



FACULTY OF:- Technology and Engineering
DEPARTMENT OF:- Humanities, Mathematics and Sciences
SEMESTER :- I
CODE :- UGHM101
NAME – Engineering Mathematics-I (EMI)

TEACHING & EVALUATION SCHEME:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory					Practical (Marks)			Total
						Sessional Exam		University Exam		Total	Pr/Viva	TW	Total	
						Marks	Hrs	Marks	Hrs					
UGHM 101	Engineering Mathematics – I (EMI)	4	0	0	4	30	1.5	70	3	100	00	00	00	100

Objectives:-

- To learn algebra of Complex No.
- To learn concept of limit & continuity
- Convergence & Divergence behaviour of Series & Sequence
- Learn to trace curves
- Meaning of Partial derivatives
- Application of Partial derivatives

Prerequisites:- Students should have a firm grasp of algebra and trigonometry. They should have the basic knowledge of Complex Numbers, Derivative of 12th science level.

Course Outline:-

Sr. No.	Course Contents	Number of Hours
1	Review of Complex Numbers and Algebra of Complex Numbers: Algebra of complex numbers, Modulus, Arguments, Polar Form, De Moivre's theorem, Expansion of $\cos n\theta$, $\sin n\theta$ in powers of $\cos \theta$ and $\sin \theta$, Roots of complex numbers, Solutions of Quadratic equations.	10
2	Review of Limit, Continuity and Differentiation: Definitions of Limit, Continuity, Differentiability, Sandwich Theorem, Indeterminate forms $\frac{0}{0}$, $\frac{\infty}{\infty}$, $0 \times \infty$, $\infty - \infty$, 0^0 , ∞^0 , 1^∞	06
3	Convergence of Sequences and Series: Limits of Sequences, Convergence of infinite Series by definition, Different tests of convergence, Alternating Series, Absolute convergence, Conditional Convergence, Power Series and radius of convergence.	12



4	Curve Tracing: Curve tracing: Cartesian and Polar curves.	05
5	Taylor's series: Taylor's series, Maclaurin's series, Convergence of Taylor's series and error estimation	05
6	Partial Differentiation: Limit, Continuity of functions of several variables, Partial derivatives, Chain rules, Homogeneous Functions, Euler's theorem, Differentiation of implicit functions	10
7	Application of partial derivatives: Jacobian, Tangent planes and normal, Linearization and error approximation, extreme values and saddle points, Lagrange Multipliers, Taylor's expansion.	08

Learning Outcomes:-

After the successful completion of the course, students will be able to

- Determine the convergence of infinite series
- Calculate the derivatives of functions of several variables
- Graphing and optimization of the functions
- Compute the basic multiple integrals

Books Recommended :-

1. Thomas' Calculus, Maurice D. Weir, **Joel Hass, Frank R. Giordano**, Person Education.
2. Calculus, **James Stewart**, Thomson (5th Edition, 2003).
3. Higher Engineering Mathematics, **B. S. Grewal**, Khanna Publication.
4. Calculus, Volumes 1 and 2 (2nd Edition), **T. M. Apostol**, Wiley Eastern (1980).

E-Resources :-

1. www.calculus.org/
2. www.archives.math.utk.edu/calculus/crol.html
3. www.distancecalculus.com/calculus1/
4. www.pearsoned.co.in/mauricedweir
5. www.mathworld.wolfram.com/ComplexNumber.html



C. U. SHAH UNIVERSITY

FACULTY OF:- Technology and Engineering
DEPARTMENT OF:- Humanities & Mathematics
SEMESTER :- I
CODE :- UGHM102
NAME – Professional Communication (PC)

TEACHING & EVALUATION SCHEME:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory				Practical (Marks)			Total	
						Sessional Exam		University Exam		Total	Pr/Viva	TW		Total
						Marks	Hrs	Marks	Hrs					
UGHM 102	Professional Communication (PC)	2	0	2	4	30	1.5	70	2.5	100	30	20	50	150

Objectives :-

- To give a global competitive edge to the students by way of honing their Professional Communication Skills.
- To make them aware of the societal setting of the professional life.
- To train them in basic fundamentals skills of Communication – LSRW

Prerequisites :-

- Students should have basic knowledge of English Language and grammar.
- Students should have ability to speak and write correct sentences in their day to day language.
- Students should be familiar with correct usage of language.

Course Outline:-

Unit No.	Course Content	Minimum Number of Hours
0	Prerequisites	02
1	Basic Fundamentals of Communication <ul style="list-style-type: none"> • Meaning, definition, objectives & Characteristics /Nature of Communication • Communication Process, Flow of Communication • Introduction to Professional Communication • Principles of Professional Communication • Ethos, Pathos, Logos, Kairos in Professional Communication • Communication Networks • Non-verbal Communication 	



2	Listening Skills <ul style="list-style-type: none"> • Hearing v/s Listening • Active v/s Passive Listening • Types of Listening • Barriers of Listening • Traits of a good listener 	03
3	Cross-Cultural Communication <ul style="list-style-type: none"> • Globalization & Communication across culture • Getting started with cross cultural communication • Cross Cultural Communication conflicts and tactics' • Hot -spot Cross Cultural Communication 	04
4	Presentation Skills <ul style="list-style-type: none"> • Skills required for presentation • Types of competency required • Nuances of Delivery – Impromptu , extempore, manuscript • Non- verbal elements – Vocal elements, Pronunciation, Do's/Don'ts, Visual aids • Preparatory steps for presentation—Planning & Outlining & Structuring 	04
5	Paragraph Development <ul style="list-style-type: none"> • What is Paragraph? • Components of Paragraph – Unity, Topic Sentence, Cohesion, Coherence, Adequate Development • Approaches of Paragraph – Inductive , Deductive & Expository Approach • Types of Paragraph • Attributes of good paragraph • Use of Transitional Words 	04
6	Business & Technical Letter Writing <ul style="list-style-type: none"> • Introduction to Letter Writing • Personal Letter Vs Business Letter • Style of Writing Business Letter • Principles of Writing Business Letter • Layout of Business Letter • Types of Letter – Inquiry, order, quotation, claim & adjustment, sales, credits & Circular 	06
7	Reading Skills <ul style="list-style-type: none"> • Purpose of reading • Understanding and Interpreting Ideas • Reading Rates • Reading & Interpretation • Interpreting Technical graphics in reading • Techniques of Reading • Reading Comprehensive Skills • Reasons for Poor the Reading Comprehensive Skills 	03



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8	Phonetics <ul style="list-style-type: none">• Speech Mechanism• Sounds, Vowels & Consonants• Accents, Tone, Syllable, Intonation Patent & Phonetics Transcription	04
9	Conversation Practice <ul style="list-style-type: none">• Dialogue Practice• Telephonic Conversation• Speaking for Various Purposes	04
10	Grammar & Vocabulary <ul style="list-style-type: none">• Tenses• Parts of Speech• Transformation• Confusable words• One word Substitute	07

Learning Out comes:-

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

- Communicate across the cultures in professional groups.
- Develop their critical listening skills.
- Improve their competences in professional writing.
- Use grammar & vocabulary in correct and appropriate manner.
- Articulate different sounds in effective ways.
- Improve their speaking skills in day to day life.
- Become techno-friendly.
- Students will become highly skilled and proficient in their field.
- Students will become competent enough to compete in today's cut throat competition
- Students will become self-motivated and self-employable.
- Students will be able to understand the value of the ethics and principles of Corporate world

Books Recommended:-

1. *Effective Personal Communication Skills For Public Relations*, **Green Andy**, Kogan Page, Limited, 2006
2. *Advanced Business Communication*, **John M. Penrose, Jr., Robert W. Rasberry, Robert J. Myers**, Thomson/South-Western, 2004
3. *Technical Communication*, **D.K.Chakradev**, Tech-max publication
4. *Basic Business Communication*, **Flatly and Lesicar**
5. *Basic Communication Skills for Technology*, **Andrea J. Rutherford**, Pearson Education



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6. *From sentence to paragraph*, **William J. Kelly and Deborah L. Lawton**, Longman
7. *Technical Communication : Principles and Practice*, **Meenaxi Raman and Sangeeta Sharma**, Oxford Press

E-Resources:

1. www.en.wikipedia.org/wiki/antonyms
2. www.en.wikipedia.org/wiki/synonym
3. www.aimpremjifoundation.org/html/calspeech.htm



FACULTY OF :-Technology and Engineering
DEPARTMENT OF :- DEPARTMENT OF ELECTRICAL ENGINEERING
SEMESTER :- I
CODE :- UGEL103
NAME –Fundamental of Electrical Engineering (FEE)

TEACHING & EVALUATION SCHEME :-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory				Practical (Marks)			Total	
						Sessional Exam		University Exam		Total	Pr/Viva	TW		Total
						Marks	Hrs	Marks	Hrs					
UGEL 103	Fundamental of Electrical Engineering (FEE)	4	0	2	6	30	1.5	70	2.5	100	30	20	50	150

Objectives:

- To acquaint the students in fundamental concepts of Electrical Engineering which includes various Engineering Standards, Basic Elements of Circuits and its properties, Basic of Energy Conversion, Various fundamentals and Laws governing the phenomena of Electromagnetism and Electrostatics.
- To impart training to the students in order to enable them to understand , analyze and evaluate various aspects of basic D.C. as well and A.C. Circuits like various connection topologies, measuring parameters, governing laws of circuits, voltage current relationship and various graphical representation of quantities of circuits.

Prerequisites:

- History of discovery of Electrical Energy
- Electrical Concepts from Physics
- Calculus
- Complex Algebra

Course outline:-

Sr. No	Content	Hours
01	Fundamental and Basic Circuit Element <ul style="list-style-type: none"> • Concepts of E.M.F., Potential Difference and current, Resistance and Resistors, effect of temperature on resistance, resistance temperature coefficient, resistors in series and parallel, S.I. units of work, power and energy. 	06



02	<p>Electromagnetism</p> <ul style="list-style-type: none"> Magnetic effect of an electric current, cross and dot conventions, right hand thumb rule and cork screw rule, nature of magnetic field of long straight conductor, solenoid and toroid. Concept of m.m.f, flux, flux density, reluctance, permeability and field strength, their units and relationships. Simple series and parallel magnetic circuits, comparison of electrical and magnetic circuit, force on current carrying conductors placed in magnetic field, Fleming's left hand rule. Faradays laws of electromagnetic induction, statically and dynamically induced E.M.F., self and mutual inductance, coefficient of couplings. Energy stored in magnetic field. Charging and discharging of inductor and time constant. 	08
03	<p>Electrostatics</p> <ul style="list-style-type: none"> Electrostatics field, electric flux density, electric field strength, absolute permittivity, relative permittivity, capacitance and capacitor, composite dielectric capacitors, capacitors in series and parallel, energy stored in capacitors, charging and discharging of capacitors and time constant. 	08
04	<p>D.C. Circuits</p> <ul style="list-style-type: none"> Classification of electrical networks, Ohm's law, Kirchhoff's law and their applications for network solutions. Simplifications of networks using series and parallel combinations and star-delta conversions. 	08
05	<p>AC Fundamentals</p> <ul style="list-style-type: none"> Sinusoidal voltages and currents, their mathematical and graphical representation, Concept of instantaneous, peak (maximum), average and R.M.S. values, frequency, cycle, period, peak factor and form factor, phase difference, lagging, leading and in phase quantities and phasor representation. Rectangular and polar representation of phasors. 	08
06	<p>AC Circuits</p> <p>a) Single Phase AC Circuit : Study of A.C. circuits consisting of pure resistance, pure inductance, pure capacitance and corresponding voltage-current phasor diagrams and waveforms. Development of concept of reactance, study of series R-L, R-C, R-L-C circuit and resonance, study of parallel R-L, R-C and R-LC circuit, concept of impedance, admittance, conductance and susceptance in case of above combinations and relevant voltage-current phasor diagrams, concept of active, reactive and apparent power and power factor. Single Phase Power Measurement</p> <p>b) Poly Phase AC Circuit : Poly phase A.C. Circuits: Concept of three-phase supply and phase sequence. Voltages, currents and power relations in three phase balanced star-connected loads and delta-connected loads along with phasor diagrams. Three Phase Power Measurement</p>	10
07	<p>Single Phase Transformer</p> <ul style="list-style-type: none"> Construction, working principle, emf equation, transformation ratio, working of transformer on no load and with load, losses, efficiency and voltage regulation 	10



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Learning Outcomes:-

- Student would be able to understand basic concept of Electrical Engineering, various Basic Circuit Elements, connection topologies and fundamental electrical circuits with various types of Load.
- The concepts of Electrical Engineering would be the foundation stone for students to study the advance concepts of Electrical Engineering and would also be useful in day to day application.

Books Recommended

1. *Electrical Technology Vol.1*, **B.L.Theraja**, S.Chand Publication, New Delhi
2. *Basic Electrical Engineering*, **V.N.Mittal**, TMH Publication, New Delhi
3. *Basic Electrical Engineering*, **V.K.Mehta**, S.Chand and Company Ltd., New Delhi
4. *Electrical Technology*, **Edward Hughes**, Seventh Edition, Pearson Education
5. *Elements of Electrical Technology*, **H.Cotton**, C.B.S. Publications
6. *Basic Circuits Analysis*, **John Omalley Shawn**, Mc Graw Hill.
7. *Principles of Electrical Engineering*, **Del. Toro**, PHI



C. U. SHAH UNIVERSITY

FACULTY OF:-Technology & Engineering.
DEPARTMENT OF:- Mechanical Engineering
SEMESTER:- I
CODE:- UGME 104
NAME – Elements of Mechanical Engineering (EME)

TEACHING & EVALUATION SCHEME:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory				Practical (Marks)			Total	
						Sessional Exam		University Exam		Total	Pr/Viva	TW		Total
						Marks	Hrs	Marks	Hrs					
UGME 104	Elements of Mechanical Engineering (EME)	4	0	2	6	30	1.5	70	2.5	100	30	20	50	150

Objectives:-

- The objective is to impart training to help the students to develop engineering skill on basic topics of mechanical engineering. By this course student can gain knowledge of basic equipment knowledge.
- Looking to the wide field of the engineering there is a need of basic mechanical course.

Prerequisites:-

- Basic knowledge of Physics and fundamentals of mathematics.

Course outline:-

Sr. No.	Course content	No. Of Hours
1.	Introduction: Prime movers, Sources of energy, Types of prime movers, Pressure, Work, Power, temperature, Systems and control volumes, thermodynamic properties, state and equilibrium processes and cycles, Enthalpy, Entropy, Efficiency, zeroth law of thermodynamics. Forms of Energy, energy transfer by work and heat, First and second law of thermodynamics	06
2.	Properties of gases : Gas laws, Boyle's law, Charle's law, Combined gaslaw, Gas constant, Internal energy, Relation between Cp and Cv,Enthalpy, Non flow process, Constant volume process, Constant pressureprocess, Isothermal process, Poly-tropic process, Adiabatic process.	05
3.	Properties of Steam : Introduction, Steam formation, Types of Steam,Enthalpy, Specific volume of steam and dryness fraction of steam ,Internal energy, Steam tables, Measurement of dryness	06



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	fraction, Bucket calorimeter, Throttling calorimeter, Separating calorimeter, Combined calorimeter.	
4.	Heat Engines : Heat Engines and their classifications, working substances, converting machines, Essential elements of heat engines, Heat engine cycles, Carnot cycle, Rankine cycle, Otto cycle, Diesel cycle	05
5.	Steam Boilers: Study of steam, boilers, fire tube and water tube boilers, its accessories and mounting	06
6.	Internal Combustion Engines: Introduction, classification and brief description of I.C. engines mechanism, 4-Stroke and 2-Stroke petrol, and diesel engines, Otto, Diesel and dual cycles and their air standard efficiencies and mean effective pressures. Comparison of petrol and diesel engines. Engine efficiencies and performance	06
7.	Speed Control: Introduction, Governors, I.C. Engine governing, Flywheel.	03
8.	Pumps: Introduction, Reciprocating pump, types and operation, Air Chamber, Centrifugal pumps, Priming, Positive displacement pumps.	04
9.	Air Compressors: Introduction and classification of air compressor, Reciprocating compressors, Operation of a compressor, Work for compression, Power required, Reciprocating compressor efficiency, Rotary compressors.	05
10.	Refrigeration & Air Conditioning: Introduction, Refrigerant, Types of refrigerators, Vapour compression refrigerating system, Window and split air conditioners	05
11.	Couplings, Clutches and Brakes: Introduction, Couplings, Clutches, Brakes, Types of brakes. Difference between a brake and a clutch.	04
12.	Transmission of Motion and Power: Introduction, Methods of drive, Power transmission elements, shaft and axle, Belt-drive, Pulleys, Power transmitted by a belt, Chain drive, Friction drive, Gear drive.	05

Learning Outcomes: -

- Student would feel very much self-satisfied and self-confident after learning the basic intricacies of mechanical engineering field like prime movers, internal combustion engines, Pumps Air compressors, Refrigeration etc.

Books Recommended:-

1. "Elements of Mechanical Engineering", **K.P.Roy and Prof.S.K .Hajra Chaudhary**
2. "Fundamental of Mechanical Engineering", **G.S. Sawhney**, Prentice Hall
3. "Thermal Engineering", **R.K. Rajput** ,S.Chand Publication New Delhi
4. "Thermal Engineering", **P. L. Ballaney**
5. "Engineering Thermodynamics", **Rayner Joel** ,ELBS Longman.
6. "Thermodynamics and Heat Engines", **Yadav R.**, Central Publishing House, Allahabad
7. "Thermodynamics – An Engineering Approach", **Cengel Y.A. and Boles M.A.**, Tata McGraw Hill.



FACULTY OF :-Technology and Engineering
DEPARTMENT OF :- DEPARTMENT OF COMPUTER ENGINEERING
SEMESTER :- I
CODE :- UGCE105
NAME – Fundamentals in Computer Programming (FCP)

TEACHING & EVALUATION SCHEME :-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory				Practical (Marks)			Total	
						Sessional Exam		University Exam		Total	Pr/Viva	TW		Total
						Marks	Hrs	Marks	Hrs					
UGCE 105	Fundamentals in Computer Programming (FCP)	4	0	2	6	30	1.5	70	2.5	100	30	20	50	150

Objectives: - This course provides students with an entry-level foundation in computer programming. The main aim of the course are to develop the Logical and programming ability in students, and to improve their proficiency in applying the computing fundamentals to their field of study.

Topics include Fundamental overview of Computer basics and the brief study of ‘C’ as a programming language. The study of basic data types, function definitions and declarations, conditional and iteration statement, array and string manipulation, recursive programming and introduction to structures, pointers and files and dynamic memory allocation.

In summary, the basic aim is to teach the student to program in C at a level where they are able to eventually write programs to help solve their everyday engineering, science and technology related problems

Prerequisites: - Basic knowledge of DOS/Unix Commands, Basic knowledge of computer and application software.

Course outline:-

Sr. No.	Course Contents	No. of Hours
1	Fundamentals of Computer: What is computer? History of computer, Block diagram of computer system, Hardware and software, Overview of types of operating systems, Compiler and interpreter, Programming Languages, Flowchart and Algorithm.	6
2	Overview of C: History of C, Features of C, Basic structure of C program, Process of	9



	executing a c program, Character set, trigraph sequences, C tokens, Data type, Variable, Storage class, Symbolic Constant, Overflow of data, Operators, Operator Precedence and Associativity, Type conversions, I/O Functions.	
3	Branching & Looping statements: Introduction, if statement, types of if statement, switch statement, while statement, for statement, do-while statement, goto statement, break and continue statement	9
4	Array & Structure: Introduction, One-dimensional array, Two-dimensional array, multidimensional array, limitation of array, strings, string handling functions, table of string, defining a structure, declare and accessing structure variable, structure member as array, structure variable as array, structure within structure, unions, bit fields	9
5	Pointer: Introduction, advantages, declaration of pointers, chain of pointers, scale factor, pointers and arrays, pointers and structures	6
6	User-defined functions and Procedures : Introduction, advantages of functions, elements of functions, categories of functions with arguments and parameters, recursion, function and arrays, functions and structure, functions and pointers	6
7	File Management and Dynamic Memory Allocation: Introduction, defining and declaring a file, I/O operations on files, overview of command line arguments, overview of malloc(), calloc(), free() functions	7

Learning Outcomes: -

- Basic programming & technical skill will be improved, students are able to solve programming problem in easiest way, it improves mathematics problem solving ability.
- Provide base foundation which will be considered as a base platform for other higher level language used for real world problem solving.

Books Recommended:

1. *Programming in ANSI C*, E. Balagurusamy, PHI
2. *Let us C*, Yaswant Kantikar, BPB
3. *C: The Complete Reference*, Herbert Schildt, McGrawHill
4. *Computer concepts and Programming*, Vikas Gupta, DreamTech
5. *Computer fundamentals and Programming in C*, Pradip dey and Manas Ghosh, Oxford

E-Resources:

1. www.cprogramming.com
2. www.c4learn.com
3. www.strostrup.com/programming



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FACULTY OF :-Technology and Engineering

DEPARTMENT OF :-Civil Engineering

SEMESTER :- I

CODE :- UGCV106

NAME – Environmental Engineering & Management (EEM)

TEACHING & EVALUATION SCHEME :-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory				Practical (Marks)			Total	
						Sessional Exam		University Exam		Total	Pr/Viva	TW		Total
						Marks	Hrs	Marks	Hrs					
UGCV 106	Environmental Engineering & Management (EEM)	2	0	0	2	30	1.5	70	2.5	100	00	00	00	100

Objectives: -

The primary objective of this course is to make people aware of the importance of environment on health of every individual and the society as a whole.

Prerequisites:-

Basic understanding of concepts related to environment and awareness about the harmful effects of pollution are required to understand the concept better.

Course Outline:-

Sr. No.	Course Contents	No. of Hours
1	The Multidisciplinary nature of environmental studies Definition, scope and importance Need for public awareness.	01
2	Environment Concept: Introduction, concept of biosphere – lithosphere, hydrosphere, atmosphere; Biogeochemical cycle.	08
3	Ecosystem : Principles and scope of Ecology; concepts of ecosystem, population, community, biotic interactions, biomes, ecological succession.	05



<p>4</p>	<p>Natural Resources: Renewable and non-renewable resources • Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people. b) Water resources: Use and over-utilization of surface and groundwater, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, Land degradation, man induced Landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.</p>	<p>15</p>
<p>5</p>	<p>Environmental Pollution Causes, effects and control measures of- Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution & Nuclear hazards</p>	<p>06</p>
<p>6</p>	<p>Conservation of Environment: The concepts of conservation and sustainable development, why to conserve, aims and objectives of conservation, policies of conservation; conservation of life support systems – soil, water , air, wildlife, forests.</p>	<p>04</p>
<p>7</p>	<p>Biodiversity and its conservation Introduction – Definition: genetic, species and ecosystem diversity. Biogeographical classification of India Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels. India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.</p>	<p>06</p>

Learning Outcomes:-

The course provides knowledge regarding conservation of environment which is very crucial in the present day scenario.



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Books Recommended:

1. *“Introduction to Environmental Engineering and Science”*, **Masters, G.M.**, Prentice –Hall of India Pvt. Ltd. , (1991)
2. *“Environmental Science”*, **Nebel, B.J.**, Prentice –Hall Inc., (1987)
3. *“Ecology: The Link between the natural and social sciences”*, **Odum, E.P.**, IBH Publishing Com., Delhi.

E-Resources:

1. www.en.wikipedia.org/wiki/Environmental_science
2. www.iisc.ernet.in/ug/enviromentscience.htm
3. www.sciencedaily.com/gallery/earth_climate/environmental_science/
4. www.environment.nationalgeographic.co.in/



FACULTY OF :-Technology and Engineering
DEPARTMENT OF :-Mechanical Engineering
SEMESTER :- I
CODE :- UGME107
NAME – Workshop Practice (WP)

TEACHING & EVALUATION SCHEME :-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory				Practical (Marks)			Total	
						Sessional Exam		University Exam		Total	Pr/Viva	TW		Total
						Marks	Hrs	Marks	Hrs					
UGME107	Workshop Practice (WP).	0	0	2	2	-	-	-	-	-	50	50	100	100

Objectives:-

- The objective is to impart training to help the students to develop engineering skill sets.
- This exercise also aims in inculcating respect for physical work and hard labor in addition to some amount of value addition by getting exposed to interdisciplinary engineering domains.

Prerequisites:-

- Looking to the wide field of the engineering, there was a need of comprehensive course.

Course outline:-

Sr. No.	Course Content	No. of Hours
1	Introduction: Introduction to Workshop	02
2	Fitting • Use and setting of fitting tools for chipping, cutting, filing, marking, center punching, drilling, tapping. Term work to include one job involving following operations : filing to size, one simple male- female joint, drilling and tapping	08
3	Carpentry • Use and setting of hand tools like hacksaws, jack planes, chisels and gauges for construction of various joints, wood tuning and modern wood turning methods. • Term work to include one carpentry job involving a joint and report on demonstration of a job involving wood turning	06
4	Smithy • At least one workshop practice job (Lifting hook and handle) is to be demonstrated.	02
5	Machine Shop • At least one turning job is to be demonstrated.	02



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6	Welding • Edge preparation for welding jobs. Arc welding for different job like, Lap welding of two plates, butt welding of plates with simple cover, arc welding to join plates at right angles.	02
7	Tin Smithy • Use of sheet metal, working hand tools, cutting , bending , spot welding	04
8	Plumbing • Use of plumbing tools, spanners, wrenches, threading dies, demonstration of preparation of a domestic line involving fixing of a water tap and use of coupling, elbow, tee, and union etc.	02
9	Foundry • Preparation of sand Mould, Types of Pattern, furnaces	02

Learning Outcomes: -

- Students will get on hand training regarding various practical applications like Fitting, Carpentry, Welding, etc.
- Practical method of explaining the core subject and the philosophy of the subject.

Books Recommended:-

1. "A Course in Workshop Technology", Vol – I, **B. S. Raghuvanshi**, Dhanapat Rai & Sons.
2. "Elements of Workshop Technology", Vol – I, **Hajara Choudhari**, Media Promoters.
3. "Workshop Technology", Vol – I, **Gupta and Kaushik**, New Heights.
4. "Workshop Technology", Vol – I, **Chapman**, The English Language Book Society.
5. "Workshop Technology", Vol.-I, **H.S.Bawa**, TMH Publications, New Delhi.
6. "Elements Of Workshop Technology" , **S.K.Hajra Choudhary**, Media Promoters & Publishers Pvt.Ltd,
7. "Workshop Technology", Vol I, II and III , **Chandola S.P.**, Oxford and IBH Publishing Co. Pvt. Ltd.,

Research reference:-

1. www.mechanical.uonbi.ac.ke/node/703
2. www.knowledgee.com
3. www.sunzi.lib.hku.hk/ER/detail/hku/443417



C. U. SHAH UNIVERSITY

FACULTY OF :-Technology and Engineering
DEPARTMENT OF :-Electronics & Communication Engineering
SEMESTER :- I
CODE :- UGEC108
NAME – Electronics & Electrical Workshop Practice (EWP)

TEACHING & EVALUATION SCHEME :-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
		Th	Tu	Pr	Total	Theory				Practical			Total	
						Sessional Exam		University Exam		Total	Pr/Viva	TW		Total
						Marks	Hrs	Marks	Hrs					
UGEC108	Electronics & Electrical Workshop Practice (EWP)	0	0	2	2	-	-	-	-	-	50	50	100	100

Objectives:-

- The objective is to impart training to help the students to develop engineering skill sets.
- This exercise also aims in inculcating respect for physical work and basic electronic circuit troubleshooting in addition to some amount of value addition by getting exposed to interdisciplinary engineering domains.

Prerequisites:-

- Looking to the wide field of the engineering, there was a need of comprehensive course.

Course outline:-

Sr. No.	Course Content	No. of Hours
1	Introduction: Introduction to Workshop	02
2	Basic Electronics Components Study: <ul style="list-style-type: none"> • Identification of Components like resistor, capacitor, diode, transistor (BJT and FET), and other semiconductors (e.g. SCR, LED, LCD, etc.) and Integrated circuits (basic analog and digital ICs like 741, 555). • Specifications for the various electronic components, e.g. resistance value by color code, wattage, diode P and N terminals, capacitor specifications like voltage, capacitance, transistor terminal identification, PNP and NPN transistors, FET terminal identifications, step-up/step-down transformers, center tapped transformers. 	04
3	Instrument familiarization: <ul style="list-style-type: none"> • Instruments like Ammeter, voltmeter, multimeter, CRO, function generator, single and dual power supply; Operating and measurement practice on these instruments. 	04



4	Soldering Practice : <ul style="list-style-type: none">Understanding the bread-board and general purpose PCB, Design of basic circuits on bread-board, Soldering practice on general purpose PCB	04
5	Earthing : <ul style="list-style-type: none">Study the types of Earthing, e.g. Pipe earthing, Plate earthing.	02
6	Electrical Wiring <ul style="list-style-type: none">Connectors & switches, system of wiring, domestic wiring installation, sub circuits in domestic wiring, simple control circuit in domestic installation, industrial electrification. Illumination: Types of lamps, fixtures & reflectors, illumination schemes for domestic, industrial & commercial premises, Lumen requirements for different categories. Safety & protection: Safety, electric shock, first aid for electric shock other hazards of electrical laboratories & safety rules, use of multi-meters, grounding, importance of grounding, equipment of grounding for safety. Circuit protection devices, fuses, MCB, ELCB & relays.	10
7	Mini Project : <ul style="list-style-type: none">Students have to prepare circuit of any electronic application on bread board and do the testing of it after working condition. They have to then solder it on general purpose PCB.	04
8	Hardware and Networking: <ul style="list-style-type: none">Dismantling of a Personal Computer (PC), Identification of Components of a PC such as power supply, motherboard, processor, hard disk, memory (RAM, ROM), CMOS battery, CD drive, monitor, keyboard, mouse, printer, scanner, pen drives, disk drives etc. • Assembling of PC, Installation of Operating System (Any one) and Device drivers, Boot-up sequence. Installation of application software (at least one) • Basic troubleshooting and maintenance • Identification of network components: LAN card, wireless card, switch, hub, router, different types of network cables (straight cables, crossover cables, rollover cables) Basic networking and crimping.	12

Learning Outcomes: -

- Students will get on hand training regarding various practical applications like component identification, laboratory instruments, bread-board mounting and soldering on PCB & Hardware and networking.
- Practical method of explaining the core subject and the philosophy of the subject.

Books Recommended:-

1. "A textbook of electrical technology" Vol-I, **B.L. Theraja**, S chand & company Ltd. New Delhi.
2. "Fundamental of Computer", **Sukhvir Sing**, Khanna Publications ,Delhi.
3. "Electronic Troubleshooting", **Daniel Tomal& Neal Widmer**, McGraw-Hill Education.



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4. *“Troubleshooting Electronic Equipment”*, **Ragbir Singh Khandpur**, Tata McGraw-Hill Education
5. *“Principles of Electronics”*, **V. K. Mehta**, S Chand & Company
6. *“Fundamentals of Electrical Engineering & Electronics”*, **B. L. Theraja**, S Chand & Company

Research reference:-

1. www.knowledgee.com
2. www.sunzi.lib.hku.hk/ER/detail/hku/443417
3. www.electronicsforu.com