

Programme/ Sem	Course Code	Name of the Course	L	T	P	C
B.E/ II	22CY2101	ENVIRONMENTAL STUDIES (common to all branches except CSE,IT & AIML)	3	0	0	2

The learner should be able to

- Course Objective**
1. Grasp the importance and issues related to ecosystem and biodiversity and their protection.
 2. Acquire knowledge about environmental pollution – sources, effects and control measures of environmental pollution.
 3. Identify the various natural resources, exploitation and its conservation
 4. Gain knowledge on the scientific, technological, economic and political solutions to environmental problems.
 5. Become aware on the national and international concern for environment and its protection

Unit	Description	Instructional Hours
	ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY	
I	Main objectives and scope of environmental studies-Importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – food chain, food web and ecological pyramids - energy flow in the ecosystem – ecological succession processes - Introduction, types, characteristic features, structure and function of the forest and ponds ecosystem – Introduction to biodiversity definition: types and value of biodiversity – hot-spots of biodiversity – threats to biodiversity–endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.	9
II	NATURAL RESOURCES Renewable and Non renewable resources - Forest resources: Use and over-exploitation, deforestation, timber extraction, mining, dams and their effects on forests and tribal people - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture – Energy resources: Renewable and non renewable energy sources – Solar energy and wind energy - role of an individual in conservation of natural resources.	9
III	ENVIRONMENTAL POLLUTION Definition – causes, effects and control measures of: Air pollution- Water pollution – Water quality parameters- Soil pollution - Noise pollution- Nuclear hazards – role of an individual in prevention of pollution.	9
IV	SOCIAL ISSUES AND THE ENVIRONMENT From unsustainable to sustainable development – urban problems related to energy- environmental ethics: Issues and possible solutions – 12 Principles of green chemistry- Municipal solid waste management. Global issues – Climatic change, acid rain, greenhouse effect and ozone layer depletion – Disaster Management – Tsunami and cyclones.	9
V	HUMAN POPULATION AND THE ENVIRONMENT Population growth, variation among nations – population explosion – family welfare programme – environment and human health – effect of heavy metals – human rights – value education – HIV / AIDS – women and child welfare –Environmental impact analysis (EIA)- GIS-remote sensing-role of information technology in environment and human health.	9
	Total Instructional Hours	45

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

- Course Outcome**
- CO1: Discuss the importance of ecosystem and biodiversity for maintaining ecological balance.
CO2: Identify the causes of environmental pollution and hazards due to manmade activities.
CO3: Develop an understanding of different natural resources including renewable resources.
CO4: Demonstrate an appreciation for need for sustainable development and understand the various social issues and solutions to solve the issues.
CO5: Describe about the importance of women and child education, existing technology to protect environment.

TEXT BOOKS:

- T1 – S.Annadurai and P.N. Magudeswaran, “Environmental studies”, Cengage Learning India Pvt.Ltd, Delhi, 2020
T2 - Anubha Kaushik and C. P. Kaushik, “Perspectives in Environmental studies”, Sixth edition, New Age International Publishers, New Delhi, 2019.

REFERENCE BOOKS:

- R1 - Erach Bharucha, “Textbook of environmental studies” University Press (I) Pvt.Ltd, Hyderabad, 2015
R2 - G.Tyler Miller, Jr and Scott E. Spoolman“Environmental Science” Thirteenth Edition, Cengage Learning, 2010.
R3 – Gilbert M. Masters and Wendell P. Ela “Introduction to Environmental Engineering and Science”, 3rd edition, Pearson Education, 2013.

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Programme/ Sem	Course Code	Name of the Course	L	T	P	C
B.E./B.Tech/ I	22HE1071	UNIVERSAL HUMAN VALUES (COMMON TO ALL BRANCHES)	2	0	0	2

The students should be made

Course Objectives

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Unit

Description

Instructional Hours

I	Introduction to Value Education Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education)-Understanding Value Education - Self-exploration as the Process for Value Education - Continuous Happiness and Prosperity – the Basic Human Aspirations - Happiness and Prosperity – Current Scenario - Method to Fulfill the Basic Human Aspirations	6
II	Harmony in the Human Being and Harmony in the Family Understanding Human being as the Co-existence of the Self and the Body - Distinguishing between the Needs of the Self and the Body - The Body as an Instrument of the Self - Understanding Harmony in the Self- Harmony of the Self with the Body - Programme to ensure self-regulation and Health	6
III	Harmony in the Family and Society Harmony in the Family – the Basic Unit of Human Interaction. Values in Human to Human Relationship 'Trust' – the Foundational Value in Relationship Values in Human to Human Relationship 'Respect' – as the Right Evaluation Understanding Harmony in the Society	6
IV	Harmony in the Nature / Existence Understanding Harmony in the Nature. Interconnectedness, self-regulation and Mutual Fulfillment among the Four Orders of Nature- Understanding Existence as Co-existence of mutually interacting units in all pervasivespace Realizing Existence as Co-existence at All Levels The Holistic Perception of Harmony in Existence. Vision for the Universal Human Order	6
V	Implications of the Holistic Understanding – a Look at Professional Ethics Natural Acceptance of Human Values Definitiveness of (Ethical) Human Conduct A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order-Competence in Professional Ethics Holistic Technologies, Production Systems and Management Models- Typical Case Studies Strategies for Transition towards Value-based Life and Profession	6
Total Instructional Hours		30

Course Outcome

- At the end of the course, the learner will be able
- CO1: To become more aware of holistic vision of life - themselves and their surroundings.
- CO2: To become more responsible in life, in the Society and in handling problems with sustainable Solutions.
- CO3: To sensitive towards their commitment towards what they understood towards environment and Socially responsible behavior.
- CO4: To able to apply what have learnt to their own self in different day-to-day settings in real life and In handling problems with sustainable solutions.
- CO5: To develop competence and capabilities for maintaining Health and Hygiene.

Reference Books:

- R1. A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1
- R2. Teachers' Manual for A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2
- R3. Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
- R4. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.

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Programme/ Sem	CourseCode	Name of the Course	L	T	P	C
B.E./B.Tech/ I	22MC1091	INDIAN CONSTITUTION (Common for all Branches)	2	0	0	0

Course Objectives

The student should be made to

1. Sensitization towards self, family (relationship), society and nature
2. Understanding (or developing clarity) of nature, society and larger systems, on the basis of human relationships and resolved individuals
3. Strengthening of self-reflection
4. Development of commitment and courage to act

Unit	Description	Instructional Hours
BASIC FEATURES AND FUNDAMENTAL PRINCIPLES		
I	Meaning of the constitution law and constitutionalism–Historical perspective of the constitution of India– salient features and characteristic of the constitution of India.	6
FUNDAMENTAL RIGHTS		
II	Scheme of the fundamental rights–fundamental duties and its legislative status–The directive principles of state policy–its importance and implementation-Federal structure and distribution Of legislative and financial powers between the union and states.	6
PARLIAMENTARY FORM OF GOVERNMENT		
III	The constitution powers and the status of the president in India.–Amendment of the constitutional Powers and procedures–The historical perspective of the constitutional amendment of India– Emergency provisions: National emergency, President rule, Financial emergency.	6
LOCAL GOVERNANCE		
IV	Local self-government-Rural Local Government-Panchayath Raj, Elections of Panchayat-State Election Commission- Urban Local Government-Amendment Act, Urban Local Government Structures in India	6
INDIAN SOCIETY		
V	Constitutional Remedies for citizens–Political Parties and Pressure Groups; Right of Women, Children and Scheduled Castes and Scheduled Tribes and other Weaker Sections.	6
Total Instructional Hours		30

Course Outcome

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

CO1: Understand the functions of the Indian government.

CO2: Understand and abide the rules of the Indian Constitution

TEXTBOOKS:

- T1: Durga Das Basu, "Introduction to the Constitution of India", Prentice Hall of India, New Delhi, 1997.
- T2: Agarwal R C., "Indian Political System", S.Chand and Company, New Delhi, 1997.
- T3: Maciver and Page, "Society: An Introduction Analysis", MacMilan India Ltd., New Delhi.
- T4: Sharma K L., "Social Stratification in India: Issues and Themes", Jawaharlal Nehru University, New Delhi, 1997.

REFERENCE BOOKS:

- R1-Sharma, Brij Kishore, "Introduction to the Constitution of India", Prentice Hall of India, New Delhi.
- R2-Gahai UR., "Indian Political System", New Academic Publishing House, Jalaendhar.
- R3-Sharma R N., "Indian Social Problems", Media Promoters and Publishers Pvt. Ltd.

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The student should be able to

- Course Objectives:**
1. Acquire the knowledge and active participate in social service and community development activities.
 2. Understand the concept of disaster management and role of NCC cadets in disaster management..
 3. Understand the concept thinking and reasoning process..
 4. Understand about maps and use of bearing and service protector
 5. Know about the principles of flight and Aero foil structure and ATC procedures.

Unit	Description	Instructional Hours
	SOCIAL SERVICES AND COMMUNITY DEVELOPMENT	
I	Basics of social services and its need - Rural development programs - Contribution of youth towards social welfare - NGOs in social services Swach bharrath Abhiyan - Social evils - Mission Indra danush - Beti bacho Beti pado - Digital awareness - Constitution day.	3
	DISASTER MANAGEMENT	
II	Organization of Disaster management -Types of emergencies - Natural and manmade disasters - fire service and fire fighting - prevention of fire.	3
	PERSONALITY DEVELOPMENT	
III	Introduction to personality development - public speaking Intra and Inter personal skills -self awareness - critical thinking - Decision making and problem solving.	3
	MAP READING	
IV	Types of maps - conventional signs - scales and Grid system - relief and contour gradient - cardinal points - Types of North - types of bearing and use of service protector - Prismatic compass and its uses - setting of map - finding North and own position.	3
	PRINCIPLES OF FLIGHT AND AIRMANSHIP	
V	Introduction to principle of flight - Forces acting on the aircraft - Angle of attack - Angle of incidence - Newton's - law of motion - Bernauli's theorem and Venturi effect - Aerofoil - Airfield layout - ATC (Air Traffic Control) - circuit procedures - Aviation medicine.	3
Total Instructional Hours		15

After completion of the course the learner will be able to


- Course Outcome:**
- CO1: Perform the social services on various occasions for better community and social life
 CO2: Appreciate the need and requirement for disaster management and NCC role in disaster management activities.
 CO3: Define thinking, reasoning, critical thinking and creative thinking
 CO4: Use of bearing and service protector and locate the places and objects on the ground.
 CO5: Understand the principles of flight and Aerofoil structure

Reference:

1. UGC and AICTE circulated syllabus.

Text Books :

1. NCC cadet Guide (SD/SW) Army
2. NCC cadet Guide (SD/SW) Airforce.
3. ANOs Guide (SD/SW) by DG NCC, Ministry of Defence, New Delhi
4. Digital Forum App 1.0 & 2.0, by DG NCC DG NCC, Ministry of Defence, New Delhi


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Programme/ Sem	Course Code	Name of the Course	L	T	P	C
B.E./B.Tech/ I	22MC2092	HERITAGE OF TAMIL	2	0	0	0

The learner should be able to

Course
Objective

1. Introduce students to the great History of Tamil literature.
2. Establish the heritage of various forms of Rock art and Sculpture art.
3. To study and understand the various folk and Martial arts of Tamil culture
4. Introduce students to Ancient Tamil concepts to understand the richness of Tamil literature.
5. To learn about the various influences or impacts of Tamil language in Indian culture.

Unit

Description

Instructional
Hours

I Language and Literature

Language families in India – Dravidian Languages – Tamil as a classical language – Classical Literature in Tamil- Secular nature of Sangam Literature – Distributive justice in Sangam Literature – Management principles in Thirukural – Tamil epics and impacts of Buddhism & Jainism in Tamil and Bakthi literature of Azhwars and Nayanmars – Forms of minor poetry – Development of Modern literature in Tamil – Contribution of Bharathiyar and Bharathidasan.

6

II Heritage _ Rock Art Paintings to Modern Art – Sculpture

Hero Stone to Modern Sculpture – Bronze icons – Tribes and their handicrafts - Art of temple car making – Massive Terracotta sculptures. Village deities, Thiruvalluvar statue at Kanyakumari, Making of musical instruments – Mridangam, Parai, Yazh and Nadhaswaram - Role of Temples in social and economic life of Tamils.

6

III Folk and Martial Arts

Therukoothu, Karagattam, Villupattu, Kaniyan koothu, Oyilattam, Leather puppetry, Silambattam., Valari Tiger dance – Sports and Games of Tamils.

6

Thinai Concept of Tamils

IV Flora and Fauna of Tamils – Aham and Puram Concept from Tholkappiyam and Sangam

Literature – Aram concept of Tamils – Education and Literacy during Sangam Age - Ancient cities and ports of Sangam age – Export and Import during Sangam age – Overseas conquest of Cholas.

6

Contribution of Tamils to Indian National Movement and Indian Culture

V Contribution of Tamils to Indian freedom struggle – The cultural influence of Tamils over the other parts of India – Self respect movement – Role of Siddha Medicine in indigenous systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil books.

6

Total Instructional Hours 30

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

CO1: Learn about the works pertaining to Sangam age

CO2: Aware of our Heritage in art from Stone sculpture to Modern Sculpture.

Course Outcome CO3: Appreciate the role of Folk arts in preserving, sustaining and evolution of Tamil culture.

CO4: Appreciate the intricacies of Tamil literature that had existed in the past.

CO5: Understand the contribution of Tamil Literature to Indian Culture

TEXTBOOKS:

T1: Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)

T2: Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).

T3: Historical Heritage of the Tamils (Dr.S.V.Subatamian, Dr.K.D. Thirunavukkarasu)(Published by: International Institute of Tamil Studies).

REFERENCEBOOKS:

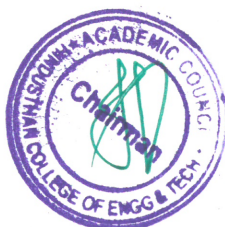
R1-The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies)

R2- Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)

R3-Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

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L T P C

Programme	Course Code	Course Title	L	T	P	C
B.E.	19HE6072	INTELLECTUAL PROPERTY RIGHTS (IPR)	1	0	0	1

- Course Objectives:**
- To introduce fundamental aspects of Intellectual property Rights to students who are going to play a major role in development and management of innovative projects in industries.
 - To disseminate knowledge on patents, patent regime in India and abroad and registration aspects.
 - To disseminate knowledge on copyrights and its related rights and registration aspects.
 - To disseminate knowledge on trademarks and registration aspects.
 - To disseminate knowledge on Design, Geographical Indication (GI) and their registration aspects.

Unit	Description	Instructional Hours
I	INTRODUCTION TO INTELLECTUAL PROPERTY Introduction, Types of Intellectual Property, International Organizations, Agencies and Treaties, Importance of Intellectual Property Rights.	3
II	PATENTS Patents -Elements of Patentability: Novelty, Non-Obviousness (Inventive Steps), Industrial Application -Non -Patentable Subject Matter -Registration Procedure, Rights and Duties of Patentee, Assignment and license.	3
III	COPYRIGHTS Purpose And Function of Trade Marks, Acquisition Of Trade Mark Rights, Protectable Matter, Selecting And Evaluating Trade Mark, Trade Mark Registration Processes.	3
IV	TRADEMARKS Concept of Trademarks -Different kinds of marks (brand names, logos, signatures, symbols, well known marks, certification marks and service marks) -Non-Registrable Trademarks -Registration of Trademarks.	3
V	DESIGN AND GEOGRAPHICAL INDICATION Design: meaning and concept of novel and original -Procedure for registration. Geographical indication: meaning, and difference between GI and trademarks - Procedure for registration.	3


- Course Outcome:**
- CO1 Identify different types of Intellectual Properties (IPs), the right of ownership, scope of protection as well as the ways to create and to extract value from IP.
- CO2 Recognize the crucial role of IP in organizations of different industrial sectors for the purposes of product and technology development.
- CO3 Identify, apply and assess ownership rights and marketing protection under intellectual property law as applicable to information, ideas, new products and product marketing.
- CO4 Identify different types of trademarks and procedure for registration
- CO5 Recognize the concept of design, geographical indication and procedure for registration

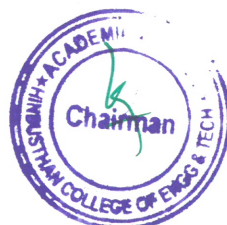
TEXT BOOKS:

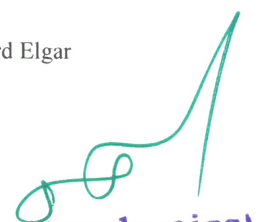
- T1- Neeraj, P., & Khusdeep, D. (2014). Intellectual Property Rights. India, IN: PHI learning Private Limited.
T2- V. Scople Vinod, Managing Intellectual Property, Prentice Hall of India pvt. Ltd, 2012.

REFERENCE BOOKS:

- R1- Ahuja, V K. (2017). Law relating to Intellectual Property Rights. India, IN: Lexis Nexis.
R2- Edited by Derek Bosworth and Elizabeth Webster, The Management of Intellectual Property, Edward Elgar Publishing Ltd., 2013.

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Programme	Course Code	Name of the Course	L	T	P	C
B.E.	22CE3203	WATER SUPPLY AND WASTEWATER ENGINEERING	3	0	0	3

- Course Objective**
1. To gain knowledge on the characteristics of water, water quality standards and water supply system based on demand
 2. To learn the unit operations and understand the design of various components of water treatment plants.
 3. To acquire adequate knowledge on water distribution, systems of plumbing and house service connections.
 4. To understand the design of sewerage system.
 5. To be conversant with the methods of water distribution, systems of plumbing and house service connections.

Unit	Description	Instructional Hours
WATER SUPPLY SYSTEM		
I	Estimation of surface and subsurface water sources - Predicting demand for water- Impurities of water and their significance - Physical, chemical and bacteriological characteristics -Waterborne diseases - Standards for potable water, Intakes of water- Pumping and gravity systems.	9
WATER TREATMENT		
II	Objectives - Unit operations - Principles, functions, and design of water treatment plant units, Plain sedimentation tanks - Aerators of flash mixers, Coagulation and flocculation – Clari flocculator - Sand filters - Disinfection - Water softening - removal of iron and manganese - Defluoridation - Desalination - Residue Management - operation and maintenance of water treatment plants.	9
WATER STORAGE AND DISTRIBUTION		
III	Storage and balancing reservoirs - types, location and capacity- Pipe materials - Laying, joining and testing of pipes - Distribution system: layout, analysis of distribution systems, leak detection, maintenance of distribution systems, pumping stations and their operations - House service connections.	9
PLANNING AND DESIGN OF SEWERAGE SYSTEM		
IV	Characteristics and composition of sewage - Population equivalent - Sanitary sewage flow estimation - Sewer materials - Hydraulics of flow in sanitary sewers - Sewer design - Storm drainage-Storm runoff estimation - Sewer appurtenances - Corrosion in sewers - Prevention and control – Sewage pumping-drainage in buildings - Plumbing systems for drainage.	9
SEWAGE TREATMENT AND DISPOSAL		
V	Objectives - Selection of Treatment Methods - Principles, Functions, - Activated Sludge Process and Extended aeration systems - Trickling filters - Sequencing Batch Reactor (SBR) - UASB - Waste Stabilization Ponds - Other treatment methods - Reclamation and Reuse of sewage - Recent Advances in Sewage Treatment - Operation and Maintenance aspects - Discharge standards-sludge treatment -Disposal of sludge.	9
Total Instructional Hours		45

- Course Outcome**
- Upon successful completion of the course, students shall have ability to
- CO1: Understand the importance of water quality standards and demand of water
 - CO2: Interpret the unit operations and maintenance of water treatment plants
 - CO3: Comprehend the water storage and distribution systems
 - CO4: Design the sewers and sewerage systems
 - CO5: Recognize the various sewage treatment and sludge disposal methods

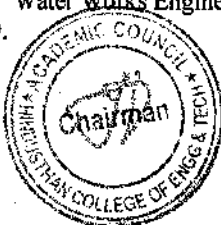
TEXT BOOKS:

- T1 - Punmia, B. C. , Ashok K. Jain, and Arun K. Jain, "Water Supply Engineering", Laxmi Publications Pvt. Ltd., New Delhi, 201
- T2 - Garg, S. K, "Environmental Engineering" Vol. I, Khanna Publishers, New Delhi, 2015.
- T3 - Garg, S.K., "Environmental Engineering" Vol. II, Khanna Publishers, New Delhi, 2015.

REFERENCE BOOKS:

- R1 - Birdie, G.S, and Birdie. J. S., "Water Supply and Sanitary Engineering", Dhanpat Rai & Sons, 2012.
- R2 - Metcalf and Eddy, "Wastewater Engineering – Treatment and Reuse", Tata McGraw Hill Company, New Delhi, 2010.
- R3 - Manual on Water Supply and Treatment, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 1999
- R4 - Syed R. Qasim and Edward M. Motley Guang Zhu, "Water Works Engineering Planning, Design and Operation", Prentice Hall of India Learning Private Limited, New Delhi, 2009.

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3		2		2		1		2	3	3	3
CO2	3	2	2		1	2	3	2	2	1	2	2	3	2
CO3	3	3	3		2	3	2		1	1	3	2	3	2
CO4	3	3	2	2	2	3	2	2	1		2	3	2	3
CO5	3	3	2		2	3	3					2	3	3
Average	3	2.8	2.4	2	1.8	2.75	2.4	2	1.25	1	2.25	2.4	2.8	2.6

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Programme	Course Code	Name of the Course	L	T	P	C
B.E.	21CE5203	WATER SUPPLY ENGINEERING	3	0	0	3

Course Objective

1. Gain knowledge on the characteristics of water, water quality standards and plan water supply system based on demand and rate of consumption
2. Acquire adequate knowledge on the conveyance system and its components
3. Learn the unit operations and understand the design of various components of water treatment plants.
4. Understand the various advanced water treatment methods.
5. Get conversant with the methods of water distribution, systems of plumbing and house service connections.

Unit	Description	Instructional Hours
	PLANNING OF WATER SUPPLY SYSTEM	
I	Public water supply system – Objectives – Planning – Design period – Physical, chemical and biological characteristics of water – IS and WHO standards – Water demand - Types of demand – Variations in demand – Population forecasting.	9
	CONVEYANCE OF WATER	
II	Sources of water – Surface and groundwater sources- Well hydraulics - Intakes – Pipes and conduits for conveying water – Pipe hydraulics – Pipe materials – Laying, joining and testing of pipes – Pipe appurtenances – Pumps and pumping stations.	9
	WATER TREATMENT	
III	Objectives – Unit operation and processes – Screens - Plain sedimentation tanks - Principles & functions of chemical feeding, flash mixers, flocculators - Sand filters – Disinfection – Residue management – Construction, operation and maintenance of water treatment plants.	9
	ADVANCED WATER TREATMENT	
IV	Principles and functions of aeration – Iron and manganese removal – Defluoridation and Demineralisation – Water softening – Desalination - Membrane systems – Recent advances.	9
	WATER DISTRIBUTION AND SUPPLY TO BUILDINGS	
V	Requirements of water distribution - Distribution systems – Analysis of distribution networks – Computer applications – Leak detection methods - Principles of design of water supply to buildings – House service connections – Fixtures and fittings – Systems of plumbing - Types of plumbing – Rural water supply.	9
Total Instructional Hours		45

Course Outcome

- Upon successful completion of the course, students shall have ability to
- CO1: Recognize the importance of water quality standards and forecast population to determine the rate of consumption
 - CO2: Interpret the various conveyance systems and its components
 - CO3: Classify and design the various components of the water treatment plant
 - CO4: Compare various advanced water treatment methods
 - CO5: Analyze distribution networks and assess the various systems of plumbing

TEXT BOOKS:

- T1 - Punmia, B. C. , Ashok K. Jain, and Arun K. Jain, "Water Supply Engineering", Laxmi Publications, Pvt. Ltd., New Delhi, 2017.
- T2 - Garg, S. K, "Environmental Engineering" Vol. I, Khanna Publishers, New Delhi, 2010.

REFERENCE BOOKS:

- R1 - Birdie, G.S, and Birdie, J. S , "Water Supply and Sanitary Engineering", Dhanpat Rai & Sons, 2012.
- R2 - Modi, P. N, "Water Supply Engineering" Vol. I, Standard Book House, New Delhi, 2010.
- R3 - Manual on Water Supply and Treatment, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 1999.
- R4 - Syed R. Qasim and Edward M. Motley Guang Zhu, "Water Works Engineering Planning, Design and Operation", Prentice Hall of India Learning Private Limited, New Delhi, 2009.



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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3		2		2		1		2	3	3	3
CO2	3	2	2		1	2	3	2	2	1	2	2	3	2
CO3	3	3	3		2	3	2		1	1	3	2	3	2
CO4	3	3	2	2	2	3	2	2	1		2	3	2	3
CO5	3	3	2		2	3	3					2	3	3
Average	3	2.8	2.4	2	1.8	2.35	2.4	2	1.25	1	2.25	2.4	2.8	2.6

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Programme	Course Code	Name of the Course	L	T	P	C
BE	21EE5202	Renewable and Non-Renewable Energy Sources	3	1	0	4

Course Objective

1. Provide knowledge on fundamentals of solar photovoltaic power generation.
2. Recognize the various components and operation of wind power generation.
3. Diagnose the role of other renewable energy sources in the power generation.
4. Describe the layout and various components of thermal power plants.
5. Illustrate the layout and various components of hydro and nuclear power generation system.

Unit	Description	Instructional Hours
	SOLAR ENERGY	
I	Renewable & Non-renewable energy sources-comparison- Installed capacity of solar power generation in India- Energy available from Sun - Solar constant, Solar Collectors–Flat plate and Concentrating collectors- Solar Heating Systems: Solar Cooker, Solar Power Tower - solar photo voltaic conversion: solar cell, classification- construction of module, panel and array- Standalone and grid connected Solar PV power generation.	12
	WIND ENERGY CONVERSION SYSTEM	
II	Energy available from wind – Wind Energy Data of India- Power, torque and speed characteristics - Basic principle and theories of wind energy conversion system- Horizontal axis and Vertical axis rotors – pitch and Yaw control mechanism-Wind generators-Types- Working of PMSG - Stand alone, grid connected and hybrid applications of WECS.	12
	OTHER RENEWABLE ENERGY SOURCES	
III	Fuel Cell: Principle of working- various types – construction and applications. Tidal and wave energy conversion & Working principle- Geothermal Energy: Resources, types - Dry steam plants- Flash steam plants and Binary cycle plants- Ocean Thermal Energy Conversion (OTEC), Principle of operation, development of OTEC plants.	12
	THERMAL POWER GENERATION	
IV	Energy scenario & Installed capacity of thermal power generation in India- Base load power plants-Selection of site for thermal power plant- General layout of coal based thermal power generation-construction and working- Environmental hazards of thermal power generation – Combined Cycle Power Plant.	12
	HYDRO AND NUCLEAR POWER GENERATION:	
V	Installed capacity of Hydro and nuclear power generation in India- Selection of site for hydel power plant- Classifications of hydel power plant-Layout and working-Pumped storage scheme-Selection of site for nuclear power plant- Layout and subsystems of Nuclear Power Plants- Working of different Nuclear Reactors - Safety measures for Nuclear Power plants.	12
	Total Instructional Hours	60

Course Outcome

- CO1: Understand the concepts and operation of solar photovoltaic power generation
 CO2: Articulate the construction and working of the components used in wind power generation
 CO3: Comprehend the concept of power generation using fuel cell, geothermal and ocean energy sources.
 CO4: Demonstrate the concepts of the components used in coal based thermal power plants.
 CO5: Exhibit the concepts of the components used in Hydro and Nuclear power plants.

TEXT BOOKS:


- T1 Dipak Kumar Mandal , Somnath Chakrabarti , Arup Kumar Das , “Power Plant Engineering: Theory and Practice”, Wiley Pvt.ltd.,2021
 T2 S.Rao & Dr.B.B.Parulker, “Energy Technology-Non Conventional, Renewable & Conventional”, 3rd edition, Khanna Publishers, 2017.

REFERENCE BOOKS:

- R1 Nag P.K., “Power Plant Engineering”, 4th Edition, Tata-McGraw Hill Education, New Delhi, 2014
 R2 R.K. Rajput, “A Text Book of Power Plant Engineering”, 4th Edition, Laxmi Publications, 2013
 R3 D.P.Kothari,K.S.Singal, Rakesh Ranjan,” Renewable Energy Sources and Engineering Technologies, Second edition ,PHI Learning pvt.ltd.,2011.


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 Dean (Academics)
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Programme	Course Code	Name of the course	L	T	P	C
BE	19EE7302	Electrical Energy Utilization and Conservation	3	0	0	3

Course Objective

1. To learn about different type of electric drives and the systems employed in electric traction.
2. To know about various lamps and design of illuminators schemes.
3. To familiarize with the existing methods, used for heating and welding.
4. To introduce the concepts of refrigeration and Air conditioning
5. To analyze the various energy saving methods

Unit	Description	Instructional Hours
	ELECTRIC DRIVES AND TRACTION	
I	Fundamentals of Electric drive – choice of an Electric Motor – Application of motors for particular services. Traction Motors – Characteristic features of Traction motor – Systems of railway electrification – Electric Braking – Train movement and energy consumption – Traction Motor control – Track equipment and collection gear.	9
	ILLUMINATION	
II	Introduction – Definition and meaning of terms used in illumination Engineering – Classification of light sources. Incandescent lamps, sodium vapour lamps, mercury vapour lamps, fluorescent lamps – Design of illumination systems – factory lighting halls – flood lighting – street lighting.	9
	HEATING AND WELDING	
III	Introduction – advantages of Electric heating – Modes of heat transfer – Methods of electric heating – Resistance heating –Direct –Indirect , Arc furnaces – Direct –Indirect , Induction heating – Direct – Indirect, Dielectric heating. Electric welding – Types – Resistance welding –Butt-Spot-Projection-Seam, Arc welding – Metal arc-Carbon arc, Requirements of good weld –Power supply for arc welding.	9
	REFRIGERATION AND AIR CONDITIONING	
IV	Introduction – Refrigeration cycle – Refrigeration system – Types of refrigerants – Domesticrefrigerator – Water coolers – Air conditioning systems– Classification of air conditioning systems – Central system — Heating of building.	9
	ECONOMICS OF ELECTRICAL ENERGY UTILIZATION	
V	Economics of Electric power supply – General rule for charging the energy – power factor improvement – methods of reducing power factor occurrence – Economic choice of equipment – energy management – energy auditing – power quality.	9
Total Instructional Hours		45

Course Outcome

- CO1: Ability to choose suitable electric drives for different applications
CO2: Ability to design the illumination systems for energy saving
CO3: Ability to understand the utilization of electrical energy for heating and welding purposes
CO4: Illustrate the concepts of refrigeration and air conditioning
CO5: Apply the various method of energy saving and choosing suitable energy efficient systems.

TEXT BOOKS:


- T1 Dr.N.V.Suryanarayana, Utilisation of Electric power, Wiley Eastern Limited, New Age International Limited, 2193
T2 J.B. Gupta, 'Utilization of Electric Power and Electric Traction', S.K. Kataria and Sons, 2002.

REFERENCE BOOKS:

- R1 R.K.Rajput, Utilisation of Electrical Power, Laxmi publications (P) Ltd., 2007.
R2 H.Partab, Art and Science of Utilisation of Electrical Energy, Dhanpat Rai and Co., New Delhi – 2004.
R3 E. Openshaw Taylor, 'Utilization of Electrical Energy in SI Units', Orient Longman Pvt. Ltd, 2003.
R4 C.L. Wadhwa, 'Generation, Distribution and Utilization of Electrical Energy', New Age International Pvt. Ltd, 2003


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Programme	Course Code	Name of the Course	L	T	P	C
BE	19EE8308	Energy Auditing and Energy Management	3	0	0	3

- Course Objective
1. Impart knowledge on basics of energy auditing.
 2. Understand the concepts of energy management.
 3. Familiarize the various energy efficient equipments.
 4. Interpret the importance of power factor improvement and energy instruments.
 5. Manipulate the economic analysis of energy management and audit.

Unit	Description	Instructional Hours
I	FUNDAMENTALS OF ENERGY AUDIT Energy audit – definition, concept, type of audit, energy index, cost index, pie charts, Sankey diagrams, load profiles, Energy conservation schemes – Energy audit of industries – energy saving opportunities, sample energy audit of industry, power station.	9
II	ENERGY MANAGEMENT IN ELECTRICAL SYSTEMS Principles of energy management, organizing energy management program, initiating, planning, controlling, promoting, monitoring, reporting – Energy Manager – Eligibility, Qualification and functions - Questionnaire and check list for top management.	9
III	ENERGY EFFICIENT MOTORS AND LIGHTING Factors affecting efficiency - Energy efficient motors - constructional details, characteristics – variable speed, variable frequency drives - voltage variation –voltage unbalance – over motoring – motor energy audit – Energy efficient lighting system design and practice- lighting control	9
IV	POWER FACTOR IMPROVEMENT AND ENERGY INSTRUMENTS Power factor - methods of improvement, location of capacitors, p.f with nonlinear loads, effect of harmonics on p.f,- p.f motor controllers –Different type of Energy Measuring Instruments - Power Quality Manger, Digital Multimeter, thermocouples, lux meters, Digital Pressure Meter.	9
V	ECONOMIC ANALYSIS METHODS Economics analysis – Depreciation Methods, time value of money, rate of return, present worth method, replacement analysis, life cycle costing analysis - Calculation of simple payback method, net present worth method.	9
Total Instructional Hours		45

- At the end of the course Students will be able to
- Course Outcome
- CO1 Apply the knowledge to calculate the efficiency, energy conservation of various utilities.
 - CO2 Design suitable energy monitoring system to analyze and optimize the energy consumption.
 - CO3 Improve the efficiency by designing suitable energy efficient systems.
 - CO4 Use the energy auditing tools learnt to save energy expenditure.
 - CO5 Carry out the cost- benefit analysis of various investment alternatives for meeting the energy needs.

TEXT BOOKS:


- T1 Paul o’ Callaghan, “Energy Management”,Mc-Graw Hill Book Company – 1st edition; 2198.
- T2 Murphy W.R. and G.Mckay Butter worth , “Energy Management”, Heinemann Publications 2007.

REFERENCE BOOKS:

- R1 John.C.Andreas, “Energy Efficient Electric Motors”, Marcel Dekker Inc Ltd – 3rd edition; 2005
- R2 W.C.Turner Steve Doty, “Energy Management Handbook”, John Wiley and Sons, 7th Edition 2009.
- R3 Amlan Chakrabarti, Energy Engineering and Management, Prentice hall India 2011
- R4 Stephan A. Roosa, Steve Doty, Wayne C. Turner, “Energy Management Handbook”, 9th Edition 2018.


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PROFESSIONAL ELECTIVE V

Programme	Course Code	Name of the Course	L	T	P	C
B.E.	19EI8181	DISASTER MANAGEMENT	3	0	0	3

- Course Objective
1. Interpret the basic knowledge of disaster management.
 2. Discuss about the exposure of environmental disaster.
 3. Create awareness about earthquake and Tsunami.
 4. Express the cyclone management techniques.
 5. Apply the technologies in disaster management..

Unit	Description	Instructional Hours
	INTRODUCTION	
I	Disaster - Disaster management - Disaster prevention and preparedness measures - Types of Disaster Causal factor of Disaster - Natural, Manmade and creeping disaster - Disaster in the Indian context-various measures - Disaster related policy goals - United Nations Development Program (UNDP) - United Nations Disaster Relief Organization (UNDRO) - Govt. of India.	9
	ENVIRONMENTAL DISASTER	
II	Environmental hazards - Typology - Assessment and response - the strategies - the scale of disaster - Vulnerability - Disaster trends - Paradigms towards a balanced view - Chemical hazards and Toxicology - Biological hazards - Hazard caused by world climate change - Risk analysis - other technological disasters.	9
	EARTHQUAKE AND TSUNAMI	
III	Earthquake - Causes of earthquake - Earthquake scales - Measures of earth quake - Magnitude and Intensity - Seismic zone - Earthquake disaster mitigation - Forecasting techniques and Risk analysis – Tsunami - Causes of Tsunami - Effects of Tsunami - Tsunami warning system in India - International status of Tsunami warning and communication system - Tsunami warning centers - Pacific Tsunami Warning Center (PTWC) - Institutional arrangements and design criteria for Tsunami mitigation.	9
	CYCLONE	
IV	Tropical cyclone - Warning system - Protection of buildings from cyclones - Precaution before and during cyclones - Tropical cyclone warning strategy in India - Cyclone related problems - Aerial survey - Management strategy - risk reduction by public awareness and education.	9
	APPLICATION OF TECHNOLOGY IN DIASTER MANAGEMENT	
V	Hazard map - Multi hazard mapping - Application of satellites in Disaster Management - Application of remote sensing in forecasting and disaster relief - Use of digital image processing in disaster management - GIS in disaster management - Spatial data - GIS data base design - Convention mapping concepts and Coordinate system - Methods of spatial Interpolation in GIS.	9
Total Instructional Hours		45

- Course Outcome
- CO1: Associate the basic concepts of disaster management in real life
 CO2: Summarize the vulnerability of environmental disaster
 CO3: Determine the measures to be taken during environmental disaster
 CO4: Predict the consequences of cyclones
 CO5: Innovate the technology in disaster management

TEXT BOOKS:

- T1 - Pardeep Sahni, Madhavi malalgoda and Ariyabandu, "Disaster Risk Reduction in South Asia", Prentice Hall of India 2003.
 T2 - Amita Sinhal, "Understanding Earthquake Disasters", Tata McGraw-Hill, 2010.

REFERENCE BOOKS:

- R1 -Pardeep Sahni, Alka Dhameja and Uma medury, "Disaster Mitigation: Experiences and Reflections", Prentice Hall of India ,2004.
 R2 - Jeff Groman, "The Atlas of Natural Disasters", Michael Friedman Publication, 2002.
 R3 -Jaikrishna & Chandrasekar, "Elements of Earthquake Engineering", South Asian Publishers Pvt ltd, 2000.


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Programme	Course Code	Name of the Course	L	T	P	C
B.E.	19EI8182	TOTAL QUALITY MANAGEMENT	3	0	0	3

Course Objective	Description
1.	Infer the basic concepts of quality management.
2.	Interpret the concepts of TQM principles.
3.	Interpret the various statistical process control charts
4.	Categorize various tools for quality improvement.
5.	Interpret the concept of Quality Management Systems and recognize the need for ISO 9000 and ISO 14000 Quality Systems

Unit	Description	Instructional Hours
INTRODUCTION TO QUALITY MANAGEMENT		
I	Definitions - TOM Framework, Benefits, Awareness and Obstacles. Quality - Vision, Mission and Policy Statements. Customer Focus - Customer Perception of Quality, Translating needs into requirements, Customer Retention. Dimensions of Product and Service Quality. Cost of Quality.	9
TQM PRINCIPLES		
II	Leadership - Strategic quality planning, Quality Councils -Employee involvement - Motivation, Empowerment, Team and Teamwork, Quality circles, Recognition and Reward, Performance Appraisal - Continuous Process Improvement – PDCA cycle, 5S, Kaizen - Supplier Partnership - Partnering, Supplier Selection, Supplier Rating.	9
TQM TOOLS AND TECHNIQUES I		
III	Seven Traditional Tools of Quality - New Management Tools - Six Sigma: Concepts, Methodology, Applications to Manufacturing, Service Sector including IT - Bench Marking - Reason to Bench Mark, Bench Marking Process - FMEA - Stages, Types.	9
TQM TOOLS AND TECHNIQUES II		
IV	Control Charts- Process Capability- Concepts of Six Sigma - Quality Function Development (QFD) - Taguchi Quality Loss Function – TPM - Concepts, Improvement Needs - Performance Measures.	9
QUALITY SYSTEMS ORGANIZING AND IMPLEMENTATION		
V	Introduction to IS/ISO 9004:2000 – Quality Management Systems – Guidelines for Performance Improvements. Quality Audits. TQM Culture, Leadership – Quality Council, Employee Involvement, Motivation, Empowerment, Recognition and Reward- Introduction to Software Quality.	9
Total Instructional Hours		45

Course Outcome	Description
CO1:	Conceptualize and imbibe the different TQM principles.
CO2:	Recall various quality concepts like employee involvement and performance measurements
CO3:	Apply the various statistical process control charts to improve the quality of the product.
CO4:	Apply various tools like QFD and FMEA for quality improvement.
CO5:	Apply the concept of Quality Management Systems

TEXT BOOKS:

T1 - Dale H. Besterfield, et al., "Total Quality Management", Pearson Education Asia, 3rd Edition, Reprint 2006.
T2 - Shridhara Bhat K, "Total Quality Management – Text and Cases", Himalaya Publishing, 2002.

REFERENCE BOOKS:

R1 - James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
R2 - Sughanti.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.
R3 -Janakiraman. B and Gopal .R.K., "Total Quality Management – Text and Cases", PHI Ltd., 2006.

WEB REFERENCES:

- <https://nptel.ac.in/courses/110/104/110104085/>
- <https://nptel.ac.in/courses/110/104/110104080/>


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Programme	Course Code	Name of the Course	L	T	P	C
B.E.	19EI8183	PROFESSIONAL ETHICS FOR ENGINEERS	3	0	0	3

- Course Objective
1. Infer the essentials of engineering ethics.
 2. Interpret the rudiments of engineers as social experimentation.
 3. Speculate the responsibilities of engineers for safety.
 4. Create awareness on social responsibilities and rights.
 5. Outline the global issues in environment.

Unit	Description	Instructional Hours
I	ENGINEERING ETHICS Senses of Engineering Ethics - Variety of moral issues - Types of inquiry - Moral dilemmas - Moral Autonomy - Kohlberg's theory - Gilligan's theory - Consensus and Controversy - Professions and Professionalism - Professional ideals and virtues - Use of ethical theories.	9
II	ENGINEERING AS SOCIAL EXPERIMENTATION Engineering as experimentation - Engineers as responsible experimenters - Research ethics - Codes of ethics - Industrial Standards - Case Study of Space Shuttle Challenger Disaster.	9
III	ENGINEERS' RESPONSIBILITY FOR SAFETY Safety and risk - Assessment of safety and risk - Risk Benefit Analysis - Reducing risk - Case Studies: Chernobyl and Bhopal Disaster.	9
IV	RESPONSIBILITIES AND RIGHTS Collegiality and Loyalty - Respect for Authority –Collective Bargaining- Confidentiality - Conflicts of Interest - Occupational Crime - Professional Rights - Employee Rights - Intellectual Property Rights (IPR) - Discrimination.	9
V	GLOBAL ISSUES Multinational Corporations - Business Ethics - Environmental Ethics -Computer Ethics -Weapons Development- Engineers as Managers - Consulting Engineers - Engineers as Expert Witnesses and Advisors - Honesty - Moral Leadership - Sample code of conduct.	9
Total Instructional Hours		45

- Course Outcome
- CO1: Practice engineering ethics and human values for a moral life.
CO2: Develop the codes of conduct for engineers in the society.
CO3: Experiment the safety measures as a responsible engineer.
CO4: Interpret the responsibilities, professional rights and moralities for enhancement of an organization.
CO5: Validate the broad range of contemporary global issues.

TEXT BOOKS:

- T1 - Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York, 2013.
T2 - Charles D Fledderman, "Engineering Ethics", Prentice Hall of India, 2004.

REFERENCE BOOKS:

- R1 - Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering Ethics – Concepts and Cases", Cengage Learning, 2009.
R2 - John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
R3 - Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.
R4 - Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.


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Programme	Course Code	Name of the Course	L	T	P	C
B.E.	19EI8184	PRINCIPLES OF MANAGEMENT	3	0	0	3

- Course Objective
1. Learn the basic functions of management in an organization
 2. Study the importance of planning and also the different types of plans.
 3. Understand the different types of organization structure in management
 4. Know the basis and importance of directing and controlling in management
 5. Understand to the importance of corporate governance and social issues.

Unit	Description	Instructional Hours
	INTRODUCTION TO MANAGEMENT CONTEXT Management definition – Science or Art – Manager versus Entrepreneur – types of managers – managerial roles and skills – Evolution of Management – Scientific, human relations , system and contingency approaches – Types of Business organization – Sole proprietorship, partnership, company-public and private sector enterprises – Organization culture and Environment – Current trends and issues in Management.	9
I		
	PLANNING Nature and purpose of planning – planning process – types of planning – objectives – setting objectives – policies – Planning premises – Strategic Management – Planning Tools and Techniques – Decision making - steps and process.	9
II		
	ORGANISING Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – departmentalization – delegation of authority – centralization and decentralization – Job Design – Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management , Career planning and management.	9
III		
	DIRECTING Foundations of individual and group behaviour – motivation – motivation theories – motivational techniques – job satisfaction – job enrichment – leadership – types and theories of leadership – communication – process of communication – barrier in communication – effective communication – communication and IT.	9
IV		
	CONTROLLING AND ISSUES IN MANAGEMENT System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – Direct And Preventive Control – Reporting. Contemporary Issues In Management: Corporate Governance Social responsibilities – Ethics in business – Recent issues.	9
V		
Total Instructional Hours		45

- Course Outcome
- CO1: Describe the concepts of management, administration and the evolution of management thoughts.
CO2: Understand and apply the planning concepts.
CO3: Explain the different organizational structures and understand the staffing process.
CO4: Analyze the various motivational and leadership theories and controlling processes.
CO5: Understand and analyze the various Contemporary Issues in Management.

TEXT BOOKS:

T1-Stephen P. Robbins and Mary Coulter, “Management”, Prentice Hall of India, 8th edition. 2012

T2-Harold Koontz & Heinz Wehrich “Essentials of management” Tata Mc Graw Hill, 1998.

REFERENCE BOOKS:

R1 - Charles W L Hill, Steven L McShane, “Principles of Management”, Mcgraw Hill Education, Special Indian Edition, 2007

R2 - Tripathy PC & Reddy PN, “Principles of Management”, Tata McGraw Hill, 1999.

R3 - JAF Stoner, Freeman R.E and Daniel R Gilbert “Management”, 6th Edition, Pearson Education, 2004.

R4 -Robert Kreitner & Mamata Mohapatra, “Management”, Biztantra, 2008.


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Programme	Course Code	Name of the Course	L	T	P	C
M.E.	20AC1095	CONSTITUTION OF INDIA	2	0	0	0

- Course Objective**
- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
 - To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional
 - Role and entitlement to civil and economic rights as well as the emergence nation hood in the early years of Indian nationalism.
 - To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution
 - To understand the central and state relation, financial and administrative.

Unit	Description	Instructional Hours
I	HISTORY OF MAKING OF THE INDIAN CONSTITUTION & PHILOSOPHY OF THE INDIAN CONSTITUTION History, Drafting Committee, (Composition & Working), Preamble, Salient Features	06
II	CONTOURS OF CONSTITUTIONAL RIGHTS AND DUTIES Fundamental Rights, Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies, Directive Principles of State Policy, Fundamental Duties.	06
III	ORGANS OF GOVERNANCE Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions	06
IV	LOCAL ADMINISTRATION District's Administration head: Role and Importance Municipalities: Introduction, Mayor and role of Elected Representative, CEO, Municipal Corporation. Pachayati raj: Introduction, PRI: Zila Pachayat. Elected officials and their roles, CEO Zila Pachayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy	06
V	ELECTION COMMISSION Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners - Institute and Bodies for the welfare of SC/ST/OBC and women.	06
Total Instructional Hours		30

- Course Outcome**
- CO1: Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- CO2: Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
- CO3: Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru
- CO4: The eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
- CO5: Discuss the passage of the Hindu Code Bill of 1956.

REFERENCE BOOKS:

- R1: The Constitution of India,1950(Bare Act), Government Publication.
R2: Dr.S.N.Busi, Dr.B. R.Ambedkar framing of Indian Constitution,1st Edition, 2015.
R3: M.P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis,2014.
R4: D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.


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Programme	Course Code	Name of the Course	L	T	P	C
M.E.	20AC2091	VALUE EDUCATION	2	0	0	0

- Course Objective**
- Understand value of education and self-development
 - Imbibe good values in students
 - Let they should know about the importance of character
 - To teach and inculcate the importance of value based living
 - To give students a deeper understanding about the purpose of life.

Unit	Description	Instructional Hours
VALUES AND SELF-DEVELOPMENT		
I	Values and self-development–Social values and individual attitudes. Work ethics, Indian vision of humanism. Moral and non-moral valuation. Standards and principles. Value judgements	7
IMPORTANCE OF CULTIVATION OF VALUES		
II	Importance of cultivation of values. Sense of duty. Devotion, Self-reliance. Confidence, Concentration. Truthfulness, Cleanliness. Honesty, Humanity. Power of faith, National Unity. Patriotism. Love for nature, Discipline	7
PERSONALITY AND BEHAVIOR DEVELOPMENT		
III	Personality and Behavior Development–Soul and Scientific attitude. Positive Thinking. Integrity and discipline. Punctuality, Love and Kindness. Avoid fault thinking. Free from anger, Dignity of labour. Universal brother hood and religious tolerance. True friendship. Happiness Vs suffering, love for truth. Aware of self-destructive habits. Association and Cooperation. Doing best for saving nature	8
CHARACTER AND COMPETENCE		
IV	Character and Competence–Holy books vs Blind faith. Self-management and Good health. Science of reincarnation. Equality, Nonviolence, Humility, Role of Women. All religions and same message. Mind your Mind, Self-control. Honesty, Studying effectively.	8
Total Instructional Hours		30

- Course Outcome**
- CO1: Students will understand the importance of value based living.
 - CO2: Students will gain deeper understanding about the purpose of their life.
 - CO3: Students will understand and start applying the essential steps to become good leaders.
 - CO4: Students will emerge as responsible citizens with clear conviction to practice values and ethics in life.
 - CO5: Students will become value based professionals and building a healthy nation

REFERENCE BOOKS:

R1: Chakroborty, S.K. “Values and Ethics for organizations Theory and practice”, Oxford University Press, New Delhi

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Programme	Course Code	Name of the Course	L	T	P	C
M.E.	20AC2092	STRESS MANAGEMENT BY YOGA	2	0	0	0

- Course Objective**
- To achieve overall health of body and mind
 - To overcome stress
 - To possess emotional stability.

Unit	Description	Instructional Hours
I	INTRODUCTION TO YOGA Definitions of Eight parts of yoga.(Ashtanga)	10
II	DO'S AND DON'T'S IN LIFE Yam and Niyam - Do's and Don't's in life - i) Ahinsa, satya, astheya, bramhacharya and aparigraha, ii) Ahinsa, satya, astheya, bramhacharya and aparigraha.	10
III	ASAN AND PRANAYAM Asan and Pranayam - Various yog poses and their benefits for mind & body - Regularization of breathing techniques and its effects-Types of pranayam	10
Total Instructional Hours		30

- Course Outcome**
- CO1: Develop healthy mind in a healthy body thus improving social health also
- CO2: Improve efficiency
- CO3: The student will apply forces and exert themselves using rarely used muscle groups

REFERENCE BOOKS:

- R1: Yogic Asanas for Group Training-Part-I":Janardan Swami Yoga bhyasi Mandal
- R2: "Rajayoga or conquering the Internal Nature" by Swami Vivekananda, Advaita Ashrama (Publication Department), Kolkata


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Programme	Course Code	Name of the Course	L	T	P	C
M.E.	20AC2093	PERSONALITY DEVELOPMENT THROUGH LIFEENLIGHTENMENT SKILLS	2	0	0	0

- Course Objective**
- To learn to achieve the highest goal happily
 - To become a person with stable mind, pleasing personality and determination
 - To awaken wisdom in students

Unit	Description	Instructional Hours
I	NEETISATAKAM-HOLISTIC DEVELOPMENT Neetisatakam-holistic development of personality - Verses- 19,20,21,22 (wisdom) - Verses- 29,31,32 (pride & heroism) – Verses- 26,28,63,65 (virtue) - Verses- 52,53,59 (dont's) - Verses- 71,73,75,78 (do's)	10
II	DAY TO DAY WORK AND DUTIES Approach to day to day work and duties - Shrimad Bhagwad Geeta: Chapter 2- Verses 41, 47,48 - Chapter 3-Verses 13, 21, 27, 35 Chapter 6-Verses 5,13,17,23, 35 - Chapter 18-Verses 45, 46, 48.	10
III	STATEMENTS OF BASIC KNOWLEDGE Statements of basic knowledge - Shrimad Bhagwad Geeta: Chapter2-Verses56, 62, 68 Chapter 12 -Verses 13, 14, 15, 16,17, 18 - Personality of role model - shrimad bhagwad geeta - Chapter2-Verses 17, Chapter 3-Verses 36,37,42 -Chapter 4-Verses 18, 38,39 Chapter18 – Verses 37,38,63	10
Total Instructional Hours		30

- Course Outcome**
- CO1: Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life
- CO2: The person who has studied Geeta will lead the nation and mankind to peace andprosperity
- CO3: Study of Neet is hatakam will help in developing versatile personality of students.

REFERENCE BOOKS:

- R1: Gopinath, Rashtriya Sanskrit Sansthanam P, Bhartrihari's Three Satakam, Niti-sringar-vairagya, New Delhi, 2010
- R2: Swami Swarupananda , Srimad Bhagavad Gita, Advaita Ashram, Publication Department, Kolkata, 2016.

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Programme	Course Code	Name of the Course	L	T	P	C
M.E. CAD/CAM	20RM1153	RESEARCH METHODOLOGY AND IPR	3	0	0	3

- Course Objectives**
1. To impart knowledge and skills required for research and IPR:
 2. Problem formulation, analysis and solutions.
 3. Technical paper writing / presentation without violating professional ethics
 4. Patent drafting and filing patents.

Unit	Description	Instructional Hours
	RESEARCH PROBLEM FORMULATION	
I	Meaning of research problem- Sources of research problem, criteria characteristics of a good research problem, errors in selecting a research problem, scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, necessary instrumentations	9
	LITERATURE REVIEW	
II	Effective literature studies approaches, analysis, plagiarism, and research ethics.	9
	TECHNICALWRITING /PRESENTATION	
III	Effective technical writing, how to write report, paper, developing a research proposal, format of research proposal, a presentation and assessment by a review committee.	9
	INTRODUCTION TO INTELLECTUAL PROPERTY RIGHTS (IPR)	
IV	Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.	9
	INTELLECTUAL PROPERTY RIGHTS (IPR) 6	
V	Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications. New Developments in IPR: Administration of Patent System, IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.	9
Total Instructional Hours		45

- Course Outcomes**
- CO1: Ability to formulate research problem
CO2: Ability to carry out research analysis
CO3: Ability to follow research ethics
CO4: Ability to understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity
CO5: Ability to understand about IPR and filing patents in R & D.

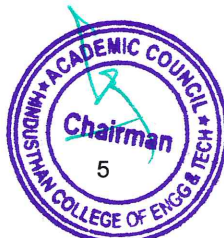
TEXT BOOKS:

- T1- Asimov, "Introduction to Design", Prentice Hall, 1962.
T2. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007.

REFERENCE BOOKS:

- R1. Mayall, "Industrial Design", McGraw Hill, 1992.
R2. Niebel, "Product Design", McGraw Hill, 1974.
R3. Ranjit Kumar, 2nd Edition, "Research Methodology: A Step by Step Guide for beginners" 2010.


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Programme	Course Code	Name of the Course	L	T	P	C
M.E.	20RM1161	RESEARCH METHODOLOGY AND IPR	2	0	0	2

- Course Objective**
- Identify an appropriate research problem in their interesting domain.
 - Understand ethical issues Understand the Preparation of a research project thesis report.
 - Understand the Preparation of a research project thesis report
 - Understand the law of patent and copyrights.
 - Understand the Adequate knowledge on IPR

Unit	Description	Instructional Hours
	RESEARCH PROBLEM FORMULATION	
I	Meaning of research problem- Sources of research problem, criteria characteristics of a good research problem, errors in selecting a research problem, scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, necessary instrumentations	06
II	LITERATURE REVIEW Effective literature studies approaches, analysis, plagiarism, and research ethics.	06
	TECHNICAL WRITING /PRESENTATION	
III	Effective technical writing, how to write report, paper, developing a research proposal, format of research proposal, a presentation and assessment by a review committee	06
	INTRODUCTION TO INTELLECTUAL PROPERTY RIGHTS (IPR)	
IV	Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.	06
	INTELLECTUAL PROPERTY RIGHTS (IPR)	
V	Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications. New Developments in IPR: Administration of Patent System, IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.	06
Total Instructional Hours		30

- Course Outcome**
- CO1: Ability to formulate research problem.
CO2: Ability to carry out research analysis.
CO3: Ability to follow research ethics.
CO4: Ability to understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
CO5: Ability to understand about IPR and filing patents in R & D.

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Programme	Course Code	Name of the Course	L	T	P	C
MCA	21CA2304	PROFESSIONAL ETHICS	3	0	0	3

- COURSE OBJECTIVE
1. To learn about computer ethics in work environment.
 2. To expose the threats in computing environment
 3. To know the intricacies of accessibility issues
 4. To ensure safe exits when designing the software projects
 5. To comprehend the concepts of computer ethics in work environment.

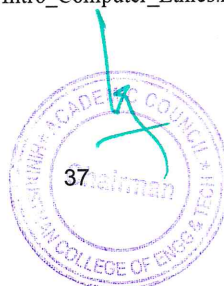
Unit	Description	Instructional Hours
	HUMAN VALUES AND COMPUTER ETHICS	
I	A general Introduction – Morals, Values and Ethics – Integrity – Work Ethic – Civic virtue – Respect For Others – Caring – Sharing – Honesty – Computer ethics: an overview – Identifying an ethical issue – Ethics and law – Ethical theories - Professional Code of conduct – An ethical dilemma – A framework for ethical decision making - Computer hacking – Introduction – definition of hacking – Destructive programs – hacker ethics – Professional constraints – BCS code of conduct – To hack or not to hack? – Ethical positions on hacking	9
II	ASPECTS OF COMPUTER CRIME AND INTELLECTUAL PROPERTY RIGHTS Aspects of computer crime - Introduction - What is computer crime – computer security measures – Professional duties and obligations - Intellectual Property Rights – The nature of Intellectual property – Intellectual Property – Patents, Trademarks, Trade Secrets, Software Issues, Copyright - The extent and nature of software piracy – Ethical and professional issues – free software and open source code	9
III	REGULATING INTERNET CONTENT, TECHNOLOGY AND SAFETY Introduction – In defence of freedom expression – censorship – laws upholding free speech – Free speech and the Internet - Ethical and professional issues - Internet technologies and privacy – Safety and risk – assessment of safety and risk – risk benefit analysis – reducing risk	9
IV	COMPUTER TECHNOLOGIES ACCESSIBILITY ISSUES Introduction – Principle of equal access – Obstacles to access for individuals – professional responsibility - Empowering computers in the workplace – Introduction – computers and employment – computers and the quality of work – computerized monitoring in the work place – telecommuting – social, legal and professional issues - Use of Software, Computers and Internet-based Tools - Liability for Software errors - Documentation Authentication and Control – Software engineering code of ethics and practices – IEEE-CS – ACM Joint task force	9
V	SOFTWARE DEVELOPMENT AND SOCIAL NETWORKING Software Development – strategies for engineering quality standards – Quality management standards – Social Networking – Company owned social network web site – the use of social networks in the hiring process – Social Networking ethical issues – Cyber bullying – cyber stalking – Online virtual world – Crime in virtual world - digital rights management - Online defamation – Piracy – Fraud	9
Total Instructional Hours		45

- COURSE OUTCOME
- CO1: Remember the human values and computer ethics.
 - CO2: Understand the computer crime and the related intellectual property rights
 - CO3: Apply regulatory and safety concepts in internet.
 - CO4: Understanding the computer technologies.
 - CO5: Remember the models software development and quality standards.

REFERENCE BOOKS :

1. Penny Duquenoy, Simon Jones and Barry G Blundell, "Ethical , legal and professional issues in computing", Middlesex University Press, 2008
2. George Reynolds, "Ethics in Information Technology", Cengage Learning, 2011
3. Caroline Whitback, "Ethics in Engineering Practice and Research", Cambridge University Press, 2011
4. Richard Spinello, "Case Studies in Information and Computer Ethics", Prentice Hall, 1997.
5. http://www.infosectoday.com/Articles/Intro_Computer_Ethics.htm

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Programme	Course Code	Name of the Course	L	T	P	C
MCA	20CA3308	RESEARCH METHODOLOGY	3	0	0	3

- COURSE OBJECTIVE
1. To identify appropriate research problem,
 2. To Understand the process of Literature Review
 3. To write a research report and thesis
 4. To understand the basis of IPR
 5. To understand all information regarding Patent

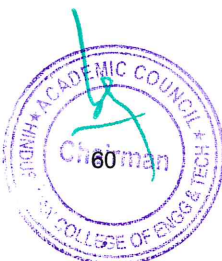
Unit	Description	Instructional Hours
	RESEARCH PROBLEM FORMULATION	
I	Meaning of research problem- Sources of research problem, criteria characteristics of a good research problem, errors in selecting a research problem, scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, necessary instrumentations.	9
	LITERATURE REVIEW	
II	Effective literature studies approaches, analysis, plagiarism, and research ethics.	9
	TECHNICAL WRITING /PRESENTATION	
III	Effective technical writing, how to write report, paper, developing a research proposal, format of research proposal, a presentation and assessment by a review committee.	9
	INTRODUCTION TO INTELLECTUAL PROPERTY RIGHTS (IPR)	
IV	Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.	9
	INTELLECTUAL PROPERTY RIGHTS (IPR)	
V	Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications. New Developments in IPR: Administration of Patent System, IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.	9
Total Instructional Hours		45

- COURSE OUTCOME
- CO1. Ability to formulate research problem
 - CO2. Ability to carry out research analysis
 - CO3. Ability to follow research ethics
 - CO4. Ability to understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity
 - CO5. Ability to understand about IPR and filing patents in R & D.

REFERENCE BOOKS:

- R1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
- R2. Kothari, C.R. (2008). Research Methodology: Methods and Techniques. Second Edition. New Age International Publishers, New Delhi.
- R3. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, EssEss Publications. 2 volumes.
- R4. Gupta S.P. (2008). Statistical Methods. 37 th ed. (Rev) Sultan Chand and Sons. New Delhi. 1470 p.
- R5. Leon & Leon (2002). Internet for everyone, Vikas Publishing House.
- R6. Wadehra, B.L. 2000. Law relating to patents, trademarks, copyright designs and geographical indications. Universal Law Publishing.
- R7. Research Methodology Dr P M Bulakh, Dr P. S. Patki and Dr A S Chodhary 2010 Published by Expert Trading Corporation Dahisar West, Mumbai 400068

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Programme	Course Code	Name of the Course	L	T	P	C
MBA	20BAX362	INTERNATIONAL HEALTH MANAGEMENT	3	0	0	3

- Course Objective**
- 1.To make the students familiar with the International health scenario.
 - 2.To make students understand the reforms in health care with an international perspective.
 - 3.To understand the health care delivery system.
 - 4.To create an awareness about IPR.
 - 5.To create an awareness on the different Health Policies.

Unit	Description	Instructional Hours
I	HEALTHCARE – A GLOBAL PERSPECTIVE Healthcare challenges – a global perspective- Wide gap in healthcare delivery – Healthcare financing in developed and developing countries – Developing National health Accounts – application in developing countries. Health insurance and managed care: Concept - Risk pooling concept – concept of managed care – Components - Managed health care models - Study of socialized Medicine, Social insurance, Mandatory insurance and Voluntary Insurance.	9
II	THE REFORMS OF HEALTHCARE SYSTEM - COMPARISION OF HEALTH INSURANCE AND NATIONAL AND INTERNATIONAL PERSPECTIVES. Evolutionary reforms in Healthcare - Structural reforms in healthcare – International convergence in healthcare systems – health sector reforms – lessons from different countries.	9
III	SYSTEMS OF HEALTH CARE DELIVERY Basic components of health services – Transition from traditional insurance to managed care – Trends and Directions – Significance for health care practitioners and policy makers – Complying with regulations – Health care systems in other countries.	9
IV	INTELLECTUAL PROPERTY RIGHTS TRIPS – IPR - The Patent Cooperation Treaty (PCT) – PCT system – PCT for product design – World Intellectual Property Organization (WIPO) and its role in new patent regime – International Registration of Trademarks.	9
V	HEALTH POLICY Health policy – Definition – Different forms of Health policies - Regulatory tools – government as a subsidiary to the private sector – Reforms in the healthcare sector – Decentralized role of the States – Access to healthcare – providers – in rural areas, low income segments – cost of Care - Quality of care.	9
Total Instructional Hours		45

- Course Outcome**
- CO1- Visualize the International health care scenario.
 - CO2- Comprehend the reforms in the health care sector with an international perspective.
 - CO3- Understand a health care delivery system.
 - CO4-Appreciate the importance of IPR and its relevance to the health care sector.
 - CO5- Comprehend the International health care policies for the betterment of health care.

Test Books:

1. Oxford Textbook of Public Health, Volume Three.
2. Hospital Management: Text & Cases, 1e Paperback – 1 January 2013 by [Ramani](#).

Reference Books:

1. Delivering Healthcare in America- A systems Approach – Third Edition – Leiyu Shi and Douglas A Singh
2. Textbook of Preventive and Social Medicine (1997), 15th edition – J.E. Park
3. Health and Social Organization: Towards a health policy for the 21st century – Blane, David, Brunner, Eric – Calrendon Press.


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Programme	Course Code	Name of the Course	L	T	P	C
MBA	20BAX363	PUBLIC HEALTH SYSTEMS AND HEALTH INSURANCE	3	0	0	3

- 1.To make the students understand the policies and theories for creating a better provision for health care.
2.To enable the students to understand the area of health sector reforms.
Course Objective 3.To enable student understand the process of planning, implementing and controlling the health care programmes.
4.To familiarize the students in the area of risk management and insurance.
5.To focus the students more specifically on actuarial principles in health insurance products.

Unit	Description	Instructional Hours
I	ISSUES, THEORIES AND CONCEPTS IN POLICY FORMULATION Welfare economics and investments in human capital – Health Economics – Demand of health and health services - Demand, elasticity and health – Production, Health and Health care – Economic Evaluation of Health Care – Economics of Markets and market intervention – Role and Responsibility of Governments in the health sector.	9
II	FINANCING, RESOURCE ALLOCATION AND HEALTH SECTOR REFORM: Mobilizing finances and models of financing – Public Expenditure in Health Mobilization of Private Resources – Selection of a suitable option – Role of International Agencies- Health Sector reform – Health Systems around the world – Govt and the improvement of health behaviours – Implementation. Policy Objectives – Policy Environment and consequence of reform – National Health Policy – Drug Policy – Framework for newer health care policy settlements – Impact of structural changes, globalization and public economy, environment and health status – current health care status of India.	9
III	PLAN IMPLEMENTATION AND CONTROL National health program – Tools – Regulation – Health services research – Measurement of health / medical needs and services.Utilization – Resources Allocation – POS/Cost benefit analysis – Eco based budgeting – System analysis and operation research in health care programs – Control mechanism.	9
IV	RISK INSURANCE AND MANAGEMNT Introduction to risk and insurance – Risk Identification and Risk Evaluation – Risk Management Techniques – Risk Management and Insurance Industry – WTO – Insurance Law and Regulation – International Laws (Salient features of above topics) Principles of health insurance – Health insurance products - Group Insurance products – Product design, development and evaluation- Risk Assessment – Underwriting and Premium Setting - Claims Management – Third Party Administration – Current Developments.	9
V	ISSUES, THEORIES AND CONCEPTS IN POLICY FORMULATION Welfare economics and investments in human capital – Health Economics – Demand of health and health services - Demand, elasticity and health – Production, Health and Health care – Economic Evaluation of Health Care – Economics of Markets and market intervention – Role and Responsibility of Governments in the health sector.	9

Total Instructional Hours 45

- Course Outcome**
- CO1- Visualize the process of the Public health system.
CO2- Comprehend the reforms in the Health sector and its financial implications.
CO3- Comprehend the process of planning and budgeting of the health care programmes.
CO4- Have practical insight into risk management and insurance in general.
CO5- Understand the actuarial principles in Health Insurance system and the risk coverage.

Text Books:

- 1.Health Planning for Effective Management – William A Reinks, Oxford University Press.
- 2.Economics of Public and Private Healthcare and Health Insurance in India Hardcover 2020, by [Brijesh C. Purohit](#).

Reference Books:

- 1.Health Sector Reform in Developing Countries - Peter Berman, Harvard University Press, 1995
- 2.Business Planning for Health Care Management – Piggot, Carolyn Semple – UK University Press.
- 3.Insurance Law and Practice, Rajiv Jain and Rakhi Biswas, Vidhi Publishers, Delhi
- 4.Safety and Risk Management, Shailendra K Singh, Mittal Publishers.

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SEMESTER IV

Programme	Course Code	Name of the Course	L	T	P	C
MBA	20BA4201	INDIAN ETHOS AND VALUES	3	0	0	3

- Course Objective**
1. To learn about Indian ethos and its relevancetoday
 2. To assist and guide the student in understanding value systems and its impact onbusiness.
 3. To know the Indian philosophy of knowingoneself.
 4. To understand the management functions with Indianperspective.
 5. To know management concepts from ancienttexts.

Unit	Description	Instructional Hours
	INDIAN ETHOS	
I	Indian Ethos –Models of management in Indian socio-political environment. Indian work ethos and principles of Indian Management –Goals of Life- Teachings of important Indian Spiritual leaders..	9
	BUSINESS CONCEPTS AND PHILOSOPHIES	
II	Economics of giving - Western economic system. Developing and implementing gross national happiness - Sabbath economics - Islamic economics and Banking	9
	INDIAN PHILOSOPHICAL SYSTEM	
III	Indian Philosophical system - Nature of mind - Personality attributes based on Gunas - Human values and five sheaths - Bagavad Gita for human perfection	9
	VALUES	
IV	Meaning - Significance - Formation of values- Science and values. – Application of values in Management - Values for managers - Chanakyaaneethi on leadership	9
	ETHICS	
V	Introduction to Greek philosophers - Perspectives on ethics - Indian constitution and Unity in diversity - Thirukuralon ethics	9
Total Instructional Hours		45

- Course Outcome**
- CO1: To impart knowledge on Indian Ethos
 CO2: To apply Indian value system in management practices
 CO3: To familiarize the students about Indian philosophy for business growth.
 CO4: Students will know about management functions and its Indian perspectives.
 CO5: To conceptualize and present various issues in Indian management thought.

TEXT BOOKS:

- T1- Nandagopal.R and AjithSankar R.N. Indian Ethos and Values in Management, 2011.
 T2-Khandelwal.N.M, Indian Ethos and Values for Managers, ISBN 978-93-5024-452-4, 3rd Edition, Himalaya Publishing House, 2011.

REFERENCEBOOKS:

- R1-Management Thoughts in Thirukkural by K. Nagarajan – ANMOL Publications PVT Ltd 4374/4B Ansari Road, New Delhi 110 002.2010
 R2-Dr. Radhakrishnan Pillai, Corporate Chanakya, Jaico Publishing House, 2016
 R3-Soham, LEEP (Life Empowerment and Enrichment Program), Central Chinmaya Mission Trust, 2017.

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PROGRAMME	COURSE CODE	NAME OF THE COURSE	L	T	P	C
M.E.	20ES2302	RESEARCH METHODOLOGY	3	0	0	3

- Course Objectives
1. Impart scientific knowledge for carrying out research work effectively.
 2. Understand the concepts in various research designs.
 3. Acquire knowledge about Experimental design and Data collection
 4. Confer about the multivariate analysis techniques
 5. Disseminate knowledge on Research Practices and Report writing.

Unit	Description	Instructional hours
I	INTRODUCTION TO RESEARCH Research-Definition-Objectives of research, Meaning of research- Characteristics of research -Importance of research activities- Types of research-Research approaches- Significance-Problems in research- Qualities of good researcher- Research process.	9
II	RESEARCH DESIGN Formulation of the research design: Process-classification of research designs- Exploratory-Secondary resource analysis-Two-tired research design- -Validity in experimentation-factors affecting external validity-classification of experimental design - Pre-experimental- Quasi-experimental designs.	9
III	DATA COLLECTION METHODS Classification of Data-Collection of primary data-Observation-Interview method- Collection of data through Questionnaires-schedules-collection of secondary data- Research applications of secondary data-Benefits and drawbacks-classification of secondary data-Internal –External data sources.	9
IV	MULTIVARIATE ANALYSIS TECHNIQUES Growth of Multivariate techniques-Characteristics and applications-Classification- Variables in multivariate analysis-Important multivariate techniques-Factor analysis- Rotation in factor analysis-R-type and Q type factor analysis-Path analysis.	9
V	RESEARCH PRACTICE AND REPORT WRITING. Literature review-Conference proceedings-Journals-Journal Impact Factor (JFI)- Citation index-h-index-Significance of report writing-Different steps in writing report-Layout of report writing-Types of reports-Mechanics of writing a research report-precautions for writing research reports-Conclusion and Scope for future work-Oral presentation.	9
Total instructional hours		45
Course Outcomes	CO1: Observe the various approaches to do research. CO2: Carryout the research design. CO3: Evaluate the data collection for research activities. CO4: Acknowledge the function of Multivariate Analysis Techniques CO5: Organize the research activity systematically and prepare research report effectively.	

TEXT BOOKS:

- T1. C.R. Kothari, Research Methodology Methods & Techniques, NEW Age International (P) Limited, New Delhi, 2007.
- T2. Dr. Deepak Chawla, Dr. Neena Sondhi, Research Methodology concepts and cases, Vikas Publishing House Pvt. Ltd., New Delhi, 2011

REFERENCE BOOKS:

- R1. K. Prathapan, Research Methodology for Scientific Research, I.K. International Publishing House Pvt. Ltd. New Delhi, 2014L.
- R2. R. Panneerselvam, Research Methodology, PHI Learning Private Limited, New Delhi, 2011.
- R3. Donald H. McBurney, Research Methods, Thomson Asia Pvt. Ltd. Singapore, 2002.

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