

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum.

Institute conducts different activities mentioned below to inculcate Professional Ethics, Gender, Human Values, Environment and Sustainability in students through their planned Curriculum.

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Description of Relevant courses in curriculum

Sr. No.	Course Name	Course Code	Year Of Introduction	Program Name	Description
Engineering Science department					
1.	Communication Skills	BTHM104	2017	First year Engineering	Teaching the Professional Ethics in First year Engineering Curriculum. The course help student to Improved communication, interaction and presentation of ideas, Right attitudinal and behavioural change.
2.	Energy and Environment Engineering	BTES105	2017	First year Engineering	Teaching Environment and Sustainability Principals in First year Engineering Curriculum . This course highlights the aspects related to air pollution, noise pollution, low cost waste water treatment systems.
3.	Field Training /	BTES21P	2017	First year Engineering	Teaches the Professional Ethics in First year Engineering Curriculum

	Internship / Industrial Training				by bringing students in direct contact with industry experts and professionals.
Computer Science & Engineering Department					
1.	Basic Human Rights	BTHM3403	2022	Computer Science & Engineering S.E	Teaching the Human Values, Professional Ethics in Second year Computer Engineering Curriculum. This course enables the students to understand the concepts of Human Rights and Human Duties, Society, Religion, Culture, and their Inter-Relationship, Social Structure and Social Problems, State, Individual Liberty, Freedom and Democracy, Human Rights in Indian Constitution and Law.
2.	Business Communication	BTCOE505 Elective – IV	2019	Computer Science & Engineering T.E	Teaching the Professional Ethics in Third year Computer Engineering Curriculum. This course highlights the concept related to Interpersonal Communication, Relational Communication, Organizational Communication, Written Communication in International Business, Role of Technology in international Business Communication, Ethics in Business Communication
3.	Development Engineering	BTCOE605 A	2019	Computer Science & Engineering T.E	This course highlights the concept of Social Justice, Social Justice and Engineering, Religious Perspectives, Secular Perspectives, World Poverty and Development, Poverty in the India, Sustainable Development, Culture and Global Competence, The Engineer's Role.
4.	National Social Service	BTCOE605 B	2019	Computer Science & Engineering T.E	This course highlights the concept of Youth and community mobilization, Importance and Role of Youth Leadership, Life Competencies and skill, Social Harmony and National Integration, Youth Development Programmes in India.

5.	Consumer Behaviour	BTCOE605 Elective – VII	2019	Computer Science & Engineering T.E	Teaching Human Values Ethics in Third year Computer Engineering Curriculum. This course highlights the concept related to Introduction to the Study of Consumer Behavior, Market Research and Consumer Behavior, The Consumer Decision Making Process, Models of Consumer Behavior, Psychological Influences on Consumer Decision Making, Sociological Influences on Consumer Decision Making, Organizational Buying.
Civil Engineering Department					
1.	Basic Human Rights	BTCVOE606B	2022	Civil Engineering T.E	Teaching the Human Values, Professional Ethics in Second year Civil Engineering Curriculum. This course enables the students to understand the concepts of Human Rights and Human Duties, Society, Religion, Culture, and their Inter-Relationship, Social Structure and Social Problems, State, Individual Liberty, Freedom and Democracy, Human Rights in Indian Constitution and Law.
2.	Environmental Engineering	BTCVC402	2022	Civil Engineering S.E	Teaching Environment and Sustainability Principals in Third year Engineering Curriculum. This course highlights the aspects related to air pollution, noise pollution, low cost waste water treatment systems.
3.	Advanced Environmental Engg	BTCVPE506	2022	Civil Engineering T.E	Teaching Environment and Sustainability Principals in Third year Engineering Curriculum. This course highlights the aspects related to air pollution, noise pollution, low cost waste water treatment systems.
4.	Air Pollution Control	BTCVVOE706B	2022	Civil Engineering B.E	Teaching Environment and Sustainability Principals in final year Engineering Curriculum. This course highlights the aspects related to air pollution, noise pollution, low cost waste water treatment systems.
5.	Planning for Sustainable Development	BTCVOE606	2022	Civil Engineering TE	Teaching Environment and Sustainability Principals in Second year Engineering Curriculum. From this course students learn- to develop optimum planning, utilization of resources, how to use

					building byelaws, green building concept. Rain water harvesting and waste management system.
Mechanical Engineering Department					
1.	Basic Human Rights	BTHM403	2022	Mechanical Engineering S.E	Teaching the Human Values, Professional Ethics in Second year Engineering Curriculum. This course enables the students to understand the concepts of Human Rights and Human Duties, Society, Religion, Culture, and their Inter-Relationship, Social Structure and Social Problems, State, Individual Liberty, Freedom and Democracy, Human Rights in Indian Constitution and Law.
2.	Field Training /Internship/ Industrial Training I	BTMI407	2022	Mechanical Engineering S.E	Teaching the Professional Ethics in Second year Engineering Curriculum.
3.	Energy Conservation and Management	BTMOE605 C	2022	Mechanical Engineering TE	This course enables the students to understand energy problem and need of energy management, Carry out energy audit of simple units, Analyse cogeneration and waste heat recovery systems.
4.	Field Training /Internship/ Industrial Training II	BTMI609	2022	Mechanical Engineering T.E	Teaching the Professional Ethics in Third year Engineering Curriculum.
5.	Renewable Energy Sources	BTMOE505 B	2022	Mechanical Engineering T.E	Teaching Environment and Sustainability Principals in Third year Engineering Curriculum. From this course students learn- to develop optimum planning, utilization of resources, how to recognize different renewable energy sources and utilization of them through Rain water harvesting and waste management system etc.

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6.	Human Resource Management	BTMOE505 C	2022	Mechanical Engineering T.E	Teaching the Human Values, Professional Ethics in Second year Engineering Curriculum. From this course students will learn to do the effective and efficient management of people in a company or organization, such that they help their business gain a competitive advantage.
7.	Solar Energy	BTMOEC50 5A	2022	Mechanical Engineering T.E	Teaching Environment and Sustainability Principles in Third year Engineering Curriculum. From this course students learn to recognize different renewable energy sources and utilization of them through solar medium.
8.	Industrial Engineering and Management	BTHMOE70 2	2022	Mechanical Engineering T.E	From this course students learn to Understand the interactions between engineering, businesses, technological and environmental spheres in the modern society, they also learn to Understand their role as engineers and their impact to society at the national and global context.

Electrical Engineering Department

1.	Basic Human Rights	BTHM304	2022	Electrical Engineering	Teaching the Human Values, Professional Ethics in Second year Engineering Curriculum. This course enables the students to understand the concepts of Human Rights and Human Duties, Society, Religion, Culture, and their Inter- Relationship, Social Structure and Social Problems, State, Individual Liberty, Freedom and Democracy, Human Rights in Indian Constitution and Law.
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Electronics And Computer Engineering

1.	Basic Human Rights	BTHM403	2022	Electronics And Computer Engineering SE	Teaching the Human Values, Professional Ethics in Second year Engineering Curriculum. This course enables the students to understand the concepts of Human Rights and Human Duties, Society, Religion, Culture, and their Inter- Relationship, Social Structure and Social Problems, State, Individual
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					Liberty, Freedom and Democracy, Human Rights in Indian Constitution and Law.
2.	Project Management and Operation Research	BTETOE505 D	2022	Electronics And Computer Engineering SE	Teaching the Professional Ethics, Human Values in Third year Engineering Curriculum. Course focuses on crosscutting issues such as Human values, conflict management, stress management. Course covers areas like personality, attitude, perception, leadership, group & team dynamics.
3.	Employability & Skill Development	BTHM605	2022	Electronics And Computer Engineering TE	Humanities & Social Science including Management Courses Teaching the Professional Ethics, Human Values in Third year Engineering Curriculum. Course useful to understand the importance of quality product making. Helpful to make decision which product is quality wise useful for human being & which one may be harmful. Sustainable development and inclusive growth is possible using its knowledge.
4.	Financial Management	BTHM705	2022	Electronics And Computer Engineering TE	Humanities & Social Science including Management Courses Teaching the Professional Ethics, Human Values in Third year Engineering Curriculum.
Management Science Department					
1.	Constitution Of India	IC001	2009	MBA-First Year	Teaching the Human Values, Professional Ethics in first year Curriculum. Student learns the framework that demarcates fundamental political code, structure, procedures, powers, and duties of government institutions and sets out fundamental rights, directive principles, and the duties of citizens.

2.	Management Practices And Organizational Behaviour	MANB401	2009	MBA-First Year	Teaching the Human Values, Professional Ethics in first year Curriculum. Course focuses on crosscutting issues such as Human values, conflict management, stress management. Course covers areas like personality, attitude, perception, leadership, group & team dynamics.
3.	Environment Management	MANB405	2009	MBA-First Year	Teaching Environment and Sustainability Principals in first year Curriculum. This course highlights the aspects related to air pollution, noise pollution, low cost waste water treatment systems.
4.	Yoga	MANB408	2009	MBA-First Year	Teaching the Human Values in first year Curriculum. Teaching the science of well- Being of humans, with the practice of ancient yoga principals. Course objective is to impart knowledge about the basic technique and practice of yoga, including instruction in breath control, meditation, and physical postures. To gain an intellectual and theoretical understanding of the principles embodied in the Yoga Sutras, the Bhagavad-Gita, and other important texts and doctrines. Relaxation and stress reduction ,Personal insight and self-understanding, Personal empowerment, Gaining wisdom and spiritual discernment. Awakening the abilities or powers of the Super conscious mind
5.	Community Services	MANB451	2009	MBA-First Year	Teaching the Human Values in first year Curriculum. This course highlights management principles how to create human values such as honesty, discipline, sincerity. To create the awareness among students to follow the professional ethics.

6.	Human Resource Management	MANB410	2009	MBA-First Year	Teaching the Human Values, Professional Ethics in first year Curriculum. Course focuses on conceptualization and fundamentals, employment, human resource development, compensation, employee engagement practices.
7.	Business Laws	MANB414	2010	MBA-Second Year	Teaching the Human Values, Professional Ethics in second year Curriculum.the course make the student aware of the Indian contract act-1872, the company act1956, the sale of goods act,1956, information Technology act & cyber laws etc. , for enhancement of their business.
8.	Indian Ethos & Values	MANB415	2010	MBA-Second Year	Teaching the Human Values, Professional Ethics in second year Curriculum. Teaching the Human Values, Professional Ethics in Third year Engineering Curriculum. This course highlights management principles how to create human values such as honesty, discipline, sincerity. To create the awareness among students to follow the professional ethics, avoid the plagiarism of Patent, IPR, copyright.
9.	International Business Environment	MANB416	2010	MBA-Second Year	Teaching the Human Values, Professional Ethics in second year Curriculum. The course highlights the topics like Written Communication in International Business, Role of Technology in international Business Communication, Moving to Another Culture, Crisis Communication, Ethics in Business Communication.

10	Consumer Behaviour	MANB501 M	2010	MBA- Second Year	Teaching the Human Values, Professional Ethics in second year Curriculum. This course highlights the concept related to Introduction to the Study of Consumer Behavior, Market Research and Consumer Behavior, The Consumer Decision Making Process, Models of Consumer Behavior , Psychological Influences on Consumer Decision Making, Sociological Influences on Consumer Decision Making, Organizational Buying.
11	Human Resource Planning And Development	MANB502 H	2010	MBA- Second Year	Teaching the Human Values, Professional Ethics in second year Curriculum. Course focuses on crosscutting issues such as Human values, conflict management, stress management. Course covers areas like personality, attitude, perception, leadership, group & team dynamics.

BTHM104/204 Communication Skills

2 Credits

Course Objectives:

- 1.To know and apply speaking and writing skills in professional as well as social situations
- 2.To Overcome Mother Tongue Influence and demonstrate neutral accent while exercising English
- 3.To know and apply communication skills for Presentations, Group Discussion and interpersonal interactions.
- 4.To know and apply grammar correctly during Speaking and Writing situations especially in context with Presentations, Public Speaking, Report writing and Business Correspondence

Course Outcomes:

Students will be able to:

- 1.Apply speaking and writing skills in professional as well as social situations
- 2.Overcome Mother Tongue Influence and demonstrate neutral accent while exercising English
- 3.Apply communication skills for Presentations, Group Discussion and interpersonal interactions.
- 4.Apply grammar correctly during Speaking and Writing situations especially in context with Presentations, Public Speaking, Report writing and Business Correspondence

Unit 1: Communication and Communication Processes (04hrs)

Introduction to Communication, Forms and functions of Communication, Barriers to Communication and overcoming them, Verbal and Non-verbal Communication Reading: Introduction to Reading, Barriers to Reading, Types of Reading: Skimming, Scanning, Fast Reading, Strategies for Reading, Comprehension. Listening : Importance of Listening, Types of Listening, Barriers to Listening.

Unit 2: Verbal & Non-verbal Communication (04 hrs)

Use of Language in Spoken Communication, Principles and Practice of Group Discussion, Public Speaking (Addressing Small Groups and Making Presentation), Interview Techniques, Appropriate Use of Non-verbal Communication, Presentation Skills, Extempore, Elocution.

Unit 3: Study of Sounds in English (02 hrs)

Introduction to phonetics, Study of Speech Organs, Study of Phonemic Script, Articulation of Different Sounds in English.

Unit 4: English Grammar (05 hrs)

Grammar: Forms of Tenses, Articles, Prepositions, Use of Auxiliaries and Modal Auxiliaries, Synonyms and Antonyms, Common Errors.

Unit 5: Writing Skills, Reading Skills & Listening Skills (04 hrs)

Features of Good Language, Difference between Technical Style and Literary Style, Writing Emails, Formal and Informal English, Technical Reports: Report Writing: Format, Structure and Types Letter Writing: Types, Parts, Layouts, Letters and Applications, Use of Different Expressions and Style, Writing Job Application Letter and Resume.

Text book:

Mohd. Ashraf Rizvi, *Communication Skills for Engineers*, Tata McGraw Hill

Reference Books:

- a. Sanjay Kumar, Pushp Lata, *Communication Skills*, Oxford University Press, 2016
- b. Meenakshi Raman, Sangeeta Sharma, *Communication Skills*, Oxford University Press, 2017
- c. Teri Kwai Gamble, Michael Gamble, *Communication Works*, Tata McGraw Hill Education, 2010
- d. Anderson, Kenneth. Joan Maclean and Tossny Lynch. *Study Speaking: A Course in Spoken English for Academic Purposes*. Cambridge: CUP, 2004.
- e. Aswathapa, K. *Organisational Behaviour*, Himalayan Publication, Mumbai (1991).
- f. Atreya N and Guha, *Effective Credit Management*, MMC School of Management, Mumbai (1994).
- g. Balan, K.R. and Rayudu C.S., *Effective Communication*, Beacon New Delhi (1996).
- h. Bellare, Nirmala. *Reading Strategies*. Vols. 1 and 2. New Delhi. Oxford University Press, 1998.
- i. Bhasker, W. W. S & Prabhu, N. S.: *English through Reading*, Vols. 1 and 2. Macmillan, 1975.
- j. Black, Sam. *Practical Public Relations*, E.L.B.S. London (1972).
- k. Blass, Laurie, Kathy Block and Hannah Friesan. *Creating Meaning*. Oxford: OUP, 2007.
- l. Bovee Courtland, L and Thrill, John V. *Business Communication*, Today McGraw Hill, New York, Taxman Publication (1989).

Communication Skill Lab:

Atleast 10 experiments should be performed from the following list

- 1) How to introduce oneself?
- 2) Introduction to Phonemic symbols
- 3) Articulation of sounds in English with proper manner
- 4) Practice and exercises on articulation of sounds
- 5) Read Pronunciations/transcriptions from the dictionary
- 6) Practice and exercises on pronunciations of words
- 7) Introduction to stress and intonation
- 8) Rapid reading sessions
- 9) Know your friend
- 10) How to introduce yourself
- 11) Extempore
- 12) Group discussion
- 13) Participating in a debate
- 14) Presentation techniques
- 15) Interview techniques

BTES105/205 Energy and Environment Engineering

2 Credits

Course Objectives:

1. To Identify conventional ,non conventional energy sources.
2. To understand the power consuming and power developing devices for effective utilization and power consumption
3. To Identify various sources of air, water pollution and its effects.
4. To understand noise,soil, thermal pollution and Identify solid, biomedical and hazardous waste.

Course Outcomes:

Students will be able to:

1. Identify conventional ,non conventional energy sources.
2. Know and discuss power consuming and power developing devices for effective utilization and power consumption
3. Identify various sources of air, water pollution and its effects.
4. Know and discuss noise,soil, thermal pollution and Identify solid, biomedical and hazardous waste.

Unit 1: Conventional Power Generation:

(4 hours)

Steam power station, Nuclear power plant – Gas turbine power plant- Hydro power station: Schematic arrangement, advantages and disadvantages, Thermo electric and thermionic generators, Environmental aspects for selecting the sites and locations of power plants.

Unit 2: Renewable Power Generation:

(4 hours)

Solar, Wind, Biogas and Biomass, Ocean Thermal energy conversion (OTEC), Tidal, Fuel cell, Magneto Hydro Dynamics (MHD): Schematic arrangement, advantages and disadvantages.

Unit 3: Energy conservation

(4 hours)

Scope for energy conservation and its benefits Energy conservation Principle– Maximum energy efficiency, Maximum cost effectiveness, Methods and techniques of energy conservation in ventilation and air conditioners, compressors, pumps, fans and blowers, Energy conservation in electric furnaces, ovens and boilers.,lighting techniques.

Unit 4: Air Pollution

(4 hours)

Environment and Human health - Air pollution: sources- effects- control measures - Particulate emission, air quality standards, and measurement of air pollution.

Unit 5: Water Pollution

(4 hours)

Water pollution- effects- control measures- Noise pollution –effects and control measures, Disposal of solid wastes, Bio-medical wastes-Thermal pollution – Soil pollution -Nuclear hazard.

Reference/Text Books:

1. A Chakrabarti, M. L. Soni, P. V. Gupta, U. S. Bhatnagar, A Text book of Power System Engineering, Dhanpat Rai Publication.
2. Rai. G. D., Non Conventional Energy Sources, Khanna Publishers, Delhi,2006.
3. Rao S., Parulekar B.B., Energy Technology-Non conventional, Renewable And Conventional, Khanna Publishers, Delhi,2005.

BTHM403: Basic Human Rights

[Unit 1]

[6 Hours]

The Basic Concepts: - Individual, group, civil society, state, equality, justice, Human Values, Human rights and Human Duties: - Origin, Contribution of American bill of rights, French revolution, Declaration of independence, Rights of citizen, Rights of working and exploited people.

[Unit 2]

[6 Hours]

Fundamental rights and economic programme, Society, religion, culture, and their inter relationship, Impact of social structure on human behavior, Social Structure and Social Problems: - Social and communal conflicts and social harmony, rural poverty, unemployment, bonded labor.

[Unit 3]

[6 Hours]

Migrant workers and human rights violations, human rights of mentally and physically challenged, State, Individual liberty, Freedom and democracy, NGOs and human rights in India: - Land, Water, Forest issues.

[Unit 4]

[6 Hours]

Human rights in Indian constitution and law:- i) The constitution of India: Preamble ii) Fundamental rights iii) Directive principles of state policy vi) Fundamental duties v) Some other provisions.

[Unit 5]

[6 Hours]

Universal declaration of human rights and provisions of India, Constitution and law, National human rights commission and state human rights commission.

Text Book:

1. Shastry, T. S. N., India and Human rights: Reflections, Concept Publishing Company India (P Ltd.), 2005.

Reference books:

1. Nirmal, C.J., Human Rights in India: Historical, Social and Political Perspectives (Law in India), Oxford India

BTHM505 (B): Business Communication

[Unit 1] **[6 Hours]**

Introduction, Definitions & Concepts, Communicative Competence.

[Unit 2] **[6 Hours]**

Intercultural Communication, Nonverbal Communication, Thought and Speech, Translation as Problematic Discourse.

[Unit 3] **[6 Hours]**

Barriers to Communication, Listening, Communication Rules, Communication Style.

[Unit 4] **[6 Hours]**

Interpersonal Communication, Relational Communication, Organizational Communication. Collaboration, Communication in Groups and Teams, Persuasive Communication.

[Unit 5] **[7 Hours]**

Negotiation and Conflict Management, Leadership, Written Communication in International Business, Role of Technology in international Business Communication, Moving to Another Culture, Crisis Communication, Ethics in Business Communication.

Text Book:

1. Mary Ellen Guffey, Essentials of Business Communication, Sixth Edition, South-Western College Publishing

Reference Books:

1. Bovee, Courtland, John Thill & Mukesh Chaturvedi, Business Communication Today: Dorling kindersley, Delhi.
2. Kaul, Asha, Business Communication, Prentice-Hall of India, Delhi.
3. Monippally, Matthukutty M. Business Communication Strategies. Tata McGraw-Hill Publishing Company Ltd., New Delhi.
4. Sharma, Sangeeta and Binod Mishra, Communication Skills for Engineers and Scientists, PHI Learning Pvt. Ltd., New Delhi.

NPTEL Course:

1. International Business Communication, by Aradhana Malik, IIT Kharagpur.

BTHM605 (A): Development Engineering

[Unit 1] **[7 Hours]**

Introduction, Various Definitions of Development Engineering.

[Unit 2] **[7 Hours]**

World Poverty and Development, Poverty in the India, Sustainable Development, Culture and Global Competence, The Engineer's Role.

[Unit 3] **[7 Hours]**

Social Justice, Social Justice and Engineering, Religious Perspectives, Secular Perspectives.

[Unit 4] **[7 Hours]**

Development Strategies: Society, Technological Change, and Development, Development Economists' Perspectives, Global Health Perspective, International Education Perspective, Social Business Perspectives.

[Unit 5] **[7 Hours]**

Engineering for Sustainable Community Development: The Engineer as a Helper Participatory Community Development, Teamwork and Project Management, Community Assessment: Learning About a Community, Project Selection, Humanitarian Technology, Participatory Technology Development, Humanitarian STEM Education. ICT for Development, AI for Humanitarian purposes, Blockchain and Social Development.

Text Book:

1. Kevin M. Passino, Humanitarian Engineering: Advancing Technology for Sustainable Development.

Teaching Scheme:(3 Lectures) hours/week

Course Contents

Module 1: Basic Concepts

(Lectures 06)

Individual, group, civil society, state, equality, justice. Human Values, Human rights & Human Duties: Origin, Contribution of American bill of rights, French revolution. Declaration of independence, Rights of citizen, Rights of working & exploited people

Module 2: Fundamental Rights and Economic Program

(Lectures 06)

Society, religion, culture, and their inter-relationship. Impact of social structure on human behavior, Social Structure and Social Problems: Social and communal conflicts and social harmony, rural poverty, unemployment, bonded labour.

Module 3: Workers and Human Rights

(Lectures 08)

Migrant workers and human rights violations, human rights of mentally and physically challenged. State, Individual liberty, Freedom and democracy.

NGOs and Human Rights in India

Land, Water, Forest issues.

Module 4: Human Rights in Indian Constitution and Law

(Lectures 08)

i) The Constitution of India: Preamble; ii) Fundamental rights; iii) Directive principles of state policy; iv) Fundamental duties; v)Some other provisions

Module 5: UDHR and Indian Constitution

(Lectures 08)

Universal declaration of human rights and provisions of India; Constitution and law; National human rights commission and state human rights commission.

References

1) Shastry, T. S. N., “India and Human Rights: Reflections”, Concept Publishing Company India (P Ltd.), 2005.

2) C. J. Nirmal, “Human Rights in India: Historical, Social and Political Perspectives (Law in India)”, Oxford India.



BTCVOE606 C. Business Communication & Presentation Skills

Teaching Scheme: (3 Lectures) hours / Week

Course Contents

Module 1: Language for Technical Purpose and Presentation Tools

(06 Lectures)

Technical vocabulary, Sentence structures, Computer Aids, Graphical presentations
Drafting Letters, e-Mails, Memos, Notices, Circulars, Schedules.

Module 2: Project Proposals and Project Reports

(08 Lectures)

Abstract, Aims, Background & significance, Design & methods, writing a sample proposal,
Project Report: Types of reports, planning a report, Collection & organization of information, Structure & style, Proof reading etc.

Module 3: Leadership Skill and Team Building, Working

(08 Lectures)

Leadership Skills: Leadership quality and styles, Emotional intelligence, Diplomacy and Tact and effective communication, Case studies. Need of team, Effective teams, Group development

Module 4: Business Meetings

(08 Lectures)

Understanding role of meetings, planning meetings, developing meeting agendas, scheduling meetings, Taking notes and publishing minutes

Module 5: Presentation Skills

(06 Lectures)

Use of presentation tools, Presentation, nonverbal techniques, handling questions

References:

- Hariharan S. (2010)“Soft Skills” MJP Publishers, Chennai
- Seely S. (2009)“Oxford Guide to Effective Writing and Speaking” Oxford University Press, UK
- Huckin T. N. and Olsen L. A.“Technical Writing and Professional Communication for Nonnative Speakers of English”Tata McGraw Hills, UK
- Masters A. & Harold R. W. (2011) Personal Development for Life & Work, Learning India Private Limited.

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

- CO1: Inculcate basics of business communication skills & relevant tools.
- CO2: Understand business SOPs and essentials of the same.
- CO3: Adapt modern skills regarding communication, presentation & team working



Reference Books

- Shah, Kale, Pataki, “Building Drawing”, Tata McGraw- Hill
- Sane Y. S., “Building Design and Drawing”, Allied Book Stall, Pune
- Jain V.K., “Automation Systems in Smart and Green Buildings”, Khanna Publishers, N. Dehli ISBN No 978-81-7409-237-3
- Jain V.K., “Handbook of Designing and Installation of Services in High Rise Building Complexes”, Khanna Publishers, N. Dehli, ISBN No. 978-81-7409-245-8
- Deodhar S.V., “Building Science and Planning”, Khanna Publishers, N. Dehli, ISBN No. 978-81-7409-199-8
- Jain A.K., “The Idea of Green Building” Khanna Publishers, N. Dehli, ISBN No. 978-81-7409-256-4
- SP 7- National Building Code Group 1 to 5- B.I.S. New Delhi
- I.S. 962 – 1989 Code for Practice for Architectural and Building Drawings

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

CO1: To plan buildings considering various principles of planning and byelaw of governing body.

CO2: Comprehend various utility requirements in buildings

CO3 : Understand various techniques for good acoustics.



BTCVC402 Environmental Engineering

Teaching Scheme: (2 Lectures+1 Tutorial) hours/week

Course Contents

Module 1: Introduction

(6 Lectures)

Environment and its components, importance of water, role of environmental engineer, sources of water, water demand: Design flow, design period, design population, factors affecting water consumption, variation in demand, and design capacity for water supply components, quality of water: Physical, chemical, biological characteristics, Indian standard for quality of potable water

Module 2: Treatment of Water

(10 Lectures)

Conveyance of raw water: Canals and pipelines, hydraulics of conduits, laying and jointing of pipelines, testing of pipe lines, designing of rising main, type of valves, types of pumps, intake structure, types of intake structures, necessity of water treatment processes

Types of Treatments:

Aeration: Necessity, methods, removal of taste and odour, design of aeration fountain

Sedimentation: Suspended Solids, settling velocity, types of sedimentation tanks, surface loading, detention time, inlet and outlet arrangements

Coagulation: Necessity, coagulant dosage, choice of coagulants, optimum pH

Rapid Mixing: Necessity, gravitational, mechanical, pneumatic devices

Slow Mixing and Flocculation: Design of flocculation chamber, mean velocity gradient, design of clari-flocculator, plate settler and tube settler

Filtration: Theory of filtration, filter materials, types of filters, components, working and cleaning of filters

Disinfection: Theory of disinfection, factors affecting, efficiency of disinfection, types of disinfectants, break point chlorination, bleaching powder estimation

Water softening methods: Lime-soda, ion exchange method, demineralization

Module 3: System of Water Supply

(6 Lectures)

Continuous and intermittent system, type of distribution systems, layouts, methods of supply: gravity, pumping and combination, hydraulic analysis of distribution system

Module 4: Treatment

(10 Lectures)

Treatment of Waste Water

Sources of wastewater flows, components of wastewater flows, wastewater constituents, characteristic of municipal waste water, necessity of treatment of waste water, sewerage systems, concept of sewage, sullage, storm water, introduction of preliminary treatment, primary treatment, secondary treatment, introduction to tertiary or advanced treatment fundamentals of anaerobic treatment, sewage and industrial waste of common origin, types

Treatment of Solid Waste

Types, sources, characteristics, ill-effects of improper solid waste management, collection, processing techniques, methods of treatment of solid waste-composting, incineration, pyrolysis and sanitary land filling. biodegradable, non-degradable segregation of solid waste, concept of hazardous waste management, e-waste disposal

Module 5: Air Pollution

(4 Lectures)

Definition, sources of air pollution, types air pollutants, atmospheric stability, mixing heights, plume types and meteorological parameters, effects of air pollution, control measures of air pollution

Text Books

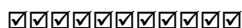
- Rao and Rao, "Air Pollution", Tata McGraw Hill Publications, New Delhi, 1990
- Garg S. K., "Water Supply Engineering", Khanna Publishers, New Delhi
- Birdi J. S. and Birdi G. S., "Water Supply & Sanitary Engineering", Dhanpat Rai Pub. Company, 8th edition, New Delhi

Reference Books

- Peavy and Rowe, "Environmental Engineering", McGraw Hill Publications
- Stern, "Environmental Engineering", Vol. I to IV, McGraw Hill Publications
- Sharma and Kaur, "Environmental Chemistry", Goyal Publisher
- Government Of India Publication, "Water Supply and Treatment Manual"
- Fair and Geyr, "Environmental Engineering", McGraw Hill Publications
- Steel and McGhee, "Environmental Engineering", McGraw Hill Publications
- Viessman & Hammer, "Water Supply & Pollution Control", Harper Collins Collage Publishers
- Publications by reouted organizations such as WHO, NEERI, MERI, MPCB, CWPRS, etc.

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

- CO1: Apply the water treatment concept and methods.
- CO2: Prepare basic process designs of water and wastewater treatment plants.
- CO3: Apply the wastewater treatment concept and methods.
- CO4: Apply the solid waste management concepts.



BTCVC 403 Structural Mechanics– I

Teaching Scheme: (2 Lectures +1 Tutorial) hours/week

Course Contents

Module 1: Beam Deflections

(Lectures 06)

Calculations of deflection for determinate beams by double integration, Macaulay's method, moment area method, conjugate beam method, deflection by method of superposition

Module 2: Energy Principles

(Lectures 06)

Strain energy and strain energy density, strain energy in traction, shear, flexure and torsion - Castiglano's and Engessor's energy theorems, principle of virtual work, application of energy theorems for computing deflections in beams, Maxwell's reciprocal theorem, Williot Mohr diagrams

Module 3: Method of Consistent Deformation

(Lectures 08)

Different structural systems, concept of analysis, basic assumptions, indeterminacy, choice of unknowns, Castiglano's theorem
Indeterminate Beams: Analysis of indeterminate beams: Propped cantilever and fixed beams - fixed end moments and reactions for standard cases of loading – slopes and deflections in fixed beams

Module 4: Moment Distribution Method

(Lectures 08)

Analysis of continuous beams propped cantilevers, continuous beams - theorem of three moments - analysis of continuous beams settlement effects, thermal effect, Shear Force and Bending Moment diagrams for continuous beams, portal frames with and without sway

Module 5: Slope Deflection Method

(Lectures 08)

Analysis of continuous beams, analysis of rigid frames, frames without sway and with sway, settlement effects, introduction to difficulties in frames with sloping legs and gabled frames

Text Books

BTCVPE 506 A. Advanced Environmental Engineering

Teaching Scheme :(3 Lectures) hours/week

Course Contents

Module 1: Low cost wastewater treatment methods

(8 Lectures)

Principles of waste stabilization pond, Design and operation of oxidation pond, aerobic & anaerobic Lagoons, Aerated Lagoon, Oxidation ditch, Septic tank. Concept of recycling of sewage Disposal of waste water-stream pollution, Self Purification, DO sag curve, Streeter Phelp's Equation, Stream classification, disposal on land, effluents standards for stream and land disposals

Module 2: Industrial Waste Water Treatment Management

(8 Lectures)

Sources of Pollution: Physical, Chemical, Organic and Biological properties of Industrial Wastes – Differences between industrial and municipal waste waters –Effects of industrial effluents on sewers and treatment plants, Prevention vs Control of Industrial Pollution

Pre and Primary Treatment: Equalization, Proportioning, Neutralization, Oil Separation by Floatation, Prevention v/s Control of Industrial Pollution

Module 3: Waste Water Treatment Methods

(8 Lectures)

Nitrification and De-nitrification – Phosphorous removal – Heavy metal removal – Membrane Separation Process–Reverse osmosis– Chemical Oxidation–Ion Exchange – Air Stripping and Absorption Processes – Special Treatment Methods – Disposal of Treated Waste

Common Effluent Treatment Plants (CETPs): Need, Planning, Design, Operation & Maintenance Problems

Module 4: Environmental Sanitation

(6 Lectures)

Communicable diseases, Methods of communication, Diseases communicated by discharges of intestines, nose and throat, other communicable diseases and their control

Module 4: Insects and Rodent Control

(6 Lectures)

Mosquitoes, life cycles, factors of diseases control methods - natural &chemical, Fly control methods and fly breeding prevention, Rodents and public health, plague control methods, engineering and bio-control methods in Rural areas, Population habits and environmental conditions, problems of water supply and sanitation aspects, low cost excreta disposal systems, Rural sanitation improvement schemes.

Text Books

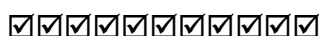
- Masters G.M. (2008) "Introduction to Environmental Engineering and Science" Prentice-Hall of India Pvt. Ltd., N. Delhi
- Metcalf & Eddy (1982) "Waste Water Engineering Treatment & Disposal", Tata McGraw Hill, New Delhi
- Garg S. K. (1979) "Sewage Disposal and Air Pollution Engineering", Khanna Publishers, New Delhi
- Rao M.N. & Datta A. K. (2018) "Waste water treatment", Oxford & Ibh Publishing Co Pvt Ltd, New Delhi

Reference Books

- Peavey H. S., Rowe D.R. (2017) "Environmental Engineering", McGraw-Hill Book Co., New Delhi
- Viessman W. and Hammer M. J. (2008) "Water Supply and Pollution Control", Pearson Publications, N. Delhi
- Hammer M. J. (2012) "Water and Waste water Technology", Prentice-Hall of India Private Limited, New Delhi
- Canter L. W. (1995) "Environmental Impact Assessment", Tata McGraw Hill Publication, New Delhi

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

1. Determine the sewage characteristics and design various sewage treatment plants.
2. Understand municipal water and wastewater treatment system design and operation.
3. Apply environmental treatment technologies and design processes for treatment of industrial waste water.
4. Understand the rural sanitation schemes.



procedure(including support movements);Ignoring axial deformations;

Module 6:Matrix analysis of spaceframes: (04 Lectures)

Stiffness method for space frames:Introduction; element stiffness matrixof space frame element with 12 dofand 6 dof; coordinate transformations;analysis by reduced stiffness method(six dof per element);

References

1. DevdasMenon, "Advanced Structural Analysis", Narosa Publishing House, 2009.
2. AsslamKassimali, "Matrix Analysis of Structures", Brooks/Cole Publishing Co., USA, 1999.
3. Amin Ghali, Adam M Neville and Tom G Brown, "Structural Analysis: A Unified Classical and Matrix Approach", Sixth Edition, 2007, Chapman & Hall.
4. DevdasMenon, "Structural Analysis", Narosa Publishing House, 2008.

BTCVOE706B Air Pollution Control

Teaching Scheme: Lectures: 3 Hours / Week

Course Objectives:

- a. To discuss the sources of air pollutants and their effect on human, plants and materials
- b. To get the knowledge of meteorology for controlling air pollution
- c. To facilitate students with design methodologies of air pollution control equipment
- d. To make aware of legislation for prevention and control of air pollution

Course Contents

Module 1: Introduction to Air Pollution (04 Lectures)

The Structure of the atmosphere, Composition of dry ambient air and properties of air. BIS Definition and scope of Air Pollution, Scales of air pollution, Types of exposures.Air Pollutants,

Module 1: Classification (04 Lectures)

Classifications, Natural and Artificial, Primary and Secondary, point and Non-Point, Line and Area Sources of air pollution. Stationary and mobile sources, composition of particulate& gaseous pollutant, units of measurement.Effect of different air pollutants on man, animals, vegetation, property, aesthetic value and visibility, air pollution episodes. Global effects of air pollution- global warming, ozonedepletion, acid rain and heat island effect.

Module3: Meteorology and Air pollution (06 Lectures)

Solar radiation, wind circulation, factors affecting dispersion of pollutants, Lapse rate, stabilityconditions, wind velocity profile, Maximum mixing depth (MMD), visibility, Windrosediagram,General characteristics of stack plume (Plume behaviour). Gaussion diffusion modelfor finding groundlevel concentration. Plume rise. Formulae for stack height and determinationof minimum stack height.

Module4: Air Sampling and Analysis (06 Lectures)

Air pollution survey, basis and statistical considerations of sampling sites. Devices and methods used for sampling gases and particulates. Stack emission monitoring, isokinetic sampling. Analysis of air samples chemical and instrumental methods. Ambient air quality monitoring.

Module5: Photochemical Smog, Odour Pollution & Indoor Pollution (08 Lectures)

Chemistry of air pollution, Chain reactions of hydrocarbons, nitrogen oxide, Sulphuric oxidesand intermediates, photochemical smog formation, air pollution indices -aerosols, fog, smog index. Odour pollution: Theory, sources, measurement and methods of control of odour pollution. Indoor air pollution: Causes of air pollution, sources and

effects of indoor air pollutants, changes in indoor air quality, control of indoor air pollutants and air cleaning systems.

Module6: Control of Air Pollution

(08 Lectures)

By process modification, change of raw materials, fuels, process equipment and process operation by use of air pollution control equipment for particulate and gaseous pollutants. Design of control equipment as Settling chamber, cyclone, fabric filter, Electrostatic precipitator and Wet scrubber. Principles of removal of gaseous pollutants, design of incineration, absorption adsorption systems. Control of air pollution from automobiles. Vehicular pollution, composition, quantity and control. Air (Prevention and Control) Pollution Act, 1981. Emission standards for stationary and mobile sources. National Ambient air quality standards, 2009 (NAAQS).

Text Books

1. Wark K. and Warner C. F. (1997) "Air pollution: Its Origin and Control" Pearson Education, Delhi
2. Rao M. and Rao H. V. N. (2017) "Air Pollution" Tata McGraw Hill Pub. Co. Ltd., New Delhi
3. Peavy S. H. and Rowe D. R. (2017) "Environmental Engineering" Tata McGraw Hill Pub. Co. Ltd., New Delhi
4. Muralio Krishna K. V. S. G. (2017) "Air Pollution and Control" Jain Brothers, Mumbai

Reference Books

1. Crawford M. (1984) "Air pollution Control Theory" McGraw Hill, New York
2. Anjaneyulu Y. (2002) "Air Pollution and Control Technologies" Allied Publishers, Mumbai
3. Raju B. S. N. (2018) "Fundamentals of Air Pollution" CBS Publishers and Distributors Pvt. Ltd., N. Delhi

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

- Identify the sources of air pollutants and their effect on human, plants and materials.
- Apply knowledge of meteorology for controlling air pollution
- Design air pollution controlling equipment.
- Apply knowledge of legislation for prevention and control of air pollution.

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BTCV0E706C Bridge Engineering

Teaching Scheme: (3 Lectures) hours/week

Course Contents

Module 1: Introduction (4 Lectures)

History of bridges, components and definitions, classification of road bridges, span length, classical examples of each type, people involved in the total process, history of analysis

Module 2: Selection of site and initial decision process (8 Lectures)

Survey and alignment, geotechnical investigations and interpretations

River Bridge: Selection of bridge site and planning, collection of bridge design data, hydrological calculation, waterway calculation, scour calculation, depth of foundation, freeboard.

Road Bridge: Selection of bridge site and planning, collection of bridge design data, vertical clearance.

Module 3: Standard loading for bridge design as per different codes (6 Lectures)

Road Bridges: IRC, BS code, AASHTO code. dead load, live load, impact factor, centrifugal force, wind loads, hydraulic forces, longitudinal forces, seismic forces, earth pressure, buoyancy, lane concept, equivalent loads, traffic load, width of roadway and footway, use of influence lines for maximum forces

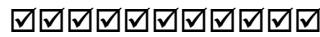
Teaching Scheme: (3 Lectures) hours/week

Course Contents

- Module 1:** (Lectures 06)
Sustainable Development-explains and critically evaluates the concept of sustainable development
- Module 2:** (Lectures06)
Environmental degradation and poverty Sustainable development: its main principles, the evolution of ideas about sustainability
- Module 3:** (Lectures 06)
Strategies for promoting sustainable development, resistances to the concept, and some alternative approaches. Examine some important current issues and areas of debate in relation to sustainable development.
- Module 4:** (Lectures 06)
Innovation for sustainable development- Environmental management and innovation strategies.
- Module 5:** (Lectures 12)
Societal transformations. Institutional theory, Governance for sustainable development. Policy responses to environmental degradation. Capacity development for innovation. Research methods.

Text/Reference Books:

- Harris, J.M., 2004, " Basic Principles for Sustainable Development, Global Development and Environment"
- Robinson, J., 2004, "Squaring the circle? Some thoughts on idea of sustainable Development" Ecological Economics
- Hjorth, P. & A. Bagheri, 2006, "Navigating towards Sustainable Development: A System Dynamics Approach", Futures
- Mog, J.M., 2004, "Struggling with Sustainability – A Comparative Framework for Evaluating Sustainable Development Programs", World Development 32(12): 2139–2160. IISD Commentary on the OECD's Draft Principles for International Investor Participation in Infrastructure
- Arundel, A., R. Kemp, and S. Parto, 2004,"Indicators for Environmental Innovation: What and How to Measure, forthcoming in International Handbook on Environment and Technology Management (ETM), edited by D. Annandale, J. Phillimore and D. Marinova, Cheltenham, Edward Elgar.



BTHM403

Basic Human Rights

3 Credits

Course Objectives:

- 1.To train the young minds facing the challenges of the pluralistic society and the rising conflicts and tensions in the name of particularistic loyalties to caste, religion, region and culture.
- 2.To give knowledge of the major "signposts" in the historical development of human rights, the range of contemporary declarations, conventions, and covenants.
- 3.To enable them to understand the basic concepts of human rights (including also discrimination, equality, etc.), the relationship between individual, group, and national rights.
- 4.To develop sympathy in their minds for those who are denied rights.
- 5.To make the students aware of their rights as well as duties to the nation

Course Outcomes:

1. Students will be able to understand the history of human rights.
2. Students will learn to respect others caste, religion, region and culture.
3. Students will be aware of their rights as Indian citizen.
4. Students will be able to understand the importance of groups and communities in the society.
5. Students will be able to realize the philosophical and cultural basis and historical perspectives of human rights.

UNIT – 1

The Basic Concepts: - Individual, group, civil society, state, equality, justice. Human Values, Human rights and Human Duties: - Origin, Contribution of American bill of rights, French revolution. Declaration of independence, Rights of citizen, Rights of working and exploited people

UNIT – 2

Fundamental rights and economic programme. Society, religion, culture, and their inter relationship. Impact of social structure on human behavior, Social Structure and Social Problems: - Social and communal conflicts and social harmony, rural poverty, unemployment, bonded labor.

UNIT – 3

Migrant workers and human rights violations, human rights of mentally and physically challenged. State, Individual liberty, Freedom and democracy. NGOs and human rights in India: - Land, Water, Forest issues.

UNIT – 4

Human rights in Indian constitution and law:-

- i)The constitution of India: Preamble ii) Fundamental rights. iii) Directive principles of state policy. iv) Fundamental duties. v) Some other provisions.

UNIT – 5

Universal declaration of human rights and provisions of India. Constitution and law. National human rights commission and state human rights commission.

CO5			3			2						1
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Course Contents:

Unit1: Introduction

[07 Hours]

General energy problem, Energy use patterns and scope of conservation. Energy Management Principles: Need, Organizing, Initiating and managing an energy management program.

Unit2: Energy Auditing

[07 Hours]

Elements and concepts, Types of energy audits, Instruments uses in energy auditing . Economic Analysis: Cash flows, Time value of money, Formula are relating present and future cash flows-single amount, uniform series.

Unit3: Financial Appraisal Methods

[07 Hours]

Payback period, Net present value , Benefit-cost ratio, Internal–rate of return,Lifecyclecosts/benefits.Thermodynamics of energy conservation, Energy conservation in Boilers and furnaces, Energy conservation in Steam and condensate system.

Unit4: Cogeneration and Insulation and Heating

[07 Hours]

Concept, Types of cogeneration systems, performance evaluation of a cogeneration system. Waste Heat Recovery: Potential, benefits, waste heat recovery equipment’s. Space Heating, Ventilation Air Conditioning (HVAC) and water heating of building, Transfer of heat, Space heating methods, Ventilation and air conditioning, Heat pumps, Insulation, Cooling load, Electric water heating systems, Electric energy conservation methods.

Insulation and Heating Industrial Insulation: Insulation materials, Insulation selection, Economical thickness of insulation. Industrial Heating: Heating by indirect resistance, direct resistance heating (salt bath furnace), and Heat treatment by induction heating in the electric arc furnace industry.

Unit5: Energy Conservation in Electric Utility and Industry

[07 Hours]

Energy costs and two part tariff, Energy conservation in utility by improving load factor, Load curve analysis, Energy efficient motors, Energy conservation in illumination systems, Importance of Power factor energy conservation, Power factor improvement methods, Energy conservation in industries

Texts:

1. Callaghan, “Energy Conservation”.
2. D.L. Reeg, “Industrial Energy Conservation”, Pergamon Press.

References:

1. T.L. Boyen, “Thermal Energy Recovery”, Wiley Eastern.
2. L.J. Nagrath , “System Modeling and Analysis”, Tata Mc Graw Hill Publications.
3. S.P. Sukhatme, “Solar Energy”, Tata Mc Graw Hill Publications.

Wind Energy

BTMOE605D	OEC2	Wind Energy	3-1-0	4 Credits
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Teaching Scheme:	Examination Scheme:
Lecture: 3 hrs/week Tutorial: 1 hr/week	Continuous Assessment: 20 Marks Mid Semester Exam: 20 Marks End Semester Exam: 60 Marks (Duration 03 hrs

Pre-Requisites: None

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

CO1	Understand historical applications of wind energy
CO2	Understand and explain wind measurements and wind data
CO3	Determine Wind Turbine Power, Energy and Torque
CO4	Understand and explain Wind Turbine Connected to the Electrical Network AC and DC
CO5	Understand economics of wind energy

Mapping of course outcomes with program outcomes

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							2	2	2	1		1

Renewable Energy Sources

BTMOE505B	OEC1	Renewable Energy Sources	3-0-0	Credits
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Teaching Scheme:	Examination Scheme:
Lecture: 3 hrs/week	Continuous Assessment: 20 Marks Mid Semester Exam: 20 Marks End Semester Exam: 60 Marks (Duration 03 hrs)

Pre-Requisites: None

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

CO1	Explain the difference between renewable and non-renewable energy
CO2	Describe working of solar collectors
CO3	Explain various applications of solar energy
CO4	Describe working of other renewable energies such as wind, biomass , nuclear

Mapping of course outcomes with program outcomes

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	3		2	3	3	3	2	2		2
CO2	1	1	3	1	2	3	3	3	2	2		2
CO3	2	1	1				3	2		1		2
CO4	3	3			2	3	3	2				1

Course Contents:

Unit 1: Solar Energy

[07 Hours]

Energy resources, Estimation of energy reserves in India, Current status of energy conversion Spectral distribution, Solar geometry, Attenuation of solar radiation in Earth's atmosphere, Measurement of solar radiation, Properties of opaque and transparent surfaces.

Unit 2: Solar Collectors

[07 Hours]

Flat Plate Solar Collectors: Construction of collector, material, selection criteria for flat plate collectors, testing of collectors, Limitation of flat plate collectors, Introduction to ETC.

Concentrating type collectors: Types of concentrators, advantages, paraboloid, parabolic trough, Heliostat concentrator, Selection of various materials used in concentrating systems, tracking.

Unit 3: Solar Energy Applications

[07 Hours]

Air/Water heating, Space heating/cooling, solar drying, and solar still, Photo-voltaic conversion.

Unit 4: Wind Energy and Biomass

Introduction to wind energy, Types of wind mills, Wind power availability, and wind power development in India. Evaluation of sites for bio-conversion and Introduction to biomass resources, Location of plants, Biomass conversion process,

Unit 5: Other Renewable Energy Sources

[07 Hours]

Tidal, Geo-thermal, OTEC, hydro-electric, Nuclear energy

Texts:

1. Chetan singh Solanki, “Renewable Energy Technologies”, Prentice Hall India, 2008.

References:

1. S. P. Sukhatme, “Solar Energy: Principles of Thermal Collection and Storage”, Tata McGraw-Hill Publications, New Delhi, 1992.
2. G. D. Rai, “Solar Energy Utilization”, Khanna Publisher, Delhi, 1992.

Human Resource Management

BTMOE505C	OEC1	Human Resource Management	3-0-0	3 Credits
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Teaching Scheme:	Examination Scheme:
Lecture: 3 hrs/week	Continuous Assessment: 20 Marks Mid Semester Exam: 20 Marks End Semester Exam: 60 Marks(Duration 03 hrs)

Pre-Requisites: None

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

CO1	Describe trends in the labor force composition and how they impact human resource management practice.
CO2	Discuss how to strategically plan for the human resources needed to meet organizational goals and objectives.
CO3	Define the process of job analysis and discuss its importance as a foundation for human resource management practice
CO4	Explain how legislation impacts human resource management practice.
CO5	Compare and contrast methods used for selection and placement of human resources.
CO6	Describe the steps required to develop and evaluate an employee training program
CO7	Summarize the activities involved in evaluating and managing employee performance.
CO8	Identify and explain the issues involved in establishing compensation systems.

Mapping of course outcomes with program outcomes

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					2						1	
CO2											3	
CO3										2		
CO4								2		2		
CO5									2	3		
CO6										1		3
CO7										2	2	
CO8											2	

Course Contents:

Unit1: Introduction to Human Resource management [07 Hours]

Concept of management, concept of human resource management, personnel to human resource management, human resource management model, important environmental influences like government regulations, policies, labor laws and other legislation. Acquisition of human resources: Human resource planning, Demand for man power, Weaknesses of man power planning, job analysis, job specification, recruitment sources, recruitment advertising, the selection process, selection devices, equal opportunities: Indian and foreign practices, socializing the new employee

Unit2: Development of Human resources [07 Hours]

Employee Training and Management Development: Training, Training and Learning, Identification of training needs, training methods, Manager Development, Methods for developing managers, evaluating training effectiveness

Career Development: Concept of career, value of effective career development, external versus internal dimensions to a career, career stages, linking career dimensions with stages

Unit3: Motivation of Human resources [07 Hours]

Definition of motivation, Nature and Characteristics of Motivation, Theories of motivation: Maslow's Need Hierarchy Theory, Drucker Theory, Likert Theory, Herzberg Two Factor theory, McClelland Theory, McGregor Theory, X and Y, etc., Psychological approach. Job Design and Work

Scheduling: Design, Scheduling and Expectancy Theory, Job characteristics model, job enrichment, job rotation, work modules, flex-time, new trends in work scheduling.

Unit4: Performance appraisal [07 Hours]

Performance appraisal and expectancy theory; appraisal process, appraisal methods, factors that can destroy appraisal. Rewarding the Productive Employee: Rewards and expectancy theory, types of rewards, qualities of effective rewards, criteria for rewards.

Unit5: Maintenance of Human resources and Labor Relations [07 Hours]

Compensation Administration: Concept of Compensation Administration, Job evaluation, Pay structures, Incentive compensation plans. Benefits and Services: Benefits for everybody, Services, Trends in benefits and services

Discipline: Concept of Discipline, types of discipline problems, general guidelines, disciplinary action, employment-at-will doctrine, disciplining special employee groups. Safety and Health: safety programs, health programs, stress, turnover.

Unions, Major labor legislation, goals of group representation. Collective Bargaining: objectives, scope, participants of collective bargaining, process of collective bargaining, trends in collective bargaining. Research and the future: What is research? Types of research, hiring searching human resource management, Secondary sources: where to look it up, Primary sources: relevant research methods, current trends and implications for human resource management.

Texts:

1. David A. De Cenzo, Stephen P. Robbins, "Personnel/Human Resources Management", Prentice Hall of India Pvt. Ltd, 3rd edition, 2002.
2. Trevor Bolton, "An Introduction to Human Resource Management", Infinity Books, 2001.

References:

1. Ellen E. Kossek, "Human Resource Management - Transforming the Workplace", Infinity Books, 2001.
2. G.S. Batra, R.C. Dangwal, "Human Resource Management New Strategies", Deep and Deep Publications Pvt. Ltd., 2001.
3. D.M. Silvera, "HRD: The Indian Experience", New India Publications, 2nd edition, 1990.

Open Elective-I

Solar Energy

BTMOE505A	OEC1	Solar Energy	3-0-0	3 credits
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Teaching Scheme:	Examination Scheme:
Lecture: 3 hrs/week	Continuous Assessment: 20 Marks Mid Semester Exam: 20 Marks End Semester Exam: 60 Marks(Duration 03 hrs)

Pre-Requisites: None

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

CO1	Describe measurement of direct, diffuse and global solar radiations falling on horizontal and inclined surfaces.
CO2	Analyze the performance of flat plate collector, air heater and concentrating type collector.
CO3	Understand test procedures and apply these while testing different types of collectors.
CO4	Study and compare various types of thermal energy storage systems.
CO5	Analyze payback period and annual solar savings due to replacement of conventional systems.
CO6	Design solar water heating system for a few domestic and commercial applications.

Mapping of course outcomes with program outcomes

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1											
CO2	1	2				1						
CO3	2			1	1		2					
CO4	1	1										
CO5		2			1							
CO6			2	3		1	1					

Course Contents

Unit 1: Solar Radiation

[07 Hours]

Introduction, spectral distribution, solar time, diffuse radiation, Radiation on inclined surfaces, measurement of diffuse, global and direct solar radiation.

Unit 2: Liquid Flat Plate Collectors

[07 Hours]

Introduction, performance analysis, overall loss coefficient and heat transfer correlations, collect or efficiency factor, collect or heat removal factor, testing procedures.

Unit 3: Solar Air Heaters

[07 Hours]

Introduction, types of air heater, testing procedure.

Unit 4: Concentrating Collectors

[07 Hours]

Types of concentrating collectors, performance analysis

Unit 5: Thermal Energy Storage and Economic Analysis

[07 Hours]

Introduction, sensible heat storage, latent heat storage and thermo chemical storage

Solar Pond: Solar pond concepts, description, performance analysis, operational problems.

Economic Analysis

Definitions, annular solar savings, payback period.

Texts:

1. J. A. Duffie, W. A. Beckman, "Solar Energy Thermal Processes", John Wiley, 1974.
2. K. Kreith, J. F. Kreider, "Principles of Solar Engineering", Tata McGraw-Hill Publications, 1978.

References:

1. H. P. Garg, J. Prakash, "Solar Energy: Fundamentals and Applications", Tata McGraw Hill Publications, 1997.
2. S. P. Sukhatme, "Solar Energy Principles of Thermal Collection and Storage", Tata McGraw Hill Publications, 1996.

Unit 1: The Basic Concepts**6Hrs**

Individual, Group, Civil Society, State, Equality, Justice, Human Values: - Humanity, Virtues, Compassion.

Unit 2: Human Rights and Human Duties:**6 Hrs**

Origin, Civil and Political Rights, Contribution of American Bill of Rights, French Revolution, Declaration of Independence, Rights of Citizen, Rights of working and Exploited people, Fundamental Rights and Economic program, India's Charter of freedom

Unit 3: Society, Religion, Culture, and their Inter-Relationship**6 Hrs**

Impact of Social Structure on Human behaviour, Roll of Socialization in Human Values, Science and Technology, Modernization, Globalization, and Dehumanization.

Unit 4: Social Structure and Social Problems**6 Hrs**

Social and Communal Conflicts and Social Harmony, Rural Poverty, Unemployment, Bonded Labour, Migrant workers and Human Rights Violations, Human Rights of mentally and physically challenged.

Unit 5: State, Individual Liberty, Freedom and Democracy**6 Hrs**

The changing of state with special reference to developing countries, Concept of development under development and Social action, need for Collective action in developing societies and methods of Social action, NGOs and Human Rights in India: - Land, Water, Forest issues.

Unit 6: Human Rights in Indian Constitution and Law**6 Hrs**

The constitution of India:

- (i) Preamble
- (ii) Fundamental Rights
- (iii) Directive principles of state policy
- (iv) Fundamental Duties
- (v) Some other provisions

Universal declaration of Human Rights and Provisions of India, Constitution and Law, National Human Rights Commission and State Human Rights Commission

Reference Books:

1. Shastry, T. S. N., India and Human rights: Reflections, Concept Publishing Company India (P Ltd.), 2005.
2. Nirmal, C.J., Human Rights in India: Historical, Social and Political Perspectives (Law in India), Oxford India.

BTHM403

Basic Human Rights

3 Credits

Course Objectives:

- 1.To train the young minds facing the challenges of the pluralistic society and the rising conflicts and tensions in the name of particularistic loyalties to caste, religion, region and culture.
- 2.To give knowledge of the major "signposts" in the historical development of human rights, the range of contemporary declarations, conventions, and covenants.
- 3.To enable them to understand the basic concepts of human rights (including also discrimination, equality, etc.), the relationship between individual, group, and national rights.
- 4.To develop sympathy in their minds for those who are denied rights.
- 5.To make the students aware of their rights as well as duties to the nation

Course Outcomes:

1. Students will be able to understand the history of human rights.
2. Students will learn to respect others caste, religion, region and culture.
3. Students will be aware of their rights as Indian citizen.
4. Students will be able to understand the importance of groups and communities in the society.
5. Students will be able to realize the philosophical and cultural basis and historical perspectives of human rights.

UNIT – 1

The Basic Concepts: - Individual, group, civil society, state, equality, justice. Human Values, Human rights and Human Duties: - Origin, Contribution of American bill of rights, French revolution. Declaration of independence, Rights of citizen, Rights of working and exploited people

UNIT – 2

Fundamental rights and economic programme. Society, religion, culture, and their inter relationship. Impact of social structure on human behavior, Social Structure and Social Problems: - Social and communal conflicts and social harmony, rural poverty, unemployment, bonded labor.

UNIT – 3

Migrant workers and human rights violations, human rights of mentally and physically challenged. State, Individual liberty, Freedom and democracy. NGOs and human rights in India: - Land, Water, Forest issues.

UNIT – 4

Human rights in Indian constitution and law:-

- i)The constitution of India: Preamble ii) Fundamental rights. iii) Directive principles of state policy. iv) Fundamental duties. v) Some other provisions.

UNIT – 5

Universal declaration of human rights and provisions of India. Constitution and law. National human rights commission and state human rights commission.

UNIT- 3

07 Hours

Transportation Problems: Introduction, Methods for finding initial solution, Test of optimality, Maximization and Minimization Transportation problems, Transshipment problems, Degeneracy.

Queuing Theory: Queuing models – queuing systems and structures – notation –parameter – single server and multiserver models – Poisson input – exponential service – constant rate service – infinite population.

Game Theory: Introduction, Two-person zero-sum game, Minimum and Maximum principle, Saddle point, Methods for solving game problems with pure and mixed strategies

UNIT- 4

07 Hours

Sequencing Models: Scheduling and sequencing. Assumptions in sequencing models, Processing 'n' jobs on 'm' machines. Processing of two jobs on machines with each having different processing order.

Inventory Models: Types of Inventory- EOQ –ERL- Deterministic inventory problems, Price breaks, stochastic inventory problems, Selective inventory control techniques..

UNIT- 5

07 Hours

Network Models: Introduction to PERT/CPM & its importance in project management. Concept & construction of network diagrams. Critical path & project duration, floats, network crashing, optimum project duration & cost, PERT activity, time estimate, probability of completion of a project on or before specified time.

TEXT/REFERENCE BOOKS:

1. Wayne. L. Winston, Operations research applications and algorithms, Thomson learning,4th edition 2007.
2. 2. Taha H.A, “Operation Research”, Pearson Education sixth edition, 2003
3. 3. S. D. Sharma, “Introduction to Operations Research”, Discovery Publishing House, New Delhi
4. 4. P. K. Gupta, D. S. Hira, “Operations Research”, S Chand and Co. Ltd., ISBN 81-219-0281-9.

BTETOE505E Augmented, Virtual and Mixed Reality

4 Credits

Course Objectives:

An ability to use current techniques, skills, and tools necessary for computing practice with an understanding of the limitations

Course Outcomes:

After completion of this course students will be able to

1. To develop 3D virtual environments.
2. To develop 3D interaction techniques and immersive virtual reality applications.

UNIT – 1 Introduction & Geometry of Virtual Worlds:

07 Hours

Course mechanics, Goals and VR definitions, Historical perspective, Birds-eye view Geometric modeling, transforming models, Matrix algebra and 2D rotations, 3D rotations and yaw, pitch, and roll, 3D rotations and yaw, pitch, and roll, Axis-angle representations, Quaternions, Converting and multiplying rotations, Homogeneous transforms, The chain of viewing transforms, Eye transforms,

Canonical view transform, View port transform

UNIT – 2 Light and Optics:

07 Hours

Three interpretations of light, Refraction, Simple lenses, Diopters, Imaging properties of lenses, Lens aberrations, Optical system of eyes

UNIT – 3 Visual Physiology & Visual Perception:

07 Hours

Photoreceptors, Sufficient resolution for VR, light intensity, Eye movements, Eye movement issues for VR, Neuroscience of vision, Depth perception, Motion perception, Frame rates and displays

UNIT – 4 Tracking Systems & Visual Rendering:

07 Hours

Overview, Orientation tracking, Tilt drift correction, Yaw drift correction, Tracking with a camera, Perspective n-point problem, Filtering, Lighthouse approach, Visual Rendering- overview, Shading models, Rasterization, Pixel shading, VR-specific problems, Distortion shading, Post-rendering imagewarp

UNIT – 5 Audio & Interfaces and Augmented Reality:

07 Hours

Physics and physiology, auditory perception, Auditory localization, Rendering, Spatialization and display, combining other senses, Interfaces, Locomotion, Manipulation, System control, Social interaction, Evaluation of VR Systems.

Augmented Reality: System Structure of Augmented Reality; Key Technology in AR; General solution for calculating geometric & illumination consistency in the augmented environment.

TEXT/REFERENCE BOOKS:

1. <http://msl.cs.uiuc.edu/vr/>
2. George Mather, Foundations of Sensation and Perception: Psychology Press; 2 edition, 2009.
3. Peter Shirley, Michael Ashikhmin, and Steve Marschner, Fundamentals of Computer Graphics, A K Peters/CRC Press; 3 edition, 2009.

BTETOE505F Open Source Technologies

4 Credits

Course Objectives:

1. Understand the difference between open source software and commercial software.
2. Familiarity with Linux operating system.
3. Understanding and development of web applications using open source web technologies

Course Outcomes:

Student will be able to

1. Define the development model of Open source software, and tell about the open-source licensing
2. Understand the difference between open source software and commercial software.
3. To get acquainted with Linux OS by understanding configuration and troubleshooting of Linux Operating System.
4. Identify, install and implementation of open source technologies.

TEXT/REFERENCEBOOKS:

1. Kinsler and Frey, „Fundamentals of Acoustics“, 4th edition

BTHM605 Employability & Skill Development 3 Credits

Course Objectives:

1. To develop analytical abilities.
2. To develop communication skills.
3. To introduce the students to skills necessary for getting, keeping and being successful in a profession.
4. To expose the students to leadership and team-building skills.

Course Outcomes:

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

1. Have skills and preparedness for aptitude tests.
2. Be equipped with essential communication skills (writing, verbal and non-verbal)
3. Master the presentation skill and be ready for facing interviews.
4. Build team and lead it for problem solving.

UNIT – 1 Soft Skills & Communication basics: 07 Hours

Soft skills Vs hard skills, Skills to master, Interdisciplinary relevance, Global and national perspectives on soft skills, Resume, Curriculum vitae, How to develop an impressive resume, Different formats of resume – Chronological, Functional, Hybrid, Job application or cover letter, Professional presentation-planning, preparing and delivering presentation, Technical writing.

UNIT – 2 07 Hours

Interpersonal Skills: Critical Thinking, Assertiveness, Decision Making, Problem Solving, Negotiation, Building Confidence, Time Management, Personal Presentation, Assertiveness, negotiation, avoiding Stress.

Commercial Awareness: Professional etiquettes and manners, Global negotiating and Persuading, Integrity. Global trends and statistics about civil engineering businesses.

UNIT – 3 Grammar and Comprehension: 07 Hours

English sentences and phrases, Analysis of complex sentences, Transformation of sentences, Paragraph writing, Story writing, Reproduction of a story, Letter writing, précis writing, Paraphrasing and e-mail writing.

UNIT – 4 Skills for interviews: 07 Hours

Interviews- types of interviews, preparatory steps for job interviews, interview skill tips, Group

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

discussion- importance of group discussion, types of group discussion, difference between group discussion, panel discussion and debate, personality traits evaluated in group discussions, tips for successful participation in group discussion, Listening skills- virtues of listening, fundamentals of good listening, Non-verbal communication-body movement, physical appearance, verbal sounds, closeness, time.

UNIT – 5 Problem Solving Techniques:

07 Hours

Problem solving model: 1. Define the problem, 2. Gather information, 3. Identify various solution, 4. Evaluate alternatives, 5. Take actions, 6. Evaluate the actions.

Problem solving skills: 1. Communicate. 2. Brain storming, 3. Learn from mistakes.

TEXT/REFERENCE BOOKS:

1. R. Gajendra Singh Chauhan, Sangeeta Sharma, "Soft Skills- An integrated approach to maximize personality", ISBN: 987-81-265-5639-7, First Edition 2016, WileyWren and Martin, "English grammar and Composition", S. Chandpublications.
2. R. S. Aggarwal, "A modern approach to verbal reasoning", S. Chandpublications.
3. Philip Carter, "The Complete Book of Intelligence Test", John Willey & SonsLtd.
4. Philip Carter, Ken Russell, "Succeed at IQ test", KoganPage.
5. Eugene Ehrlich, Daniel Murphy, "Schaum's Outline of English Grammar", McGraw Hills.
6. David F. Beer, David A. McMurrey, "A Guide to Writing as an Engineer", ISBN: 978- 1-118-30027-5 4th Edition, 2014, Wiley.

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BTHM705

Financial Management

2 Credits

Course Objectives:

- To help the students to develop cognizance of the importance of Financial Management in corporate valuation
- To enable students to describe how people analyze the corporate leverage under different conditions and understand why people value different corporate in different manner.
- To provide the students to analyze specific characteristics of Supply Chain Industry and their future action for cash flow
- To enable students to synthesize related information and evaluate options for most logical and optimal solution such that they would be able to predict and control Debt Equity incurrence and improve results.

Course Outcomes:

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

1. The students would be able to understand and define basic terminology used in finance and accounts
2. The students would be able to prepare & appraise Financial Statements and evaluate a company in the light of different measurement systems.
3. The students would be able to analyze the risk and return of alternative sources of financing.
4. Estimate cash flows from a project, including operating, net working capital, and capital spending.
5. To estimate the required return on projects of differing risk, to estimate the cash flows from an investment project, calculate the appropriate discount rate, determine the value added from the project, and make a recommendation to accept or reject the project
6. To describe and illustrate the important elements in project finance Using financial calculator and Excel in a variety of problems.

UNIT - 1

Introduction to Financial Accounting, Book keeping & Recording: Meaning, Scope and importance of Financial Accounting. Financial Accounting - concepts and conventions, classification of accounts, Rules and principles governing Double Entry Book-keeping system, Meaning, Preparation of Journal, Ledger, Cash book & Trial balance.

UNIT - 2

Financial Statement Preparation, analysis & Interpretation: Preparation of financial statement and Profit & Loss Account, Balance Sheet, Ratio Analysis - classification of various ratios.

UNIT - 3

Introduction To Financial Management: Concept of business finance, Goals & objectives of financial management, Sources of financing, Long Term financing- shares, debentures, term loans, lease & hire purchase, retained earnings, public deposits, bonds (Types, features & utility). Short Term Financing- bank finance, commercial paper, trade credit

UNIT - 4

Working Capital Management: Concept of working Capital, significance, types. Adequacy of working capital, Factors affecting working capital needs, financing approaches for working capital, Methods of forecasting working capital requirements, Methods of Forecasting.

UNIT - 5

Time Value of Money & Capital Budgeting: Concept of time value of money, Compounding & discounting; Future value of single amount & annuity, present value of single amount & annuity; Practical application of time value technique. Capital budgeting - Nature and significance, techniques of capital budgeting –Pay Back Method, Accounting rate of return, Internal Rate of Return, DCF, Net Present Value and profitability index.

UNIT - 6

Project Financing: Details of the company, its promoters and project finances required, profitability etc., Loan documentation-Appraisal of terms loans by financial institutions. Basic components of project finance.

TEXT & REFERENCE BOOKS

1. Financial Management by Khan & Jain, Text, Problem & Cases, Tata McGraw Hill Publication 5th Edition.
2. Tulsian Financial Management by Dr. P.C.Tulsian, S Chand Publication 5th Edition.
3. Taxman's Financial Management by Ravi M. Kishore, Taxmann 2017 Edition.
4. A Textbook of Financial , Cost & Management Accounting by Dr.P.Pariasamy, Himalaya Publishing House
5. Fundamentals of financial Management by Bhabhtosh Banerjee, PHI publication, 2nd Edition.

MBA First Semester

Subject Title	: Management Practices & Organizational Behavior		
Subject Ref. No.	: MANB401	No. of Credits	: 4
		No. of Periods / Week	: 4
		Assignments / Sessional	: 20
		Semester Examination	: 80
Course Objective	: The Subject intends to empower the students to understand the nuances of Organizational Functioning with special reference to Human Behavior, Group Dynamics, Organizational Learning & thereon; thereby making them capable of working in an organizational set-up.		
Pre Requisite	: The students are expected to be prepared with the theoretical aspects of the same, so that the mentor could facilitate the minds to absorb its practical aspects.		
Unit – I	: Genesis of Management Thought & Conceptualization: Understanding of Management Concepts, Evolution of Management Thought, Systems and Contingency Approach for understanding organizations, Managerial Processes, Functions, Skills & roles of a Manager in an organization; Management by Objectives (MBO).		
Unit – II	: Management of Individual Behavior in Organization - I: Personality, Perceptions, Values, Attitudes, Learning.		
Unit – III	: Management of Individual Behavior in Organization - II: Work motivation & Employee Engagement, Individual decision making & problem solving		
Unit – IV	: Group Dynamics: Corporate Leadership, Emotional Intelligence, Understanding & managing group processes-Interpersonal and Group Dynamics - Communication, Group Decision-making, Organizational Design & Structure, Recreation & Work Stress		
Unit – V	: Society vis-à-vis Organization: Corporate Social Responsibility; Corporate Global Citizenship in the wake of Globalization		
Text Books	: <ol style="list-style-type: none"> 1. Luthans, F. <i>Organizational Behaviour</i>, 7th ed., New York, McGraw Hill, 1995. 2. Robbins, S.P. <i>Management</i>, 5th ed., New Jersey, Englewood Cliffs, Prentice Hall Inc., 1996. Robbins, S.P. <i>Organizational Behaviour</i>, 7th ed., New Delhi, Prentice hall of India, 1996 		
Additional Reference Books	: <ol style="list-style-type: none"> 1. Koonz, H. and Weachirch, H. <i>Management</i>. 10th ed., New York, McGraw Hill, 1995. 2. Goleman, Daniel <i>Emotional Intelligence</i>, 		

Subject Title	: Environment Management		
Subject Ref. No.	: MANB406	No. of Credits	: 2
		No. of Periods / Week	: 2
		Assignments / Sessional	: 10
		Semester Examination	: 40
Course Objective	: UNs Resolution for 2010 & the World Millennium Goals have Environment & Sustainable Development as the core objective. The course is designed to make the budding managers sensitized to Environment along with developing an understanding of inclusive & sustainable growth; thereby creating Managers that cater to the societal demands along with the organizational priorities.		
Unit – I	: Environment Management: Fundamentals-Sustainable Development, Implications of human population growth, Limits to growth, Environment and Business Schools.		
Unit – II	: Energy Management-Fossil Fuels use, Nuclear – Wind – Hydro Energy, Bio-fuel; Recycling Industry; Ecosystem Concepts; Ecology: Industrial Ecology, Agro-ecology.		
Unit – III	: Environment Management System; EMS Standards; Audit Scheme; Clearance/Permissions for establishing industry; Carbon Credit.		
Unit – IV	: Environmental Management and Valuation: Environmental Accounting, Green Funding, Green Banking; Environment Ethics; Environmental Health & Protection; GATT/ WTO Provisions; Environmental Law.		
Unit – V	: Pollution and Waste Management- Air, Water, Noise & Land Pollution; Waste Management; Biodiversity Management; forest products and Trade; Global-warming; Bharat Stage – II & Euro – II; Role of NGO's.		
Text Books	: 1. Uberoi, N.K.; <i>Environmental Management</i> , Excel Books, A-45, Naraina Pahse-1, New Delhi, 2000. 2. Pandey, G.N.; <i>Environmental Management</i> , Vikas Publishing House New Delhi, 1997. 3. Gupta, N. Dass: <i>Environmental Accounting</i> , Wheeler Publishing 19, K.G. Marg, New Delhi, 1997. 4. Mahanty, S.K. <i>Environment & Pollution Law Manual</i> , Universal Law Publishing, G.T. Karnal Road, New Delhi, 1996. 5. Harley, Nick: <i>Environmental Economics</i> , MacMillan India Ltd., Ansari Road, New Delhi, 1997. 6. Kolstad, Charles D.: <i>Environmental Economics</i> , Oxford University Press, 2000. 7. Nigel Horan, : <i>Environment Waste Management: An European Perspective</i> , John Wiley & Sons, 1996.		

Subject Title	: Yoga	No. of Credits	: 2
Subject Ref. No.	: MANB408	No. of Periods / Week	: 2
		Assignments / Sessional	: 50

Course Objective : The objective of this course is to promote holistic development of the students. The course should be undertaken and assessed by a Qualified Yoga Teacher .

Subject Title: Human Resource Management
Subject Code: MANB-410

No. of credits: 04
No of periods / week: 04
Assignments/sessions: 20
Semester Exam: 80

Course Objectives: In a complex world of industry and business organizational efficiency is largely dependent on the contribution made by the members of the organization. The Objectives of this course is to sensitize students to the various facets of managing people and to create an understanding of the policies and practices of human resource management.

Pre-requisites: Evolution of Human Resource Management, basic Functions and impact on Human Resource Management.

Unit-I **Conceptualization & fundamentals:** Introduction to HRM, corporate objectives & HRM, Concepts & functions of HRM, comparison between Personnel Management & HRM, corporate level strategies & its effect on HRM, Role of Human Resources Manager.

Unit-II **Employment:** Job Design, Job Analysis, Human Resource Planning, Recruitment, Selection, Placement, Induction.

Unit-III **Human Resource Development:** Training & Development, career planning & succession Planning, Performance Appraisal, Potential Appraisal, Promotion, Transfer & Demotion, Retention & Retrenchment, Exit Interviews

Unit-IV **Compensation :** Job Evaluation, Wage & salary Administration

Unit-V **Employee Engagement Practices:** Employee welfare, Industrial Relations, fringe Benefits, social Security measures.

Text Books:

1. Dessler, Gary Human Resource Management, Prentice Hall
2. Aswathappa K. Human Resources and Personnel Management Tata McGraw Hill New Delhi, 1997.
3. P. Subba Rao; Personnel And Human Resource Management" Text & Cases, Himalaya Publishing House. 2009.
4. Sarma A.M., Performance Management systems, Himalaya Publication House, 2008.
5. Cardy, Performance Management concepts skills & exercise, printice Hall of India 2007.

Subject Title	: Business Laws		
Subject Ref. No.	: MANB414	No. of Credits	: 4
		No. of Periods / Week	: 4
		Assignments / Sessional	: 20
		Semester Examination	: 80
Course Objective	: The Course bears the onus of developing technical insights in students about the legislative framework of Indian Business Scene.		
Pre Requisite	: The students are required to refer Bare Acts, Law Codes & Supreme Court Precedents on the topics to be discussed in the lecture beforehand.		
Unit – I	: The Indian Contract Act, 1872 (Section 1 – 100) Fundamentals & Conceptualization, Essentials of a Valid Contract, Void-Voidable Contracts, Performance & Breach of Contracts, Remedies on Breach of Contract & Quasi Contracts.		
Unit – II	: The Company Act, 1956 Concept, Nature & Types of Companies, Formation of Company, Memorandum of Association & Articles of Association, Prospectus, Allotment of Shares, Director & its Qualifications, Shares & Share Capital, Membership, Borrowing Powers, Management & Meetings, Winding-up of a Company.		
Unit – III	: The Sale of Goods Act, 1930 Concept, Definitions, Solemnization of a Sale of Goods Contract, Paid & Unpaid Seller, Rights of an Unpaid Seller, Remedies on breach of Contract,		
Unit – IV	: The Negotiable Instruments Act, 1881 Types & Nature of Instruments, Negotiation & Assignment, Holder-in-due Course, Dishonor & Discharge of Negotiable Instruments, Arbitration. & Consumer Protection Act		
Unit – V	: Information Technology Act & Cyber Laws		
Text Books	: Bare Acts & Code Books		
Additional Reference Books	: Supreme Court Journals, Supreme Court Reports & other Reference Journals		

Subject Title	: Indian Ethos & Values		
Subject Ref. No.	: MANB415	No. of Credits	: 2
		No. of Periods / Week	: 2
		Assignments / Sessionals	: 10
		Semester Examination	: 40

Unit I Fundamentals & Conceptualization: Morals – Ethics – Values, Indian Heritage on Ethics, Fundamental principles of Ethics-Values in Business, Need for values in Global change,

Professional Ethics of a Manager, Indian Leaders on Business Ethics.

Unit II Societal Aspect of Ethics & Corporate Governance: Corporate Social Responsibility & corporate Governance, Corporate Global Citizenship.

- Reference Books**
1. Mishra “Business Ethics”, Tata McGraw Hill
 2. Chakraborty, S.K.: Foundation of Managerial work-Contribution from Indian Thought, Himalaya Publishing House Delhi 1998.
 3. Biswanath Ghose, Indian Ethos & Values, Vikas Publishing, 2008.
 - 4.S.A. Sherlekar, Global Dharmic Management, Himalaya Publication House, 2nd Edition 2005.
 5. CVS Murthy, Business Ethics, Himalaya Publishing House, 2006
 6. N.M. Khandelwal, Indian Ethnos & values for Manager, Himalaya

Subject Title	: International Business Environment		
Subject Ref. No.	: MANB416	No. of Credits	: 2
		No. of Periods / Week	: 2
		Assignments / Sessional	: 10
		Semester Examination	: 40
Course Objective	: The objective of the course is to provide the student with a background of various environment factors that have major repercussions on business and sharpen their mind to watch and update the changes that occur constantly in this sphere.		
Unit – I	: International business – An overview of international business, International business environment – Economic, Socio – cultural, Political, Natural environment. Theories of International Business, Strategies of International Business, Modes of entering International Business, Advantages and Disadvantages of International Business,		
Unit – II	: Globalization – Introduction, Meaning, and Definition, Features, Stages of Globalization, Globalization of Markets, Globalization of Production, Globalization of Investments and Technology. Advantages and Disadvantages of Globalizations		
Unit – III	: World Trade Organization(WTO), Tariff and non-Tariff barriers, General Agreement on Trade and Tariff(GATT),Establishment of World Trade Organization., Uruguay round Package., Organization structure of the WTO,WTO –Anti Dumping Measures.		
Unit – IV	: Regional Economic Integration, Global monetary system, Foreign Exchange Market, Global Capital Market.		
Unit – V	: International Marketing, Global HRM, Global Production, Corporate Social Responsibility.		
Text Books	: Francis Cherunilam: Business Environment: Text and Cases, 17/e, Himalaya, 2007. - K.A swathappa, Essentials of Business Environment, 9/e Himalaya, 2007. - P. Subbarao : International Business, Himalaya Publishing. - Charles Hill, International Business – Tata Mc. Graw Hill,		

MBA-III Semester - Marketing

Subject Title	: CONSUMER BEHAVIOUR		
Subject Ref. No.	: MANB-501M	Credits	: 4
		Lectures/ Week	: 4
		Assignments / Sessional	: 20 Marks
		Semester Examination	: 80 Marks

Objective :- The basic objective of this course is to develop an understanding about the consumer decision-making process and its application in marketing function of firms.

- Unit I –** Introduction to Consumer Behavior; Consumer Behavior and Marketing Strategy;
- Unit II-** Consumer Involvement and Decision Making; Information Search Process; Evaluative Criteria and Decision Rules;
- Unit III –** Consumer Motivation; Information Processing and Consumer Perception; Consumer Attitudes and Attitude Change;
- Unit IV –** Influence of Personality and Self Concept on Buying Behavior; Psychographics and Lifestyle; Reference Group Influence;
- Unit V –** Diffusion of Innovation and Opinion Leadership Family Decision Making; Industrial Buying Behavior; Models of Consumer Behavior; Consumer Behavior Audit; Consumer Behavior Studies in India.

Suggested Readings:

1. Assael, H. *Consumer Behaviour and Marketing Action*. Ohio, Sought Western, 1995.
2. Engle, J.F. etc. *Consumer Behaviour*. Chicago, Dryden Press, 1993
3. Howard, John A. etc. *Consumer Behaviour in Marketing*. Englewood Cliffs, New Jersey, Prentice Hall Inc., 1989.
4. Hawkins, D.I. etc *Consumer Behaviour: Implications for Marketing Strategy*. Texas, Business, 1995.
5. Mowen, John C. *Consumer Behaviour*. New York, MacMillan, 1993.
6. Schiffman, L G and Kanuk, L L. *Consumer Behaviour*. New Delhi, Prentice Hall of India, 1994.

Subject Title: Human Resource Planning And Development

Subject Ref. No.: MANB-502H

No. of credits: 04

No of periods /week: 04

Assignments/ sessions: 20

Semester Exam: 80

Course Objectives: To equip the students with the basic understanding of the Human Resource Planning and to provide an insight into the application of Human Resource Forecasting tools and techniques for the purpose of management decision Making.

Pre-requisites: Basics of Human Resource Planning & Role of human resource planning in Human resource Management.

Unit-I Human Resource Planning; Meaning, Importance and Benefits of HRP, Influence of strategic management on HRP, Factor affecting HRP, Process of HRP, Ethics in Human Resource Planning

Unit-II Models and Techniques of Manpower Demand and Supply Forecasting; Recruitment, Centralized and Decentralized Recruitment, Traditional and Modern Sources of Recruitment, Selection Procedure;

Unit-III Human Resource Development, Training methods ,HRD Climate; Culture; QWL, Management of Change; TQM and HRD Strategies; HRD in Strategic Organizations

Unit-IV Career Management and Career Planning; Performance Planning; Potentials Appraisal and Career Development;

Unit-V Human Resource Information System; Indian Labour market Analysis. Retention; Redeployment and Exit Strategies;

Text Books:

1. P.Subba Rao, Personnel and Human Resource Management: Text & Cases, Himalaya Publishing House, 4th revised & Enlarged edition 2010,2011
2. Dr. L.M Prasad, Human Resource Management, Sultan Chand & sons, 2nd Edition Reprint 2009.
3. Dr. P.C. Tripathi, Human Resource Development, Sultan Chand & Sons 5th renised Edition Reprint 2009.
4. Dr. C.B. Gupta, Human Resource Management, Sultan chand & son's, 2009.
5. H. John Bernardin, Florida Atlantic, U-boca Raton, Human Resource Management, McGraw Hill, 2001.
6. George Dreher Indian a university Bloomington & Thomas W Doughherty university of Missouri Columbia, Human resource strategy A ehavioral perspective for the general manager, McGraw Hill companies, 2001.
7. Dipak Kumar Bhattacharyya, Human Resource Planning, Excel Books, 2007.
8. Biswanath Ghosh, Human Resources development & Management,

Subject Title	Cross Culture & Global Human Resource Management
Subject Ref. No.	MANB 506H
	No. of Credits 4
	No. of Periods/Week 4
	Assignments / Sessional 20
	Semester Exams 80
Course Objectives	Metamorphosis from a Closed Economy to a Globalized World has led to free-flow of Goods, Services, Stock & now Humans; & hence the need to study International Human Resource Management. The subject aims to expose & articulate the budding HR Managers, with the concept of Country Cultures, influence on Organizational functioning; thereby arming them to with the skills of International Employee Selection, Engagement & Retention Program.
Pre-requisite	The Students are expected to study various National Cultures; & study their influence on the Organizational Functioning, Expatriate Management & HR Strategies. The students are required to refer various caselets, folklore, research articles & Business Magazines on the subject.
Unit – I	Fundamentals of Culture Structural Evolution of Global Organizations, The Iceberg Model of Organizational Culture, Hofsted’s Theory of Culture, 7-S Framework, Kurt-Lewin Model of Change, Hopson’s Change Curve, Virginia Satir’s Model.
Unit – II	Cross-Culture Variables: National Cultures according to Hofsted’s Study: India, USA, Japan, Europe (Germany, France and England), Australia and Middle East. Diversity Management in an organizational context: Socio-cultural context and employee management issues. Cross Cultural Communication and Negotiation
Unit – III	Expatriate Management - I Institutional & Structural Context-Managing alliances and joint ventures ,HR challenges in cross-border integrations-Legal issues in global workforce management. Functional Aspects: Staffing in International context, Appraisal of Expat
Unit – IV	Expatriate Management - II International Training, Compensation Approaches, Social Security Systems across countries
Unit – V	International Contexts International Labour Relations , HRM practices in different countries
Text Books	1. Peter. J. Dowling & others, International Human Resource Management, South western publisher, 2nd Edition 2001. 2. P.L.Rao, International Human resource Management Text & cases, Excel Books, Print Edition 2008.
Additional References	1. Muthinah, K., International relation, Himalaya Publishing House, 2005. 2. Fred Maidment, Western Connecticut, Annual Editions Human Resources, McGraw Hill Dushkin, 17th Edition 2009. 3. K.A. swathappa Canara Bank School of Management studies, International Human Resource Management Text & cases, McGraw