstration of different operations of lathe machine Practice of facing plain turning, taper turning etc

2. Study of Carpentry tools, equipments and different jobs Practice of Lap joints, Butt joints, T-Lab joints

3. Practice of Lap joint, Butt Joint, T-joint

4. Preparation of ¥ shape, square shape, work pieces as per the given specification

5. Replacement of fuse, condenser of fan/motor and fan regulator; Installation of switch board with wiring;
Concepts of measuring instruments.

6. Identification of various electronics components and their terminals; Study of logic gates AND, OR, XOR and NOT, NAND, NOR; Study of Basic ICs.

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

1. Understand the appropriate tools, materials, instruments required for specific operations in workshop.
2. Understand the figures of the hand tools used in fitting, carpentry, welding shop and machine tools such as lathe machine.
3. Understand report of procedures followed for a given task in fitting, carpentry, welding and machine shops.
4. Basic understanding of electrical equipment fitting and understanding of electronic logic gates AND, OR, NOT and ICs.
5. Basic understanding of electrical equipment fitting and understanding of electronic logic gates AND, OR, NOT and ICs. Apply techniques to perform basic operations with hand tools and power tools such as center lathe machine, fitting shop, carpentry, welding using given job drawing.

Textbooks/References:

1. Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.

SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
Subject Code:	ITUBLL1	L	T	P	IA	MSE	TOTAL	25	50	01
Subject:	Storyboarding & Script Writing Lab	-	-	2	25	--	25			

COURSE OBJECTIVE:

1. To understand the use of essential tools and materials for storyboarding and scripting
2. To practically apply visual storytelling techniques for different media formats
3. To develop skills in script formatting, scene development, and dialogue writing
4. To learn visual sequencing through shot planning, framing, and transitions
5. To explore collaborative development of storyboards and scripts

COURSE OUTCOME:

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

1. Identify and use storyboard and scriptwriting tools safely and effectively
2. Write formatted scripts with clear structure, scene direction, and dialogue
3. Translate written scenes into visually coherent storyboard panels
4. Plan shot sequences and camera movements to enhance narrative flow
5. Collaborate in teams to develop, present, and refine story concepts visually and verbally

List of experiments/demonstrations:

1. Introduction to studio tools and safety measures. Familiarization with storyboard panels, pencils, markers, light boxes, and digital tools
2. Practice in drawing basic frames and shot types: close-up, medium shot, long shot, over-the-shoulder, POV
3. Script formatting exercise using standard screenplay software (e.g., Celtx, Final Draft)
4. Writing loglines, synopses, and short scenes with dialogue and action description
5. Visualization of a given script into a storyboard: identifying shots, camera angles, and composition
6. Creating a storyboard for a short scene with transitions and annotations
7. Mood board creation and thumbnail sketching for character, scene, or environment
8. Dialogue writing and scene breakdown: character interaction, conflict, and pacing
9. Group activity: Collaborative scriptwriting and storyboarding for a 1–2-minute animation or short film
10. Digital storyboarding practice using tools like Storyboarder or Adobe Photoshop
11. Review and critique session: presentation of storyboards and scripts with peer and instructor feedback
12. Final project: Complete script and storyboard for an original short story/advertisement/animation scene

Course Outcomes and their mapping with Programme Outcomes: Storyboarding & Script Writing Lab

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1							3		1			1			
CO2							3		1			1			
CO3							3		1			1			

Weightage: **1-Slightly; 2-Moderately; 3-Strongly**

SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ES Assessment	Grand total	Credits
<i>Subject Code:</i>	PEUBLS2	L	T	P	Attendance	Activities	TOT AL	25	50	01
<i>Subject:</i>	SPORTS AND YOGA	-	-	2	5	20	25			

Course Objectives:

- To make the students understand the importance of sound health and fitness principles as they relate to better health.
- To expose the students to a variety of physical and yogic activities aimed at stimulating their continued inquiry about Yoga, physical education, health, and fitness.
- To create a safe, progressive, methodical, and efficient activity-based plan to enhance improvement and minimize risk of injury.
- To develop among students an appreciation of physical activity as a lifetime pursuit and a means to better health.

Physical Fitness Tests

- AAHPER youth fitness test
- Cooper's 12 Minute run-walk test

General Introduction of games and sports

Fundamental skills, history and development of the following games and sports:

- Athletics
- Batminton
- Basketball
- Cricket
- Football
- Hockey
- Handball
- Kabaddi
- Kho-kho
- Volley-ball
- Yoga

Note:

1. Each student will have to clear one of the physical fitness tests by the end of the semester.
2. One project is to be prepared by the students at least for two games.

References:

1. Barron H M, McGhee R (1997) A Practical Approach to Measurement in Physical Education.
2. Kansal D K (1996), Test and Measurement in sports and physical education, New Delhi, D V S Publication

Course Outcomes:

On completion of the course, the student will be able to:

1. Apply warming up and warming down exercises in daily physical fitness activities
2. Apply stretching rotation and flexibility exercises in daily physical fitness activities.
3. Make use of acquired yoga asanas skill and pranayama method in daily lifestyle.

4. Utilize the acquired weight training skills for the development of muscular strength and development. Utilize the acquired skills in playing sports and games.

**Course Outcomes and their Mapping with Programme Outcomes: SPORTS AND YOGA
(PEUBLS2)**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1									3			3			
CO2									3						
CO3									3			3			
CO4									3			3			

Weightage: 1-Sightly, 2-Moderately, 3-Strongly