

# JHARKHAND RAI UNIVERSITY



## **MINING ENGINEERING**

### **B.Tech**



## SYLLABUS

## SEMESTER II

Kamre | Ratu Road | Ranchi | Jharkhand

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## B.TECH SEMESTER II

BTECH IN MINING ENGINEERING												
SEMESTER II												
S.No.	Subject Code	Name of Subject	Periods			Evaluation Scheme				Subject Total	Credit	Hours
			L	T	P	Assignment	TA	Total	ESE			
1	9.151	Applied Physics II	3	0	0	20	10	30	70	100	3	3
2	9.152	Environmental Science	3	0	0	20	10	30	70	100	3	3
3	9.153	Engineering Thermodynamics	3	0	0	20	10	30	70	100	3	3
4	9.154	Data Structure	2	0	0	20	10	30	70	100	2	2
5	9.155	Mathematics II	3	0	0	20	10	30	70	100	3	3
6	9.156	Basic Electrical & Electronics Engineering	3	0	0	20	10	30	70	100	3	3
7	40B.151	Life Skills II	2	0	0	20	10	30	70	100	2	2
<b>8</b>	<b>14B.201</b>	<b>**Disaster Management</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>10</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>0</b>	<b>3</b>
<b>PRACTICAL/DESIGN/DRAWING/SESSIONAL</b>												
1	9P.151	Applied Physics II Lab	0	0	2		20	20	30	50	1	2
2	9P.154	Data Structure Lab	0	0	2		20	20	30	50	1	2
3	9P.156	Basic Electrical & Electronics Engineering Lab	0	0	2		20	20	30	50	1	2
4	9P.157	Work Shop Practice II	0	0	4		20	20	30	50	2	4
									<b>TOTAL</b>	<b>900</b>	<b>24</b>	<b>32</b>

- MOOCS introduced through SWAYAM in all semester.
- \*\* NOTE: Qualifying Non Credit Course

**Program:** B.Tech

**Semester:** Second

**Course:** Applied Physics II

**Course Code:** 9.151

L	T	P	C
3	0	0	3

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### Course Objective:

- An ability to apply Knowledge of mathematics, science and engineering.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to function on multidisciplinary teams.
- An ability to identify, formulate and solve engineering problems.
- The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.

### Unit I

Special Theory Of Relativity :Postulates, Galilean transformations, Lorentz transformations, length contraction, time dilation, velocity addition, mass change and Einstein's mass energy relation.

### Unit II

Quantum Mechanics: Planck's theory of black-body radiation, Compton effect , wave particle duality, De Broglie waves, Davisson and Germer's experiment, uncertainty principle, physical interpretation of wave function and its normalization, expectation value. Schrodinger equation in one dimension, solutions of time-independent Schrodinger equation for free particle, particle in an infinite square well, potential barrier and tunneling, hydrogen atom.

### Unit III

Statistical Physics and Thermodynamics: Elementary ideas, comparison of Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics. Zeroth law, first law, second law, entropy, heat transfer, steady state one-dimensional heat conduction.

### Unit IV

Lasers and Applications: Emission of light by atoms, spontaneous and stimulated emission, Einstein's A and B coefficients, laser: population-inversion, properties of laser radiation, Ruby & He-Ne lasers, applications of lasers and, elementary ideas of holography and fiber optics. Nuclear Physics: Nuclear forces, binding energy, liquid drop model, fission, nuclear reactors, fusion, energy processes in stars, controlled thermonuclear reactions.

### Suggested Readings:

1. *Mathematical Physics* : Gupta & Kumar
2. *Principles of Electromagnetic* : Matthew N.O.Sadiku
3. *Engineering Physics* : R.K.Gaur & S.L. Gupta
4. *Engineering Physics* : G.S. Raghuvanshi
5. *Modern Engineering Physics*: A.S.Vasudeva

6. *A Textbook of Optics : Brij Lal & Subramanyam*
7. *Heat, Thermodynamics & Statistical Physics : Brij Lal ,Subramanyam & P.S.Hemne*
8. *Nuclear Physics : D.C. Tayal*
9. *Optics : Ajoy Ghatak*

**Program:** B.Tech

**Semester:** Second

**Course:** Applied Physics II Lab

**Course Code:** 9P.151

L	T	P	C
0	0	2	1

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### List of Experiments:

1. To determine Young' modulus of the material of a given wire using Searle's Apparatus
2. To determine the unknown resistance of given wire using Potentiometer.
3. To determine the wavelength of sodium light by Newton's ring method.
4. To measure the wavelength of Mercury spectrum using Spectrometer grating.
5. To study the variation of magnetic field with distances using Helmholtz Galvanometer.

**Program:** B.Tech

**Semester:** Second

**Course:** Environmental Studies

**Course Code:** 9.152

L	T	P	C
3	0	0	3

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### Course Objective:

- Now a day all regulatory bodies have given emphasis on environmental studies to save our environmental.
- In B.Tech course students are studying environmental study because in every aspect of their studies.
- They are studying about machine or land or water or space all are the important component of environment.
- The Environmental studies are based on intellectual property right (IPRs) have become important in a biodiversity-rich country like India to protect microbes, plant and animals that have useful genetic properties. Destruction of habitats, over-use of energy resource and environmental pollution has been found to be responsible for the loss of a large number of lives.
- It is feared that a large portion of life on the earth may get wiped out in the near future.

### Unit I

#### Multidisciplinary nature of environmental studies, Natural Resources

Definition, scope and importance need for public awareness.

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 forest and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, 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 non-renewable 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.

### Unit II

#### Ecosystems, Biodiversity and its conservation

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.

- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem:-
  - a. Forest ecosystem
  - b. Grassland ecosystem
  - c. Desert ecosystem
  - d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
- Introduction – Definition: genetic, species and ecosystem diversity.
- Bio geographical 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.

### **Unit III:**

#### **Environmental Pollution, Social Issues and the Environment**

##### Definition

- Cause, effects and control measures of:-
  - a. Air pollution
  - b. Water pollution
  - c. Soil pollution
  - d. Marine pollution
  - e. Noise pollution
  - f. Thermal pollution
  - g. Nuclear hazards
- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management: floods, earthquake, cyclone and landslides.
- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case Studies
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

## **Unit IV**

### **Human Population and the Environment, Field work**

- Population growth, variation among nations.
- Population explosion – Family Welfare Programme.
- Environment and human health.
- Human Rights.
- Value Education.
- HIV/AIDS.
- Women and Child Welfare.
- Role of Information Technology in Environment and human health.
- Case Studies.
- Visit to a local area to document environmental assets-river/forest/grassland/hill/mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc.

### ***Suggested Reading:***

1. *G. Kiely – Environmental Engineering Irwin/ McGraw Hill International Edition, 1997*
2. *M. L. Davis and S. J. Masen, Principles of Environmental Engineering and Science, McGraw Hill International Edition, 2004*



**Program:** B.Tech

**Semester:** Second

**Course:** Engineering Thermodynamic

**Course Code:** 9.153

L	T	P	C
3	0	0	3

### Course Objective:

- To understand the nature and role of thermodynamic properties
- To reorganize and understand different forms of energy
- An ability to understand work and heat interaction
- Acquire working knowledge of all laws of thermodynamics

## Unit I

### Introduction to Engineering Thermodynamics

Scope and applications of thermodynamics, System, surroundings, boundary, control volume, types of system, unit and dimensions. Macroscopic and Microscopic view point, Thermodynamic Properties, Path function, Point function, State and Equilibrium, Process, Cycle, Quasi-static process and its significance. Energy, Flow Energy, Potential energy, Kinetic energy, Heat transfer, sign convention (Numerical). Work transfer, shaft work, displacement work, power (Numerical). Zeroth law of thermodynamics, temperature, and temperature scales .Numerical on temperature measurement.

## Unit II

### First Law of Thermodynamics

Joule's experiment, internal energy as a property, 1st law of thermodynamics, First Law applied to closed system undergoing a process/ a cycle, PMM-I, Numerical on application of 1st law to closed system. Enthalpy and internal energy of an ideal gas, specific heat,  $C_v$  and  $C_p$ . Principles of conservation of mass and energy, steady state steady flow process, continuity equation. Steady flow energy equation (SFEE), applications of SFEE. Significance of  $-\int v dP$ , relation between  $\int P dv$  and  $-\int v dP$ , Numerical on application of 1st law to steady flow systems.

## Unit III

### Second Law of Thermodynamics

Limitations of First Law, thermal reservoir, heat engine & its efficiency, Refrigerator and Heat pump, Coefficient of Performance. Statements of second law, Equivalence of statements of second law, PMM-II, Numerical on application of 2nd law. Reversibility and Irreversibility, Causes of irreversibility, Carnot cycle, Reversed Carnot cycle, their analysis. Carnot theorem, Absolute temperature scale, Numerical on Carnot cycle, Carnot theorem and temperature scales. Entropy – Introduction, Law for two isentropic path, Entropy as property, Clausius theorem (No numerical).Clausius statement, Clausius inequality, Entropy principle.

## Unit IV

### Properties of Ideal Gases

Ideal gas, Laws for an ideal gas, Equation of state, Universal gas constant, Characteristic gas constant, Relation between  $C_p$ ,  $C_v$  and  $R$ . Ideal Gas Processes, their presentation on p-v, T-S plane, Analysis for Heat transfer, Work transfer, change in Internal Energy, enthalpy and Entropy –Isobaric, Isochoric and Isothermal processes (Numerical ). Reversible Adiabatic process, presentation on p-v, T-S plane, Analysis for Heat transfer, Work transfer, and change in Internal Energy, enthalpy and Entropy. Reversible

Polytropic process, presentation on p-v, T-S plane, Analysis for Heat transfer, Work transfer, and change in Internal Energy, enthalpy and Entropy. Numerical on above gas processes.

### **Properties of Steam**

Pure substance, Phases of pure substances, Phase change diagrams (p-v, p-T, T-s) for water substance at standard atmospheric pressure, sensible heat and latent heat of steam. Terminology: dry, superheated, wet steam, saturation temperature, critical point and triple point, use of steam table. Numerical using steam table. Numerical using Mollier diagram. Measurement of dryness fraction by using separating and throttling calorimeter.

### ***Suggested Readings:***

1. *Thermal Engineering by R.K Rajput*
2. *Engineering Thermodynamics by PK NAG*
3. *Engineering Thermodynamics by D.S. Kumar*

**Program:** B.Tech

**Semester:** Second

**Course:** Data Structure

**Course Code:** 9.154

L	T	P	C
2	0	0	2

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### Course Objective:

- To teach efficient storage mechanisms of data for an easy access.
- To design and implementation of various basic and advanced data structures.
- To introduce various techniques for representation of the data in the real world.
- To develop application using data structures.
- To teach the concept of protection and management of data.

### Unit I

**Introduction:** Basic Terminology, Elementary Data Organization, Algorithm, Efficiency of an Algorithm, Time and Space Complexity, Asymptotic notations: Big-Oh, Time-Space trade-off. Abstract Data Types (ADT)

**Arrays:** Definition, Single and Multidimensional Arrays, Representation of Arrays: Row Major Order, and Column Major Order, Application of arrays, Sparse Matrices and their representations. Linked lists: Array Implementation and Dynamic Implementation of Singly Linked Lists, Doubly Linked List, Circularly Linked List, Operations on a Linked List. Insertion, Deletion, Traversal, Polynomial Representation and Addition, Generalized Linked List.

### Unit II

**Stacks:** Abstract Data Type, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C, Application of stack: Prefix and Postfix Expressions, Evaluation of postfix expression, recursion, Tower of Hanoi Problem, Simulating Recursion, Principles of recursion, Tail recursion, Removal of recursion Queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, Array and linked implementation of queues in C, Dequeue and Priority Queue.

### Unit III

**Trees:** Basic terminology, Binary Trees, Binary Tree Representation: Array Representation and Dynamic Representation, Complete Binary Tree, Algebraic Expressions, Extended Binary Trees, Array and Linked Representation of Binary trees, Tree Traversal algorithms: In order, Preorder and Post order, Traversing Binary trees, Huffman algorithm.

### Unit IV

**Graphs:** Terminology, Sequential and linked Representations of Graphs: Adjacency Matrices, Adjacency List, Adjacency Multi list, Graph Traversal : Depth First Search and Breadth First Search, Connected Component, Spanning Trees, Minimum Cost Spanning Trees: Prim and Kruskal algorithm. Transitive Closure and Shortest Path algorithm: Warshal Algorithm and Dijkstra Algorithm, Searching : Sequential search, Binary Search, Comparison and Analysis Internal Sorting: Insertion Sort, Selection, Bubble Sort, Quick Sort, Two Way Merge Sort, Heap Sort, Radix Sort, Practical consideration for Internal Sorting.

**Search Trees:** Binary Search Trees(BST), Insertion and Deletion in BST, Complexity of Search Algorithm, AVL trees, Introduction to m-way Search Trees, B Trees & B+ Trees .Hashing: Hash Function, Collision Resolution Strategies Storage Management: Garbage Collection and Compaction.

### Suggested Readings:

1. *C & Data structures - P. Padmanabham, B.S. Publications.*
2. *Data Structures and Program Design in C, R.Kruse, C.L. Tondo, BP Leung, Shashi M, Second Edition, Pearson Education.*

**Program:** B.Tech

**Semester:** Second

**Course:** Data Structure Lab

**Course Code:** 9P.154

L	T	P	C
0	0	2	1

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### List of Experiments:

1. Program to read and display n numbers using an array.
2. Program to transpose a 3 X 3 matrix.
3. Program to insert a number at a given location in an array.
4. Program to delete a number from a given location in an array.
5. Program to create a linked list and perform insertions a) at beginning b) at end c) before a given node  
d) After a given node
6. Program to create a linked list and perform deletions a) from beginning b) from end c) at a given node  
d) After a given node
7. Program to create a circular linked list and perform insertion at the beginning of list.
8. Program to create a circular linked list and perform insertion at the end of list.
9. Program to create a circular linked list and perform deletion from the beginning of list.
10. Program to create a circular linked list and perform deletion from the end of list.
11. Program to perform Push, Pop and Peep operations on a stack.
12. Program to implement a linear queue.
13. Program to implement a linked queue.
14. Program to implement a priority queue.
15. Program to implement a Binary Search tree and perform the following:
  - a) Insert Element
  - b) Preorder Traversal
16. Program to implement a Binary Search tree and perform the following:
  - a) Insert Element
  - b) Post-order Traversal
17. Program to search an element in an array using linear search technique.
18. Program to search an element in an array using binary search technique.
19. Program to sort an array using insertion sort algorithm.
20. Program to implement quick sort algorithm.

**Program:** B.Tech

**Semester:** Second

**Course:** Mathematics II

**Course Code:** 9.155

L	T	P	C
3	0	0	3

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### Course Objective:

- Apply the principles of differential calculus to solve a variety of practical problems in engineering and applied science.
- Apply the principles of partial differentiation, directional derivatives and double integral.
- To find the velocity and acceleration of a particle moving along a space curve.

### Unit I

**Multiple Integral & Vector Calculus:** Operations under the sign of integration, Multiple integrals, change of order of integration, Transformation of Co-ordinates, Area, Volume and Surface area of solids using multiple integrals. Vector Calculus: Differentiation & Integration of vectors, Directional derivatives, Gradient, Divergence, Curl, Green's theorem, Stoke's theorem, and Gauss Divergence theorem, with applications.

### Unit II

**Ordinary Differential Equations:** Linear differential equations: Bernoulli's from exact equations, nonlinear equations, Clairaut's form, and higher order equations with constant coefficients. Cauchy's and Legendre's differential equations. Solution of higher order equation by the change of independent variable, Method of variation of Parameters in Simple cases, Applications to Engineering problems.

### Unit III

**Partial differential equations:** Formation of partial differential equations. Lagrange's first order linear equations. Non - linear equations. Higher order differential equations with constant Co-efficient. Non homogeneous equations: solution by separation of variables. Boundary value Problems. wave equation in one dimension and its solution. Derivation of one dimensional heat equation and its solution.

### Unit IV

**Algebra of Matrices:** Rank of a matrix. Consistency and Inconsistency of a system of linear equations. Eigen Values and Eigen Vectors. Cayley Hamilton Theorem.

### Suggested Readings:

1. H.K. Dass, "Advance Engineering Mathematics"; S.Chand &Co., 9<sup>th</sup> Revised Ed., 2001.
2. B.S. Grewal, "Higher Engineering Mathematics".
3. E. Kreyszig, "Advance Engineering Mathematics"

**Program:** B.Tech

**Semester:** Second

**Course:** Basic Electrical & Electronics Engg.

**Course Code:** 9.156

L	T	P	C
3	0	0	3

### Course Objective:

- Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance.
- To provide knowledge in the basic concepts of Electric Circuits, Electrical machines and Measurement techniques.
- Ability to perform speed characteristic of different electrical machine

### Unit I

**AC & DC Circuits :** Basic definitions, symbols and units of all circuit elements, Ohm's law & its applications, Kirchhoff's laws, Average & RMS values, Concept of Phasor representation RLC series & parallel, Resonance in AC circuits, Simple problems in DC circuit analyses, Simple problems in AC circuit analyses.

### Unit II

**Magnetic Circuits:** Terminology & definitions, mmf, reluctance etc, Analyses of composite magnetic circuits, Concept of Leakage flux & fringing, Faradays' laws, Induced e.m.f & inductances, Energy storage in magnetic systems, B-H curve, Hysteresis & eddy currents, Magnetic materials.

### Unit III

**Semiconductor fundamentals:** Basic atomic structure, energy levels of insulators, conductors & semiconductors, Intrinsic & Extrinsic semiconductors, Effect of doping & temp. On conductivity, Carrier densities, diffusion & drift carriers, Hall effect, carrier recombination & generation, Continuity equation & Thermal Equilibrium. Semiconductor Junctions: P-N Junction Terminology & definitions (contact potential, space charge, depletion width etc.), Forward & Reverse biased P-N junction, P-N junction diode & it's V-I characteristics, Zener & avalanche breakdown, Special diodes. Photodiodes, LED, Varactor diode, Zener diode.

### Unit IV

**Diode Circuits:** Diode as a circuit Element, Load Line concept, Introduction to Regulated Power Supply, PN Diode as Half Wave, Full Wave and Bridge Rectifier, PIV, Rectification Efficiency and Ripple Factor Calculation, Filters and its Types, Shunt Capacitor, Series Inductor, LC Filter and Pi Filter, Additional Diode Circuits (principle only), Peak Detector, Clipping and Clamping circuit. **Digital Electronics:** Introduction to digital and analog systems, advantages of digital systems, Number systems and conversions, decimal, binary, octal and hexadecimal, Gray code, BCD (weighted and non weighted) and ASCII codes.

### Suggested Readings:

1. *Basic Electrical Engineering, Fitzgerald, Hinginbotham*
2. *Basic Electrical Engineering I.J. Nagrath and D.P. Kothari, 2nd Edition, TMH, Delhi.*
3. *Electric circuits- Schaum Series*
4. *Electrical Engineering- Del Toro*

**Program:** B.Tech

**Semester:** Second

**Course:** Basic Electrical & Electronics Engg. Lab

**Course Code:** 9P.156

L	T	P	C
0	0	2	1

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### List of Experiments:

1. A basic introduction to laboratory instrument with its specification.
2. To determine the Resistance value using Color-code.
3. To determine the equivalent Resistance in Series & Parallel.
4. To determine Characteristics of PN Junction diode.
5. To determine Characteristics of Zener diode.
6. To Study the characteristics of BJT in CB configuration.
7. To Study the characteristics of BJT in CE configuration.
8. To study the process of soldering.



**Program:** B.Tech

**Semester:** Second

**Course:** Life Skills II

**Course Code:** 40B.201

L	T	P	C
2	0	0	2

**Course Objective:** To impart basic skills of Professional Communication in English through intensive practice to the Students, so as to enable them to function confidently & effectively in that Language in the Professional Sphere of their life.

The student must have some basic command of English so that the Student must be able to:

- At the end of the course the student should become a good communicator not only in the organization but in day today life also. Should know and learn the dynamics of external and internal communication.
- Use some 2000 (at least 1500) general-purpose words of English to express himself/herself in writing & 1500 such words to talk about day-to-day events & experiences of life.
- Understand slowly-delivered spoken material in Standard Indian English, and
- Speak reasonably clearly (if not fluently) on routine matters with his fellow Students, with proper word stress, intonation pattern, accent and perfect articulation.
- Should have command over the language.

## **WRITING SKILLS**

### **Unit I**

#### **Letter Writing**

- Business/official Letters
- Letter Writing Skills
- Planning of the Letter
- Letter Writing Process
- Form & Structure
- Essentials of Letter Writing
- Types of Professional Letters: letter of enquiry, letter of placing order, information seeking letter, letter of claim & complaint, information giving letter, letter of acceptance, letter of rejection

### **Unit II**

#### **Professional Writing**

- Job Application, introduction, layout & format (specimen)
- D O letter
- Resume & Job Application
- Covering Letter
- Editorial Letter
- Writing Mails & SMS (E-Language)
- Notice, Memo, Circular & Minutes Writing.
- Social Letters (letters to friends/relatives etc.)

## **STUDY SKILLS**

### Unit III

#### Reading Skills

- Newspaper Reading
- Mechanics of Note making
- Note Making Techniques/ Reduction Devices
- Organization Techniques/Method of Sequencing
- Mechanics of Summarizing
- Outlining & Paraphrasing

### Unit IV

#### Referencing Skills

- Referencing Skills
- Method of Referencing
- Using Foot Notes
- Scanning and Skimming Skills
- Finding required Information/Meaning/ Pronunciation

### **Suggested Readings:**

1. *Monippally, Matthukutty. M. 2001. Business Communication Strategies. 11<sup>th</sup> Reprint. Tata McGraw-Hill. New Delhi*
2. *Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates. Prentice Hall Press. New York*
3. *Lewis, Norman. 1991. Word Power Made Easy. Pocket Books*
4. *Sen , Leena .Communication Skills ; Eastern Economy Edition*
5. *Ghanekar, Dr. Anjali. Essentials of Business Communication Skills ; Everest Publishing House*
6. *David Green. Contemporary English Grammar, Structure & Composition ; MacMillan*
7. *Dictionary; Oxford*
- *Dictionary ; Longman*

### **Websites**

- [www.tatamcgrawhill.com/digital\\_solutions/monippally](http://www.tatamcgrawhill.com/digital_solutions/monippally)
- [www.dictionary.cambridge.org](http://www.dictionary.cambridge.org)
- [www.wordsmith.org](http://www.wordsmith.org)
- [www.edufind.com](http://www.edufind.com)
- [www.english\\_the\\_easy\\_eay.com](http://www.english_the_easy_eay.com)
- [www.englishclub.com](http://www.englishclub.com)
- [www.english\\_grammar\\_lessons.com](http://www.english_grammar_lessons.com)
- [www.wikipedia.org/wiki/english\\_grammar](http://www.wikipedia.org/wiki/english_grammar)

**Program:** B.Tech

**Semester:** Second

**Course:** Disaster Management

**Course Code:** 14B.201

L	T	P	C
3	0	0	0

### Course Objective:

- Develop an understanding of the key concepts, definitions a key perspectives of All Hazards Emergency Management
- Understand the Emergency/Disaster Management Cycle
- Have a basic understanding for the history of Emergency Management
- Develop a basic under understanding of Prevention, Mitigation, Preparedness, Response and Recovery
- Develop a basic understanding for the role of public private partnerships.

### Unit I

Understanding Disasters: Understanding the concepts and definitions of disaster, hazard, vulnerability, risk, importance, dimensions & scope of Disaster Management, Disaster Management cycle and disaster profile of India.

### Unit II

Types, Trends, Causes, Consequences and Control of Disaster: Geological Disasters (earthquakes, landslides, tsunami, mining); Hydro-Meteorological Disasters (floods, cyclones, lightning, thunder-storms, hail storms, avalanches, droughts, cold and heat waves); Biological Disasters (epidemics, pest attacks, forest fire); Technological Disasters (chemical, industrial, radiological, nuclear, bomb threat, explosion) and Man-made Disasters (building collapse, rural and urban fire, road and rail accidents, nuclear, radiological, chemicals and biological disasters; terrorist attack, , sudden shooting); Global Disaster Trends–Emerging Risks of Disasters–Climate Change and Urban Disasters; Financial emergency( risk of eviction, risk in arrears, sudden health emergency, family emergency, unexpected loss of income).

### Unit III

Prevention and Mitigation of Disaster: Disaster Mitigation: meaning and concept, Disaster Mitigation Strategies Emerging Trends in Disaster Mitigation, Mitigation management, Role of Team and Coordination. Disaster Preparedness: Concept & Nature, Disaster Preparedness Plan, Preventions. Roles & Responsibilities of Different Agencies and Government, Technologies for Disaster Management. Early Warning System; Preparedness, Capacity Development; Awareness during Disaster.

### Unit IV

Applications of Science and Technology for Disaster Management & Mitigation: Geo-informatics in Disaster Management (RS, GIS, GPS and RS) Disaster Communication System (Early Warning and Its Dissemination) Land Use Planning and Development, Regulations, Disaster Safe Designs and Constructions, Structural and Non Structural Mitigation of Disasters.

### Suggested Reading:

1. *Disaster Management- J. P. Singhal, Laxmi Publications.*
2. *Disaster Management - Dr. Mrinalini Pandey, Wiley India Pvt. Ltd.*

3. *Disaster Science and Management- Tushar Bhattacharya, McGraw Hill Education (India) Pvt. Ltd.*
4. *Disaster Management: Future Challenges and Opportunities - Jagbir Singh, K W Publishers Pvt. Ltd.*

**Program:** B.Tech

**Semester:** Second

**Course:** Workshop Practice II

**Course Code:** 9P.157

L	T	P	C
0	0	4	2

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### Course Objective:

- To develop in students, graphic skills for communication of concepts, ideas and design of engineering products and expose them to existing national standards related to technical drawings.
- Students will be able to use their skills during their project work.
- Students will be able to understand the practical difficulties encountered in industries during any assembly work
- Students will be able to do simple electronic and electrical work throughout their carrier.
- Students will be able to rectify simple problem connected with pipe fittings

### Unit I

**CARPENTRY SHOP:** Introduction. Various types of woods. Different types of tools, machines and accessories.

### Unit II

**WELDING SHOP:** Introduction, types of welding, ARC welding, Gas welding, Gas Cutting. Welding of dissimilar materials, Selection of welding rod material Size of welding rod and work piece. Different types of flame. Elementary symbolic representation, Safety precautions in welding safety equipments and its use in welding processes.

### Unit III

**FITTING SHOP:** Introduction, Various marking, measuring, cutting, holding and striking tools. Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc. working Principle of Drilling machine, tapping dies its use. Safety precautions and safety equipments.

### Unit IV

**PLUMBING SHOP:** Introduction, Various marking, measuring, cutting, holding and striking tools. Different G.I.pipes, PVC pipes, flexible pipes used in practice. G. I. pipes and PVC pipes fittings and accessories, Adhesive solvents-chemical action, piping layout.

**SHEET METAL SHOP:** Introduction, Various types of tools, Equipments and accessories, Different types of operations in sheet metal shop. Soldering and riveting. Safety precautions.

### Suggested Reading:

1. *Workshop Technology* S.K. Hajara Chaudhary Media Pro-motors and Publishers, New Delhi
2. *Workshop Technology* B.S. Raghuvanshi Dhanpat Rai and sons, New Delhi
3. *Production Technology* R K Jain Khanna Publishers, New Delhi
4. *Workshop Technology* H.S.Bawa Tata McGraw Hill Publishers,