



**C. U. SHAH UNIVERSITY**

## **FACULTY OF SCIENCE**

### **DEPARTMENT OF PHYSICS**

**COURSE: B.Sc.**

**SEMESTER: III**

**SUBJECT NAME: Heat and Thermodynamics**

**SUBJECT CODE: 4SC03PHC1**

**Teaching & Evaluation Scheme:-**

Teaching hours/week				Credit	Evaluation Scheme/semester							
Th	Tu	Pr	Total		Theory				Practical			Total Marks
					Sessional Exam		University Exam		Internal		University	
					Marks	Hrs	Marks	Hrs	Pr	TW		
3	0	0	3	3	30	1.5	70	3	--	--	--	100

**Objectives:-**The general purpose of this course is

- To expose the student knowledge of Heat and thermodynamics.
- To expose the student knowledge of Laws of Thermodynamics.
- To expose the student knowledge of carnot cycle and carnot engine and its application.
- To expose the student knowledge of Maxwell's thermodynamic Relation and Its Application.

**Prerequisites:-**Fundamental knowledge of Heat and Thermodynamics.

**Course outline:-**

Sr. No.	Course Contents
1	Zeroth and First Law of Thermodynamics, Thermodynamical Equilibrium, Zeroth Law of Thermodynamics and Concept of Temperature, Work and Heat Energy, State Functions, First Law of Thermodynamics, Differential form of First Law, Internal Energy, First Law and Various Processes, Applications of First Law, General Relation between $C_p$ and $C_v$ , Work Done during Isothermal and Adiabatic Processes, Compressibility and Expansion Coefficient, Atmosphere and Adiabatic Lapse Rate



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<b>2</b>	Second Law of Thermodynamics, Reversible and Irreversible Changes, Conversion of Work into Heat and Heat into Work, Heat Engines, Carnot Cycle, Carnot Engine and its Efficiency Second Law of Thermodynamics, Kelvin-Planck and Clausius Statements and their Equivalence, Applications of Second law of Thermodynamics, Thermodynamic Scale of Temperature and its Equivalence to Perfect Gas Scale, Third Law of Thermodynamics, Temperature-Entropy Diagrams, First and second order Phase Transitions.
<b>3</b>	Maxwell's Thermodynamic Relations, Derivations of Maxwell's Relations, Applications of Maxwell's Relations, Clausius-Claapeyron equation, Values of $C_p$ - $C_v$ , TdS Equations, Joule-Kelvin Coefficient for Ideal and Van-der-Waal Gases, Energy Equations and Change of Temperature during an Adiabatic Process.
<b>4</b>	Properties of radiant heat, Emission and absorption of Radiation, Absorbing power, Reflecting power, Transmitting power, Radiating, Black Body, Stefan's Law, Wien's Law, Energy distribution in a Black Body, Rayleigh-Jeans Law, Planck's Law.

**Learning Outcomes:-**After successful completion of this course, students have:

- Knowledge of Thermodynamics laws and process.
- Knowledge of Carnot cycle.
- Knowledge of Maxwell's thermodynamic relation and its application.
- Knowledge of properties of radiant heat.

### **Books Recommended:-**

1. 'Conceptual Physics', **Paul G. Hewitt**, *Pearson Publication*.
2. 'Engineering Physics', **R.K.Gaur, S.L.Gupta**, *Dhanpat Rai Publication*.
3. 'Modern Physics', **R.Mrugesan&KiruthingaSivaprasath**, *S.Chand Comp*.
4. 'Modern Physics', **B.L. Theraja**, *S.Chand & Company Ltd*.
5. 'Modern Engineering Physics', **A.S. Vasudeva**, *S.Chand Company*.
6. 'University Physics', **Sears, Zeemansky and Young**, *Narosa Publishing*.
7. 'Physics', **Halliday and Resnick**, *John Wiley*.
8. 'The Word of Science', *Paragon, U.K.*
9. 'Thermodynamics', **Enrico Fermi**, *Courier Dover Publications*.
10. 'A Treatise on Heat Including Kinetic Theory of Gases, Thermodynamics and Recent Advances in Statistical Thermodynamics', **Meghnad Saha, B. N. Srivastava**, *Indian Press*.
11. 'Heat and Thermodynamics: An Intermediate Textbook' **Mark Waldo Zemansky, Richard Dittman**, *McGraw-Hill*.
12. 'Thermal Physics' **Garg, Bansal and Ghosh**, *Tata McGraw-Hill*.
13. 'Thermodynamics, Kinetic Theory, and Statistical Thermodynamics', **Francis W. Sears & Gerhard L. Salinger**, *Narosa Publication*.



**E-Resources:-**

1. [www.physic.about.com](http://www.physic.about.com)
2. [www.physic.org](http://www.physic.org)
3. [www.Physicsclassroom.com](http://www.Physicsclassroom.com)
4. [www.howstuffwork.com](http://www.howstuffwork.com)
5. [www.colorado.edu/physics/2000](http://www.colorado.edu/physics/2000)
6. [www.ndrs.org.physic.com](http://www.ndrs.org.physic.com)
7. [www.physlinc.com](http://www.physlinc.com)
8. [www.fearophysic.com](http://www.fearophysic.com)
9. [www.hyperphysics.com](http://www.hyperphysics.com)



**C. U. SHAH UNIVERSITY**

## **FACULTY OF SCIENCE**

### **DEPARTMENT OF PHYSICS**

**COURSE: B.Sc.**

**SEMESTER: III**

**SUBJECT NAME: Electricity and Magnetism**

**SUBJECT CODE: 4SC03PHC2**

#### **Teaching & Evaluation Scheme:-**

Teaching hours/week				Credit	Evaluation Scheme/semester							
Th	Tu	Pr	Total		Theory				Practical			Total Marks
					Sessional Exam		University Exam		Internal		University	
					Marks	Hrs	Marks	Hrs	Pr	TW		
3	0	0	3	3	30	1.5	70	3	--	--	--	100

**Objectives:-**The general purpose of this course is

- To expose the student knowledge of Electricity and Magnetism.
- To expose the student knowledge of Electric field intensity, Electric Flux, Electric Flux density, Gauss Law, Proof of Gauss Law, Capacity of a Parallel Plate Condenser.
- To expose the student knowledge of Magnetic field and Magnetic Induction, Magnetic field due to solenoid, Magnetic susceptibility and permeability.
- To expose the student knowledge of Line Integral of Electric Field, Conservative Nature of Electrostatic Field.

**Prerequisites:-**Fundamental knowledge of Electricity and Magnetism.

#### **Course outline:-**

Sr. No.	Course Contents
1	Electric field intensity, Electric Flux, Electric Flux density, Gauss Law, Proof of Gauss Law, Field around a charged straight conductor, Electric field around a sphere, Electric Potential, Potential gradient and Electric Intensity, Potential of a charged sphere, Potential and Electric field due to Electric dipole, Potential energy of a Capacitor, Capacity of a condenser (Capacitor), Capacity of a Parallel Plate Condenser.



<b>2</b>	Magnetic field and Magnetic Induction, Hall Effect, Hall Voltage and Hall coefficient, Hall Mobility, Magnetic flux, Magnetic field around current carrying conductor, Magnetic field due to solenoid, Magnetic susceptibility and permeability.
<b>3</b>	Para, Dia, Ferro-magnetic substances, Hysteresis loop, Energy loss due to Hysteresis, Self Induction, Self Inductance of a solenoid, Mutual Inductance, Mutual Inductance of two solenoids.
<b>4</b>	Electric Field and Lines. Electric Field $E$ due to a Ring of Charge. Electric Flux, Gauss's law. Gauss's law in Differential form. Applications of Gauss's Law, Line Integral of Electric Field. Electric Potential Difference and Electric Potential $V$ (Line integral). Conservative Nature of Electrostatic Field.

**Learning Outcomes:-**After successful completion of this course, students have:

- Knowledge of Electric field intensity, Electric Flux, Electric Flux density, Gauss Law, Proof of Gauss Law, Capacity of a Parallel Plate Condenser.
- Knowledge of Magnetic field and Magnetic Induction, Magnetic field due to solenoid, Magnetic susceptibility and permeability.
- Knowledge of Conservative Nature of Electrostatic Field.

### **Books Recommended:-**

1. 'Electricity and Magnetism', **Berkeley**, *Physics course*.
2. 'Fundamentals of electricity and magnetism', **Arthur F. Kip**, *McGraw-Hill*.
3. 'Electricity and magnetism', **J.H.Fewkes & John Yarwood**, *Oxford Univ. Press*.
4. 'Introduction to Electrodynamics', **David J. Griffiths**, *Benjamin Cummings*.
5. 'Electricity and magnetism', **Edward M. Purcell**, *McGraw-Hill Education*.
6. 'Electricity and magnetism', **D. C. Tayal**, *Himalaya Publishing House*.
7. 'Electromagnetics', **Joseph A. Edminister**, *Tata McGraw Hill*.

### **E-Resources:-**

1. [www.physic.about.com](http://www.physic.about.com)
2. [www.physic.org](http://www.physic.org)
3. [www.Physicsclassroom.com](http://www.Physicsclassroom.com)
4. [www.howstuffwork.com](http://www.howstuffwork.com)
5. [www.colorado.edu/physics/2000](http://www.colorado.edu/physics/2000)
6. [www.ndrs.org.physic.com](http://www.ndrs.org.physic.com)
7. [www.physlinc.com](http://www.physlinc.com)
8. [www.fearophysic.com](http://www.fearophysic.com)
9. [www.hyperphysics.com](http://www.hyperphysics.com)



**C. U. SHAH UNIVERSITY**

## **FACULTY OF SCIENCE**

### **DEPARTMENT OF PHYSICS**

**COURSE: B.Sc.**

**SUBJECT NAME: Modern Physics**

**SEMESTER: III**

**SUBJECT CODE:4SC03PHE1**

#### **Teaching & Evaluation Scheme:-**

Teaching hours/week				Credit	Evaluation Scheme/semester								
Th	Tu	Pr	Total		Theory				Practical				Total Marks
					Sessional Exam		University Exam		Internal		University		
					Marks	Hrs	Marks	Hrs	Pr	TW			
3	0	0	3	3	30	1.5	70	3	--	--	--	100	

#### **Objectives:-**

The general purpose of this course is

- To expose the student knowledge of Bending of Beam, Cantilever loaded at the free end, Viscosity and coefficient of viscosity, Reynold's number, Poiseuille's Equation, Stoke's law.
- To expose the student knowledge of Michelson-Morley Experiment, Special theory of Relativity, Lorentz Transformation, Mass-Energy Relation.
- To expose the student knowledge of Investigation of Spectra, Production of Spectra, Quantum Numbers and their Physical Interpretation, L-S Coupling, J-J Coupling, Experimental study of Zeeman Effect, Stark Effect.
- To expose the student knowledge of Macroscopic and microscopic states, Phase space, Liouville's theorem, Additive property of entropy, Entropy of a perfect gas in a Microcanonical, ensemble, Gibbs paradox.
- To expose the student knowledge of X-rays.

**Prerequisites:-**Fundamental knowledge of Physics.



## **Course Outline:-**

<b>Sr. No.</b>	<b>Course Contents</b>
<b>1</b>	Bending of Beam, Bending Moment of a Beam, Cantilever loaded at the free end, Cantilever supported at its ends, loaded in the middle, Viscosity and coefficient of viscosity, Streamline and Turbulent flow, Reynold's number, Poiseuille's Equation for the flow of liquid through a tube, Volume of liquid flowing out, Stoke's law. Galilean Transformation, Ether Hypothesis, Michelson-Morley Experiment, Special theory of Relativity, Lorentz Transformation, Length contraction, Time dilation, Relativity of simultaneity, Addition of velocities, Variation of mass with velocity, Mass-Energy Relation.
<b>2</b>	Macroscopic and microscopic states, Phase space, Liouville's theorem, Fluctuations in a physical quantity, Microcanonical Ensemble Microcanonical distribution, Microcanonical average, Equal a priori probability, Additive property of entropy, Entropy of a perfect gas in a Microcanonical, ensemble, Gibbs paradox, Removal of Gibbs paradox, Thermodynamic quantities in a Microcanonical ensemble, Average energy per particle, Specific heat at constants volume.
<b>3</b>	Investigation of Spectra, Production of Spectra, Types of Spectra, Wave Number, The Spinning, Electron, Space Quantization, Quantum Numbers and their Physical Interpretation, L-S Coupling, J-J Coupling, Experimental study of Zeeman Effect, Classical Interpretation of Normal Zeeman Effect, Anomalous Zeeman Effect, Stark Effect.
<b>4</b>	Production of X-rays, X-rays, Light and Electromagnetic Spectrum, Diffraction of X-Radiations, Bragg's law, Continuous X-ray spectrum, Characteristic Emission Spectrum, Characteristic absorption Spectrum, A Close Survey of Emission Spectrum, Explanation of Emission and Absorption Spectra, Comparison of Optical and X-ray Spectra, Moseley's Law, The Fluorescence yield and Auger Effect.

**Learning Outcomes:-**After successful completion of this course, students have:

- Knowledge of Bending of Beam, viscosity, Reynold's number, Poiseuille's Equation, Stoke's law.
- Knowledge of Michelson-Morley Experiment, Special theory of Relativity.
- Knowledge of Spectra, Quantum Numbers and their Physical Interpretation, Experimental study of Zeeman Effect, Stark Effect.

## **Books Recommended:-**

1. 'Conceptual Physics', **Paul G. Hewitt**, *Pearson Publication*.
2. 'Engineering Physics', **R. K. Gaur, S. L. Gupta**, *Dhanpat Rai Publication*.
3. 'Modern Physics', **R. Mrugeshan & Kiruthinga Sivaprasath**, *S. Chand Comp.*



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4. 'Principles of Electronics', **V. K. Mehta & Rohit Mehta**, S. Chand Company.
5. 'Modern Physics', **B. L. Theraja**, *S.Chand & Company Ltd.*
6. 'Modern Engineering Physics', **A. S. Vasudeva**, S. Chand Company.
7. 'Engineering Physics', **G. Vijayakumari**, *Vikas Publication*
8. 'University Physics', **Sears, Zeemansky and Young**, *Narosa Publishing.*
9. 'Physics', **Halliday and Resnick**, *John Wiley.*
10. 'Atomic Physics', **J. B. Rajam**, *S. Chand & Company Ltd.*
11. 'Engineering Physics', **M. N. Avadhanulu & P.G. Kshirsagar**, *S. Chand & Company Ltd .*
12. 'A Text Book of Quantum Mechanics', **Methue & Venktesn.**
13. 'Statistical Mechanics', **B K Agarwal and Melvin Eisner** *New Age International Limited. Publishers.*
14. 'Fundamental of Statistical Mechanics' **B. B. Laud**, *New Age International Publication.*

### **E-Resources:-**

1. [www.physic.about.com](http://www.physic.about.com)
2. [www.physic.org](http://www.physic.org)
3. [www.Physicsclassroom.com](http://www.Physicsclassroom.com)
4. [www.howstuffwork.com](http://www.howstuffwork.com)
5. [www.colorado.edu/physics/2000](http://www.colorado.edu/physics/2000)
6. [www.ndrs.org.physic.com](http://www.ndrs.org.physic.com)
7. [www.physlinc.com](http://www.physlinc.com)
8. [www.fearophysic.com](http://www.fearophysic.com)
9. [www.hyperphysics.com](http://www.hyperphysics.com)





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## **FACULTY OF SCIENCE**

### **DEPARTMENT OF PHYSICS**

**COURSE: B.Sc.**

**SEMESTER: III**

**SUBJECT NAME: Non-Conventional Energy Resources**

**SUBJECT CODE: 4SC03PHE2**

#### **Teaching & Evaluation Scheme:-**

Teaching hours/week				Credit	Evaluation Scheme/semester							
Th	Tu	Pr	Total		Theory				Practical			Total Marks
					Sessional Exam		University Exam		Internal		University	
					Marks	Hrs	Marks	Hrs	Pr	TW		
3	0	0	3	3	30	1.5	70	3	--	--	--	100

**Objectives:-**The general purpose of this course is

- To expose the students' knowledge towards need of alternative & non-conventional renewable energy sources, their optimal usage with existing non renewable energy sources and their management to reduce the pollution and make this earth more liveable for all living organisms.

**Prerequisites:-**Fundamental knowledge of Bachelor degree in physics.

#### **Course Outline:-**

Sr. No.	Course Contents
1	<b>Solar Energy :</b> Introduction, The Physics of the Sun, Solar Radiation - Beam and Diffused Radiation, Solar Constant, Earth Sun Angles, Attenuation and Measurement of Solar Radiation, Local Solar Time, Derived Solar Angles, Sunrise, Sunset and Day Length. Flat Plate Collectors, Concentrating Collectors, Advanced Solar Collectors, Solar Air Heaters-Types, Solar Driers, Storage of Solar Energy-Thermal Storage, Solar Pond, Solar Water Heaters, Solar Distillation, Solar Driers, Solar Cooker, Solar Heating & Cooling of Buildings, Photo Voltaic Effect, Semi Conductor Photo Voltaic Solar Cells, Solar Photo Voltaic System, Applications and Limitations of PV Solar Cells, Environmental Impact of Solar Power. PV Hybrid System.



<b>2</b>	<b>Geothermal Energy :</b> Introduction, Structure of Interior Earth, Geothermal Sites, Estimation and Nature of Geothermal Energy, Geothermal Sources and Resources Like Hydrothermal, Geo-Pressured Hot Dry Rock, Magma. Advantages, Disadvantages and Application of Geothermal Energy, Site selection, Prospects of Geothermal Energy in India, Problems and Limitations of Geothermal Energy Conversion.
<b>3</b>	<b>Hydro Power, Oceanic Thermal and Tidal Energy :</b> Introduction, Principle Of Ocean Thermal Energy Conversion, Ocean Thermal Electric Conversion (OTEC) Systems Like Open Cycle, Closed Cycle, Hybrid Cycle, Prospects of OTEC in India, Applications and Limitations of OTEC, Wave Energy Conversion Mechanics, Energy From Tides, Basic Principle of Tidal Power, Single Basin and Double Basin Tidal Power Plants, Advantages, Limitation and Scope of Tidal Energy. Wave Energy and Power From Wave, Wave Energy Conversion Devices, Advantages and Disadvantages of Wave Energy. ( <b>DIRECT ENERGY CONVERSION</b> ), Need for DEC, Carnot Cycle, Limitations, Principles of DEC. Thermo-Electric Generators, Seebeck, Peltier and Joule Thomson Effects, Figure of Merit, Materials, Applications.
<b>4</b>	<b>Fuel Cells :</b> Introduction, Design Principle and Operation of Fuel Cell, Types of Fuel Cells, Conversion Efficiency of Fuel Cell, Application of Fuel Cells. <b>Hydrogen Energy :</b> Introduction, Properties of Hydrogen as renewable energy, Sources of Hydrogen, Hydrogen Production Methods, Hydrogen Storage, Hydrogen Transportation, Utilization of Hydrogen Gas, Hydrogen As Alternative Fuel For Vehicles, Problems and Limitations of Hydrogen Fuel, Hydrogen Cartridge Development, Economics of Hydrogen Fuel & its Applications.

### **Learning Outcomes:-**

After successful completion of this course, students will be able:

- To understand and the renewable and non renewable energy sources i.e. nonconventional energy sources and conventional energy sources.
- To know about alternative energy sources to meet energy requirement of global scenario.
- To have deep knowledge regarding availability, harnessing, conversion, storage and optimal management of solar energy, wind energy, bio-mass energy, geo-thermal energy, oceanic energy and magneto-hydro dynamic energy.
- To grasp the technological knowhow to get application of nonconventional energy sources with the conventional energy sources to fulfil the global energy need in affordable and economical way.
- To have knowledge of efficient energy management.

### **Books Recommended:-**

1. 'Non Conventional Energy Sources', **G.D.Rai**, *Khanna Publishers*.



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2. 'Solar Energy: Fundamentals and Applications', **H.P. Garg & Jai Prakash**, *Tata McGraw Hill Pub.*
3. 'Solar Energy : Principles of Thermal Collection and Storage', **S.P. Sukhatme**, *Tata McGraw Hill Pub.*
4. 'Alternative Energy Sources', **B.L. Singhal**, *Tech Max Publication.*
5. 'Non Conventional Energy Sources', **S.Hasan Saeed and D.K.Sharma**.
6. 'Magneto Hydro Dynamics', **Kuliovsky and Lyubimov**, *Addison.*
7. 'Solar Engineering of Thermal Process', **Duffic and Beckman**, *John Wile Pub.*
8. 'Non-Conventional Energy Systems', **K Mittal**, *Wheeler Pub.*
9. 'Renewable energy resources', **Tiwari and Ghosal**, *Narosa Pub.*
10. 'Renewable Energy Technologies', **Ramesh & Kumar**, *Narosa Pub.*
11. 'Renewable Energy Sources and Conversion Technology', *Tata Mc Grew Hill.*
12. 'Renewable Energy Sources and Emerging Technologies', **D.P.Kothari**, *Prentice Hall of India Pvt. Ltd.*
13. 'Non Conventional Energy', **Ashok V.Desai**, *New Age International Publishers Ltd.*

### **E-Resources:-**

1. [www.physic.about.com](http://www.physic.about.com)
2. [www.physic.org](http://www.physic.org)
3. [www.Physicsclassroom.com](http://www.Physicsclassroom.com)
4. [www.howstuffwork.com](http://www.howstuffwork.com)
5. [www.colorado.edu/physics/2000](http://www.colorado.edu/physics/2000)
6. [www.ndrs.org.physic.com](http://www.ndrs.org.physic.com)
7. [www.physlinc.com](http://www.physlinc.com)
8. [www.fearophysic.com](http://www.fearophysic.com)
9. [www.hyperphysics.com](http://www.hyperphysics.com)



**C. U. SHAH UNIVERSITY**

## **FACULTY OF SCIENCE**

### **DEPARTMENT OF PHYSICS**

**COURSE: B.Sc.**

**SEMESTER: III**

**SUBJECT NAME: Physics Practical-III**

**SUBJECT CODE: 4SC03PHP1**

#### **Teaching & Evaluation Scheme:-**

Teaching hours/week				Credit	Evaluation Scheme/semester							
Th	Tu	Pr	Total		Theory				Practical			Total Marks
					Sessional Exam		University Exam		Internal		University	
					Marks	Hrs	Marks	Hrs	Pr	TW		
0	0	4	4	2	--	--	--	--	10	10	30	50

**Objectives:-**The general purpose of this course is

- To expose the student knowledge Of Practical related to theory.

**Prerequisites:-**Fundamentalknowledge of Physics Practical.

#### **Course outline:-**

Sr. No.	Course Contents
1	Determine the Young modulus by Cantilever.
2	Determine the Young modulus by bending of beam.
3	Study of one dimensional elastic collision using two spheres.
4	Determine the viscosity of liquid by Searl's co-axial cylinder.
5	Determine the thermal conductivity of cardboard by Lee's method.
6	Temperature of filament and Heat radiation & Verification of Steafen's law.
7	Find the co-efficient of viscosity of water by its flow through a capillary tube uniform bore.
8	Determine the Moment of Inertia of a Fly wheel.
9	Determine the Figure of merit & volt sensitivity of ballistic galvanometer.
10	Measurement of High resistance by leakage.
11	Comparison of Capacitance by De'Sauty's method.
12	Measurement of Specific resistance of electrolyte by Kohlrauch's method.
13	Study of magnetic field of Solenoid.



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<b>14</b>	Determine the Self Induction by Maxwell Bridge.
<b>15</b>	Frequency response & Bandwidth of R. C. Coupled Amplifier.
<b>16</b>	Experimental checkups by Multimeter, ( Power Supply, Resistors, Transistor, Diode, Capacitor)

**Learning Outcomes:-**After successful completion of this course, students have:

- Knowledge of practical's and its application in various fields.

### **Books Recommended:-**

1. 'Practical Physics', **C. L. Arora**, S. Chand Comp. Ltd., New Delhi.
2. 'Advanced Practical Physics', **M. S. Chauhan & S. P. Sing**, PragatiPracation, Meerut.
3. 'Experimental Physics', **University GranthNirman Board**, (Gujarati Medium).
4. 'Physics through experiments Vol. I & II', **B. Sarafetlal**.
5. 'Advanced Practical Physics', **S L Gupta and V Kumar**, PragatiPrakashan, Meerut.
6. 'An advanced course in practical Physics', **D. Chattopadhyay and P. C. Rakshit**, New Central book agency Pvt. Ltd.

### **E-Resources:-**

1. [www.physic.about.com](http://www.physic.about.com)
2. [www.physic.org](http://www.physic.org)
3. [www.Physicsclassroom.com](http://www.Physicsclassroom.com)
4. [www.howstuffwork.com](http://www.howstuffwork.com)
5. [www.colorado.edu/physics/2000](http://www.colorado.edu/physics/2000)
6. [www.ndrs.org.physic.com](http://www.ndrs.org.physic.com)
7. [www.physlinc.com](http://www.physlinc.com)
8. [www.fearophysic.com](http://www.fearophysic.com)
9. [www.hyper.physics.com](http://www.hyper.physics.com)



**C. U. SHAH UNIVERSITY**

**FACULTY OF SCIENCE**  
**DEPARTMENT OF ENGLISH**

**COURSE: B.Sc.**

**SEMESTER: III**

**SUBJECT NAME: Communication Skills in English (CSE)**

**SUBJECT CODE: 4SC03CSE1**

**Teaching & Evaluation Scheme:-**

Teaching Scheme				Credit	Evaluation Scheme						
Th	Tu	Pr	Total		Th	Hrs	Sessional Exam	Hrs	Term Work	Practical / Comprehensive Viva	Total
02	02	--	04	03	70	3	30	1.5	20	30	150

**Objectives:**

- To train them in basic fundamentals skills of Communication – LSRW through study of Literature

**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.

**Detail Course Content:**

Unit No.	Content In details including Its Sub Topics	Min.Hours
	<b>Part-A Communication</b>	
<b>1</b>	<b>Fundamental Concepts of Communication</b>	<b>10</b>
	<ul style="list-style-type: none"> <li>Meaning and objectives of communication</li> <li>Functions of communication</li> <li>Definitions of communication</li> <li>Process of communication</li> <li>Characteristics of communication</li> <li>Levels of communication</li> <li>Scope of communication</li> <li>Non Verbal Communication</li> </ul>	
<b>2</b>	<b>Role of Language In Communication/Language &amp; Communication Relationship</b>	<b>04</b>
	<ul style="list-style-type: none"> <li>Role of Languages in Communication</li> <li>Characteristics of Language</li> <li>English as a Language of Global Communication</li> </ul>	-
<b>3</b>	<b>Reading Skill</b>	<b>06</b>
	<ul style="list-style-type: none"> <li>Fundamental Concepts of Reading</li> <li>Techniques of Reading: Scanning &amp; Skimming</li> <li>Paraphrasing</li> <li>Reading selected text in the class room, where students will explorer/express their own views/Ideas in Reading, Writing &amp; Speaking.</li> </ul>	-



<b>4</b>	<b>Writing Skills</b>	<b>06</b>
	<b>Informal Letter Writing</b> <ul style="list-style-type: none"> <li>- Introduction to Informal Letter</li> <li>- Characteristics of Letter</li> <li>- Types of Letter</li> <li>- Official Letters: to the university, college principal, Municipal Corporation etc.</li> </ul> <b>Essay Writing</b> <ul style="list-style-type: none"> <li>- How to Write Essay(s) effectively?</li> <li>- List of Select Essays for Practice (Technical and Non Technical)</li> </ul>	-
<b>5</b>	<b>Speaking Skills (Students Forum)</b> <ul style="list-style-type: none"> <li>- Foreign Language Club will be Started (Student Forum)</li> <li>- Students will express their views on Current Topics/ Issues in Group / Individually (Technical &amp; Non Technical Topics)</li> </ul> <b>Speaking English through Correct Phonetic Transcription</b> <ul style="list-style-type: none"> <li>- Basic Concepts in Phonetics</li> <li>- Articulation of sound</li> <li>- Symbols of vowels and consonants</li> <li>- Phonetic transcription of words</li> </ul> <b>Conversation Skills</b> <ul style="list-style-type: none"> <li>- An Introduction</li> <li>- Situation based conversation</li> <li>- Telephonic conversation</li> </ul>	<b>08</b>
<b>6</b>	<b>Concepts of Grammar</b>	<b>06</b>
	<ul style="list-style-type: none"> <li>• Degree of Comparison</li> <li>• Transformation of Sentences</li> <li>• Interchange of Simple, Complex and Compound sentences</li> </ul>	
<b>7</b>	<b>Vocabulary Building</b> <ul style="list-style-type: none"> <li>• Suffixes</li> <li>• Prefixes</li> <li>• Confusable</li> </ul>	<b>02</b>
	<b>Part-B Literary Text</b>	
	"One Night @ the Call Centre" by Chetan Bhagat- Rupa Publication	<b>18</b>

### Resources:

- "One Night @ the Call Centre" by Chetan Bhagat- Rupa Publication
- Green Andy, Effective Personal Communication Skills For Public Relations, Kogan Page, Limited, 2006
- Basic Business Communication, by Flatly and Lesicar
- Basic Communication Skills for Technology, by Andrea J. Rutherford, by Pearson Education
- From sentence to paragraph, by William J. Kelly and Deborah L. Lawton, by Longman
- Technical Communication : Principles and Practice, by Meenaxi Raman and Sangeeta Sharma, Oxford University Press
- An Intermediate English Grammar, Raymond Murphy, Cambridge University Press
- A High School English Grammar, Wren & Martin, S. Chand Publication
- A Course in Phonetics for Spoken English, Sethi & Dhamija

<b>6</b>	<b>Learning Phonetics for Effective Speaking</b>
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## **C. U. SHAH UNIVERSITY**

	<ul style="list-style-type: none"> <li>• Speech Mechanism</li> <li>• Sounds, Vowels &amp; Consonants</li> <li>• Accents, Tone, Syllable, Intonation Pattern &amp; Phonetics Transcription</li> </ul>
7	<b>Revision of Grammar</b> Some of the grammatical topics should be revised to strengthen LSRW SKILLS of the students
8	<b>Vocabulary Developing</b> <ul style="list-style-type: none"> <li>• Homophones</li> <li>• Homonyms</li> <li>• One word Substitute</li> </ul>
9	<b>PART – B Literature</b> <b>Prose (One Act Play)</b> <ul style="list-style-type: none"> <li>• “A Marriage Proposal” by Anton Chekhov</li> </ul> <b>Poetry</b> <ul style="list-style-type: none"> <li>• “The Night of Scorpion ” by Nissim Ezekiel</li> <li>• “The Lamb” by William Black</li> <li>• “The Pulley ” by George Herbert</li> </ul>

### **Resources:**

- Green Andy, Effective Personal Communication Skills For Public Relations, Kogan Page, Limited, 2006
- Technical Communication, by D.K.Chakrader, Tech-max publication
- Basic Business Communication, by Flatly and Lesicar
- Basic Communication Skills for Technology, by Andrea J. Rutherford, by Pearson Education
- From sentence to paragraph, by William J. Kelly and Deborah L. Lawton, by Longman
- Technical Communication : Principles and Practice, by Meenaxi Raman and Sangeeta Sharma, Oxford University Press
- An Intermediate English Grammar, Raymond Murphy, Cambridge University Press
- A High School English Grammar, Wren & Martin, S. Chand Publication
- A Course in Phonetics for Spoken English, Sethi & Dhamija
- Masks: One Act Plays (Ed) D. S. Maini. Macmillan.
- Wing word: A Collection of Poetries.