



SRI VENKATESWARA

COLLEGE OF ENGINEERING AND TECHNOLOGY

Thirupachur-631203, Tiruvallur TK & DT
Approved by AICTE New Delhi & Affiliated to Anna University, Chennai
(A Telugu Minority Institution)

**LIST OF COURSE WITH TOPICS OF PROFESSIONAL ETHICS, GENDER,
HUMAN VALUES, ENVIRONMENT AND SUSTAINABILITY**



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1.3.1 List of Courses with topics of Gender, Human Values, Environment and Sustainability and Professional Ethics

S. No	Program Code	Program Name	Course code	Course Name	Name of the Topics	Regulation of Anna University
1	103	Civil Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	R2017
2	103	Civil Engineering	EN8491	Waste Supply Engineering	Environment and Sustainability	R2017
3	103	Civil Engineering	EN8592	Waste water Engineering	Environment and Sustainability	R2017
4	103	Civil Engineering	GE8076	Professional Ethics in Engineering	Professional Ethics	R2017
5	103	Civil Engineering	GE8075	Intellectual Property Rights	Human Values	R2017
6	103	Civil Engineering	GE8077	Total Quality Management	Professional Ethics	R2017
7	103	Civil Engineering	ORO551	Renewable Energy Sources	Environment and Sustainability	R2017
8	106	Electronics and Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	R2017
9	106	Electronics and Communication Engineering	MG8591	Principles of Management	Professional Ethics	R2017
10	106	Electronics and Communication Engineering	GE8077	Total Quality Management	Professional Ethics	R2017
11	106	Electronics and Communication Engineering	OBM752	Hospital Management	Human Values	R2017
12	105	Electrical and Electronics Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	R2017
13	105	Electrical and Electronics Engineering	ME8792	Power Plant Engineering	Environment and Sustainability	R2017
14	105	Electrical and Electronics Engineering	EE8703	Renewable Energy Sources	Environment and Sustainability	R2017
15	104	Computer Science and Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	R2017
16	104	Computer Science and	MG8591	Principles of Management	Professional Ethics	R2017



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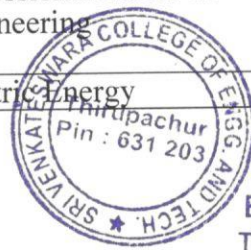


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		Engineering				
17	104	Computer Science and Engineering	GE8074	Human Rights	Human Values	R2017
18	104	Computer Science and Engineering	GE8076	Professional Ethics in Engineering	Professional Ethics	R2017
19	104	Computer Science and Engineering	OIM551	World Class Manufacturing	Human Values	R2017
20	114	Mechanical Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	R2017
21	114	Mechanical Engineering	MG8591	Principles of Management	Professional Ethics	R2017
22	114	Mechanical Engineering	ME8792	Power Plant Engineering	Environment and Sustainability	R2017
23	631	Master of Business Administration	BA5102	Principles of Management	Professional Ethics	R2017
24	631	Master of Business Administration	BA5105	Organisational Behaviour	Human Values	R2017
25	631	Master of Business Administration	BA5107	Total Quality Management	Professional Ethics	R2017
26	631	Master of Business Administration	BA5204	Human Resource Management	Human Values	R2017
27	631	Master of Business Administration	BA5003	Customer Relationship Management	Human Values	R2017
28	631	Master of Business Administration	BA5014	Entrepreneurship Development	Human Values	R2017
29	631	Master of Business Administration	BA5015	Industrial Relations and Labour Welfare	Human Values	R2017
30	631	Master of Business Administration	BA5019	Strategic Human Resource Management	Human Values	R2017
31	103	Civil Engineering	EN6501	Municipal Solid Waste Management	Environment and Sustainability	R2013
32	103	Civil Engineering	GE6757	Total Quality Management	Professional Ethics	R2013
33	103	Civil Engineering	MG6851	Principles of Management	Professional Ethics	R2013
34	104	Computer Science and Engineering	GE6075	Professional Ethics in Engineering	Professional Ethics	R2013
35	105	Electrical and	EE6801	Electrical Energy	Environment and	R2013



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		Electronics Engineering		Generation, Utilization and Conservation	Sustainability	
36	105	Electrical and Electronics Engineering	GE6757	Total Quality Management	Professional Ethics	R2013
37	106	Electronics and Communication Engineering	GE6351	Environmental Science and Engineering	Environment and Sustainability	R2013
38	106	Electronics and Communication Engineering	GE6757	Total Quality Management	Professional Ethics	GE6351
39	106	Electronics and Communication Engineering	MG6851	Principles of Management	Professional Ethics	R2013
40	114	Mechanical Engineering	GE6351	Environmental Science and Engineering	Environment and Sustainability	R2013
41	114	Mechanical Engineering	GE6075	Professional Ethics in Engineering	Professional Ethics	R2013
42	114	Mechanical Engineering	MG6851	Principles of Management	Professional Ethics	R2013
43	114	Mechanical Engineering	ME6003	Renewable Sources of Energy	Environment and Sustainability	R2013
44	114	Mechanical Engineering	MD6501	Hospital Management	Human Values	R2013
45	631	Master of Business Administration	BA7101	Principles of Management	Professional Ethics	R2013
46	631	Master of Business Administration	BA7104	Total Quality Management	Professional Ethics	R2013
47	631	Master of Business Administration	BA7204	Human Resource Management	Human Values	R2013
48	631	Master of Business Administration	BA7034	Industrial Relationship & Labour Welfare	Human Values	R2013



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OBJECTIVES:

- To study the nature and facts about environment.
- To finding and implementing scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- To study the dynamic processes and understand the features of the earth's interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY 14

Definition, scope and importance of **environment** – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds; Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT II ENVIRONMENTAL POLLUTION 8

Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – solid waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III NATURAL RESOURCES 10

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over- utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, **environmental** effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for **sustainable** lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.



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UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

7

From unsustainable to **sustainable development** — urban problems related to energy — water conservation, rain water harvesting, watershed management — resettlement and rehabilitation of people; its problems and concerns, case studies — role of non-governmental organization- environmental ethics: Issues and possible solutions — climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. — wasteland reclamation — consumerism and waste products — environment production act — Air (Prevention and Control of Pollution) act — Water (Prevention and control of Pollution) act — Wildlife protection act — Forest conservation act — enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

6

Population growth, variation among nations — population explosion — family welfare programme — environment and human health — human rights — value education — HIV / AIDS — women and child welfare — role of information technology in environment and human health — Case studies.

TOTAL: 45 PERIODS

OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters

TEXTBOOKS:

1. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, 2006.
2. Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education, 2004.

REFERENCES :

1. Dharmendra S. Sengar, 'Environmental law', Prentice hall of India Pvt Ltd, New Delhi, 2007.
2. Erach Bharucha, "Textbook of Environmental Studies", Universities Press(I) Pvt, Ltd, Hyderabad, 2015.
3. G. Tyler Miller and Scott E. Spoolman, "Environmental Science", Cengage Learning IndiaPVT, LTD, Delhi, 2014.
4. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, 2005.




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OBJECTIVE:

- ❖ To equip the students with the principles and design of water treatment units and distribution system.

UNIT I SOURCES OF WATER

9

Public water supply system – Planning, Objectives, Design period, Population forecasting; Water demand – Sources of water and their characteristics, Surface and Groundwater – Impounding Reservoir – Development and selection of source – Source Water quality – Characterization – Significance – Drinking Water quality standards.

UNIT II CONVEYANCE FROM THE SOURCE

9

Water supply – intake structures – Functions; Pipes and conduits for water – Pipe materials – Hydraulics of flow in pipes – Transmission main design – Laying, jointing and testing of pipes – appurtenances – Types and capacity of pumps – Selection of pumps and pipe materials.

UNIT III WATER TREATMENT

9

Objectives – Unit operations and processes – Principles, functions, and design of water treatment plant units, aerators of flash mixers, Coagulation and flocculation – Clari floccuator – Plate and tube settlers – Pulsator clarifier – sand filters – Disinfection – Residue Management – Construction, Operation and Maintenance aspects.

UNIT IV ADVANCED WATER TREATMENT

9

Water softening – Desalination- R.O. Plant – demineralization – Adsorption – Ion exchange – Membrane Systems – RO Reject Management – Iron and Manganese removal – Defluoridation – Construction and Operation & Maintenance aspects – Recent advances – MBR process

UNIT V WATER DISTRIBUTION AND SUPPLY

9

Requirements of water distribution – Components – Selection of pipe material – Service reservoirs – Functions – Network design – Economics – Analysis of distribution networks – Computer applications – Appurtenances – Leak detection. Principles of design of water supply in buildings – House service connection – Fixtures and fittings, systems of plumbing and types of plumbing.

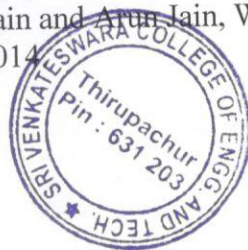
TOTAL: 45 PERIODS**OUTCOMES:**

The students completing the course will have

- ❖ an insight into the structure of drinking water supply systems, including water transport, treatment and distribution
- ❖ the knowledge in various unit operations and processes in water treatment
- ❖ an ability to design the various functional units in water treatment
- ❖ an understanding of water quality criteria and standards, and their relation to public health
- ❖ the ability to design and evaluate water supply project alternatives on basis of chosen criteria.

TEXTBOOKS:

1. Garg, S.K. Environmental Engineering, Vol.I Khanna Publishers, New Delhi, 2010.
2. Modi, P.N., Water Supply Engineering, Vol.I Standard Book House, New Delhi, 2010.
3. Punmia, B.C., Ashok Jain and Arun Jain, Water Supply Engineering, Laxmi Publications (P) Ltd., New Delhi, 2014

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REFERENCES:

1. Manual on Water Supply and Treatment, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 1999.
2. 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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OBJECTIVE:

- ❖ The objectives of this course is to help students develop the ability to apply basic understanding of physical, chemical, and biological phenomena for successful design, operation and maintenance of sewage treatment plants.

UNIT I PLANNING AND DESIGN OF SEWERAGE SYSTEM 9

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 - Rain Water ting.

UNIT II PRIMARY TREATMENT OF SEWAGE 9

Objectives – Unit Operations and Processes – Selection of treatment processes – Onsite sanitation - Septic tank- Grey water harvesting – Primary treatment – Principles, functions and design of sewage treatment units - screens - grit chamber-primary sedimentation tanks – Construction, Operation and Maintenance aspects.

UNIT III SECONDARY TREATMENT OF SEWAGE 9

Objectives – Selection of Treatment Methods – Principles, Functions, - Activated Sludge Process and Extended aeration systems -Trickling filters– Sequencing Batch Reactor(SBR) – Membrane Bioreactor - UASB – Waste Stabilization Ponds – - Other treatment methods - Reclamation and Reuse of sewage - Recent Advances in Sewage Treatment – Construction, Operation and Maintenance aspects.

UNIT IV DISPOSAL OF SEWAGE 9

Standards for– Disposal - Methods – dilution – Mass balance principle – Self purification of river- Oxygen sag curve – deoxygenation and reaeration - Streeter-Phelps model - Land disposal – Sewage farming – sodium hazards - Soil dispersion system.

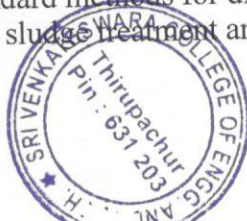
UNIT V SLUDGE TREATMENT AND DISPOSAL 9

Objectives - Sludge characterization – Thickening - Design of gravity thickener- Sludge digestion – Standard rate and High rate digester design- Biogas recovery – Sludge Conditioning and Dewatering – Sludge drying beds- ultimate residue disposal – recent advances.

TOTAL: 45 PERIODS**OUTCOMES:**

The students completing the course will have

- ❖ An ability to estimate sewage generation and design sewer system including sewage pumping stations
- ❖ The required understanding on the characteristics and composition of sewage, self-purification of streams
- ❖ An ability to perform basic design of the unit operations and processes that are used in sewage treatment
- ❖ Understand the standard methods for disposal of sewage.
- ❖ Gain knowledge on sludge treatment and disposal.



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TEXTBOOKS:

1. Garg, S.K., Environmental Engineering Vol. II, Khanna Publishers, New Delhi, 2015.
2. Duggal K.N., "Elements of Environmental Engineering" S. Chand and Co. Ltd., New Delhi, 2014.
3. Punmia, B.C., Jain, A.K., and Jain. A.K., Environmental Engineering, Vol .II, Laxmi Publications, 2010.

REFERENCES:

1. Manual on Sewerage and Sewage Treatment Systems Part A,B and C, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 2013.
2. Metcalf and Eddy- Wastewater Engineering–Treatment and Reuse, Tata Mc.Graw-Hill Company, New Delhi, 2010.
3. Syed R. Qasim "Wastewater Treatment Plants", CRC Press, Washington D.C., 2010
4. Gray N.F, "Water Technology", Elsevier India Pvt. Ltd., New Delhi, 2006.

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PROFESSIONAL ETHICS IN ENGINEERING

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OBJECTIVE:

- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT I HUMAN VALUES

10

Morals, values and **Ethics** – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time –



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Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II ENGINEERING ETHICS 9

Senses of 'Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION 9

Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS 9

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk – Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) -Discrimination.

UNIT V GLOBAL ISSUES 8

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership – Code of Conduct – Corporate Social Responsibility.

TOTAL: 45 PERIODS

OUTCOME:

- ❖ Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.

TEXT BOOKS:

1. Mike W. Martin and Roland Schinzinger, "Ethics in Engineering", Tata McGraw Hill, New Delhi, 2003.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

REFERENCES:

1. Charles B. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering Ethics – Concepts and Cases", Cengage Learning, 2009.
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.
5. Laura P. Hartman and Joe Desjardins, "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" Mc Graw Hill education, India Pvt. Ltd., New Delhi, 2013.
6. World Community Service Centre, ' Value Education', Vethathiri publications, Erode, 2011.

Web sources:

1. www.onlineethics.org
2. www.nspe.org
3. www.globalethics.org



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OBJECTIVE:

- ❖ To give an idea about IPR, registration and its enforcement.

UNIT I INTRODUCTION 9

Introduction to IPRs, Basic concepts and need for Intellectual Property - Patents, Copyrights, Geographical Indications, IPR in India and Abroad – Genesis and Development – the way from WTO to WIPO – TRIPS, Nature of Intellectual Property, Industrial Property, technological Research, Inventions and Innovations – Important examples of IPR.

UNIT II REGISTRATION OF IPRs 10

Meaning and practical aspects of registration of Copy Rights, Trademarks, Patents, Geographical Indications, Trade Secrets and Industrial Design registration in India and Abroad

UNIT III AGREEMENTS AND LEGISLATIONS 10

International Treaties and Conventions on IPRs, TRIPS Agreement, PCT Agreement, Patent Act of India, Patent Amendment Act, Design Act, Trademark Act, Geographical Indication Act.

UNIT IV DIGITAL PRODUCTS AND LAW 9

Digital Innovations and Developments as Knowledge Assets – IP Laws, Cyber Law and Digital Content Protection – Unfair Competition – Meaning and Relationship between Unfair Competition and IP Laws – Case Studies.

UNIT V ENFORCEMENT OF IPRs 7

Infringement of IPRs, Enforcement Measures, Emerging issues – Case Studies.

TOTAL:45 PERIODS**OUTCOME:**

- ❖ Ability to manage Intellectual Property portfolio to enhance the value of the firm.

TEXTBOOKS:

1. V. Scople Vinod, Managing Intellectual Property, Prentice Hall of India pvt Ltd, 2012
2. S. V. Satakar, "Intellectual Property Rights and Copy Rights, Ess Ess Publications, New Delhi, 2002

REFERENCES:

1. Deborah E. Bouchoux, "Intellectual Property: The Law of Trademarks, Copyrights, Patents and Trade Secrets", Cengage Learning, Third Edition, 2012.
2. Prabuddha Ganguli, "Intellectual Property Rights: Unleashing the Knowledge Economy", McGraw Hill Education, 2011.
3. Edited by Derek Bosworth and Elizabeth Webster, The Management of Intellectual Property, Edward Elgar Publishing Ltd., 2013.



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OBJECTIVE:

- ❖ To facilitate the understanding of Quality Management principles and process.

UNIT I INTRODUCTION 9

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention.

UNIT II TQM PRINCIPLES 9

Leadership - Quality Statements, Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement - PDCA cycle, 5S, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

UNIT III TQM TOOLS AND TECHNIQUES I 9

The 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.

UNIT IV TQM TOOLS AND TECHNIQUES II 9

Quality Circles - Cost of Quality - Quality Function Deployment (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.

UNIT V QUALITY MANAGEMENT SYSTEM 9

Introduction—Benefits of ISO Registration—ISO 9000 Series of Standards—Sector-Specific Standards—AS 9100, TS16949 and TL 9000-- ISO 9001 Requirements—Implementation—Documentation—Internal Audits—Registration--**ENVIRONMENTAL MANAGEMENT SYSTEM:** Introduction—ISO 14000 Series Standards—Concepts of ISO 14001—Requirements of ISO 14001—Benefits of EMS.

TOTAL: 45 PERIODS**OUTCOME:**

- ❖ The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

TEXTBOOK:

1. Dale H.Besterfield, Carol B.Michna,Glen H. Besterfield, Mary B.Sacre,Hemant Urdhwareshe and Rashmi Urdhwareshe, "Total Quality Management", Pearson Education Asia, Revised Third Edition, Indian Reprint, Sixth Impression, 2013.

REFERENCES:

1. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
2. Janakiraman. B and Gopal .R.K., "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.
3. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd.,2006.
4. ISO9001-2015 standards

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OBJECTIVES:

- ❖ To get exposure on solar radiation and its environmental impact to power.
- ❖ To know about the various collectors used for storing solar energy.
- ❖ To know about the various applications in solar energy.
- ❖ To learn about the wind energy and biomass and its economic aspects.
- ❖ To know about geothermal energy with other energy sources

UNIT I . PRINCIPLES OF SOLAR RADIATION 10

Role and potential of new and renewable source, the solar energy option, Environmental impact of solar power, physics of the sun, the solar constant, extraterrestrial and terrestrial solar radiation, solar radiation on titled surface, instruments for measuring solar radiation and sun shine, solar radiation data.

UNITII SOLAR ENERGY COLLECTION 8

Flat plate and concentrating collectors, classification of concentrating collectors, orientation and thermal analysis, advanced collectors.

UNIT III SOLAR ENERGY STORAGE AND APPLICATIONS 7

Different methods, Sensible, latent heat and stratified storage, solar ponds. Solar Applications- solar heating/cooling technique, solar distillation and drying, photovoltaic energy conversion.

UNIT IV WIND ENERGY 10

Sources and potentials, horizontal and vertical axis windmills, performance characteristics, Betz criteria BIO-MASS: Principles of Bio-Conversion, Anaerobic/aerobic digestion, types of Bio-gas digesters, gas yield, combustion characteristics of bio-gas, utilization for cooking, I.C. Engine operation and economic aspects.

UNIT V GEOTHERMAL ENERGY 9

Resources, types of wells, methods of hamessing the energy, potential in India. OCEAN ENERGY: OTEC, Principles utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy: Potential and conversion techniques, mini-hydel power plants, and their economics. DIRECT ENERGY CONVERSION: Need for DEC, Carnot cycle, limitations, principles of DEC.

TOTAL: 45 PERIODS

OUTCOMES:

- ❖ Understanding the physics of solar radiation.
- ❖ Ability to classify the solar energy collectors and methodologies of storing solar energy.
- ❖ Knowledge in applying solar energy in a useful way.
- ❖ Knowledge in wind energy and biomass with its economic aspects.
- ❖ Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.

TEXT BOOKS:

1. Rai G.D., "Non-Conventional Energy Sources", Khanna Publishers, 2011
2. Twi dell & Wier, "Renewable Energy Resources", CRC Press (Taylor & Francis), 2011



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REFERENCES:

1. Tiwari and Ghosal, "Renewable energy resources", Narosa Publishing House, 2007
2. Ramesh R & Kumar K.U, "Renewable Energy Technologies", Narosa Publishing House, 2004
3. Mittal KM, "Non-Conventional Energy Systems", Wheeler Publishing Co. Ltd, New Delhi, 2003
4. Kothari D.P, Singhal, K.C., "Renewable energy sources and emerging technologies", P.H.I, Newdelhi, 2010




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- To study the nature and facts about environment.
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- To study the interrelationship between living organism and environment.
- To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- To study the dynamic processes and understand the features of the earth's interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

UNIT I**ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY****14**

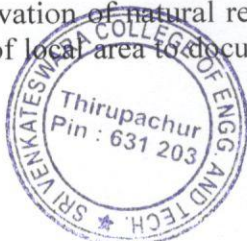
Definition, scope and importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds; Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT II**ENVIRONMENTAL POLLUTION****8**

Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – solid waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III**NATURAL RESOURCES****10**

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over- utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.



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UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

7

From unsustainable to sustainable development — urban problems related to energy — water conservation, rain water harvesting, watershed management — resettlement and rehabilitation of people; its problems and concerns, case studies — role of non-governmental organization- environmental ethics: Issues and possible solutions — climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. — wasteland reclamation — consumerism and waste products — environment production act — Air (Prevention and Control of Pollution) act — Water (Prevention and control of Pollution) act — Wildlife protection act — Forest conservation act — enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

6

Population growth, variation among nations — population explosion — family welfare programme — environment and human health — human rights — value education — HIV / AIDS — women and child welfare — role of information technology in environment and human health — Case studies.

TOTAL: 45 PERIODS

OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters


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OBJECTIVE:

- To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization .

UNIT I INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS 9

Definition of Management – Science or Art – Manager Vs 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.

UNIT II PLANNING 9

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.

UNIT III ORGANISING 9

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

UNIT IV DIRECTING 9

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.

UNIT V CONTROLLING 9

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.

TOTAL: 45 PERIODS**OUTCOME:**

- Upon completion of the course, students will be able to have clear understanding
- Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management



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OBJECTIVE:

- ❖ To facilitate the understanding of Quality Management principles and process.

UNIT I INTRODUCTION 9

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention.

UNIT II TQM PRINCIPLES 9

Leadership - Quality Statements, Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement - PDCA cycle, 5S, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

UNIT III TQM TOOLS AND TECHNIQUES I 9

The 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.

UNIT IV TQM TOOLS AND TECHNIQUES II 9

Quality Circles - Cost of Quality - Quality Function Deployment (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.

UNIT V QUALITY MANAGEMENT SYSTEM 9

Introduction—Benefits of ISO Registration—ISO 9000 Series of Standards—Sector-Specific Standards—AS 9100, TS16949 and TL 9000-- ISO 9001 Requirements—Implementation—Documentation—Internal Audits—Registration--ENVIRONMENTAL MANAGEMENT SYSTEM: Introduction—ISO 14000 Series Standards—Concepts of ISO 14001—Requirements of ISO 14001—Benefits of EMS.

TOTAL: 45 PERIODS**OUTCOME:**

- ❖ The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

TEXTBOOK:

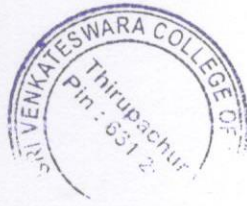
1. Dale H.Besterfield, Carol B.Michna,Glen H. Besterfield, Mary B.Sacre,Hemant Urdhwareshe and Rashmi Urdhwareshe, "Total Quality Management", Pearson Education Asia, Revised Third Edition, Indian Reprint, Sixth Impression, 2013.



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REFERENCES:

1. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
2. Janakiraman. B and Gopal .R.K., "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.
3. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.
4. ISO9001-2015 standards




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UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

7

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization- environmental ethics: Issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air (Prevention and Control of Pollution) act – Water (Prevention and control of Pollution) act – Wildlife protection act – Forest conservation act – enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

6

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health – Case studies.

TOTAL: 45 PERIODS

OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
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ME8792

POWER PLANT ENGINEERING

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OBJECTIVE:

- Providing an overview of Power Plants and detailing the role of Mechanical Engineers in their operation and maintenance.

UNIT I COAL BASED THERMAL POWER PLANTS 9

Rankine cycle - improvisations, Layout of modern coal power plant, Super Critical Boilers, FBC Boilers, Turbines, Condensers, Steam & Heat rate, Subsystems of thermal power plants — Fuel and ash handling, Draught system, Feed water treatment. Binary Cycles and Cogeneration systems.

UNIT II DIESEL, GAS TURBINE AND COMBINED CYCLE POWER PLANTS 9

Otto, Diesel, Dual & Brayton Cycle - Analysis & Optimisation. Components of Diesel and Gas Turbine power plants. Combined Cycle Power Plants. Integrated Gasifier based Combined Cycle systems.

UNIT III NUCLEAR POWER PLANTS 9

Basics of Nuclear Engineering, Layout and subsystems of Nuclear Power Plants, Working of Nuclear Reactors : *Boiling Water Reactor* (BWR), *Pressurized Water Reactor* (PWR), CANada Deuterium- Uranium reactor (CANDU), Breeder, Gas Cooled and Liquid Metal Cooled Reactors. Safety measures for Nuclear Power plants.

UNIT IV POWER FROM RENEWABLE ENERGY 9

Hydro Electric Power Plants — Classification, Typical Layout and associated components including Turbines. Principle, Construction and working of Wind, Tidal, *Solar* Photo Voltaic (SPV), Solar Thermal, Geo Thermal, Biogas and Fuel Cell power systems.

UNIT V ENERGY, ECONOMIC AND ENVIRONMENTAL ISSUES OF POWER PLANTS 9

Power tariff types, Load distribution parameters, load curve, Comparison of site selection criteria, relative merits & demerits, Capital & Operating Cost of different power plants. Pollution control technologies including Waste Disposal Options for Coal and Nuclear Power Plants.

TOTAL: 45 PERIODS

OUTCOMES:

Upon the completion of this course the students will be able to

- CO1 Explain the layout, construction and working of the components inside a thermal power plant.
- CO2 Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.
- CO3 Explain the layout, construction and working of the components inside nuclear power plants.
- CO4 Explain the layout, construction and working of the components inside Renewable energy power plants.
- CO5 Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.



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TEXT BOOK:

1. Nag. P.K., "Power Plant Engineering", Third Edition, Tata McGraw — Hill Publishing Company Ltd., 2008.

REFERENCES:

1. El-Wakil. M.M., "Power Plant Technology", Tata McGraw — Hill Publishing Company Ltd., 2010.
2. Godfrey Boyle, "Renewable energy", Open University, Oxford University Press in association with the Open University, 2004.
3. Thomas C. Elliott, Kao Chen and Robert C. Swanekamp, "Power Plant Engineering", Second Edition, Standard Handbook of McGraw — Hill, 1998.




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OBJECTIVES:

To impart knowledge on the following Topics

- Awareness about renewable Energy Sources and technologies.
- Adequate inputs on a variety of issues in harnessing renewable Energy.
- Recognize current and possible future role of renewable energy sources.

UNIT I RENEWABLE ENERGY (RE) SOURCES 9

Environmental consequences of fossil fuel use, Importance of renewable sources of energy, Sustainable Design and development, Types of RE sources, Limitations of RE sources, Present Indian and international energy scenario of conventional and RE sources.

UNIT II WIND ENERGY 9

Power in the Wind – Types of Wind Power Plants(WPPs)–Components of WPPs- Working of WPPs- Siting of WPPs-Grid integration issues of WPPs.

UNIT III SOLAR PV AND THERMAL SYSTEMS 9

Solar Radiation, Radiation Measurement, Solar Thermal Power Plant, Central Receiver Power Plants, Solar Ponds.- Thermal Energy storage system with PCM- Solar Photovoltaic systems : Basic Principle of SPV conversion — Types of PV Systems- Types of Solar Cells, Photovoltaic cell concepts: Cell, module, array ,PV Module I-V Characteristics, Efficiency & Quality of the Cell, series and parallel connections, maximum power point tracking, Applications.

UNIT IV BIOMASS ENERGY 9

Introduction-Bio mass resources –Energy from Bio mass: conversion processes-Biomass Cogeneration-**Environmental** Benefits. Geothermal Energy: Basics, Direct Use, Geothermal Electricity. Mini/micro hydro power: Classification of hydropower schemes, Classification of water turbine, Turbine theory, Essential components of hydroelectric system.

UNIT V OTHER ENERGY SOURCES 9

Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems. Wave Energy: Energy from waves, wave power devices. Ocean Thermal Energy Conversion (OTEC)- Hydrogen Production and Storage- Fuel cell : Principle of working- various types - construction and applications. Energy Storage System- Hybrid Energy Systems.

TOTAL:45 PERIODS

OUTCOMES:

- Ability to create awareness about renewable Energy Sources and technologies.
- Ability to get adequate inputs on a variety of issues in harnessing renewable Energy.
- Ability to recognize current and possible future role of renewable energy sources.
- Ability to explain the various renewable energy resources and technologies and



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their applications.

- Ability to understand basics about biomass energy.
- Ability to acquire knowledge about solar energy.

TEXT BOOKS:

1. Joshua Earnest, Tore Wizeliu, 'Wind Power Plants and Project Development', PHI Learning Pvt.Ltd, New Delhi, 2011.
2. D.P.Kothari, K.C Singal, Rakesh Ranjan "Renewable Energy Sources and Emerging Technologies", PHI Learning Pvt.Ltd, New Delhi, 2013.
3. Scott Grinnell, "Renewable Energy & Sustainable Design", CENGAGE Learning, USA, 2016.

REFERENCES

1. A.K.Mukerjee and Nivedita Thakur," Photovoltaic Systems: Analysis and Design", PHI Learning Private Limited, New Delhi, 2011
2. Richard A. Dunlap," Sustainable Energy" Cengage Learning India Private Limited, Delhi, 2015.
3. Chetan Singh Solanki, " Solar Photovoltaics : Fundamentals, Technologies and Applications", PHI Learning Private Limited, New Delhi, 2011
4. Bradley A. Striebig,Adebayo A.Ogundipe and Maria Papadakis," Engineering Applications in Sustainable Design and Development", Cengage Learning India Private Limited, Delhi, 2016.
5. Godfrey Boyle, "Renewable energy", Open University, Oxford University Press in association with the Open University, 2004.
6. Shobh Nath Singh, 'Non-conventional Energy resources' Pearson Education ,2015



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OBJECTIVES:

- To study the nature and facts about environment.
- To finding and implementing scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- To study the dynamic processes and understand the features of the earth's interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

14

Definition, scope and importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds; Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT II ENVIRONMENTAL POLLUTION

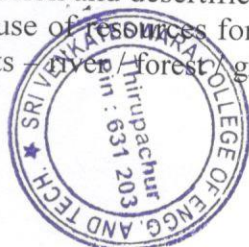
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Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – solid waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III NATURAL RESOURCES

10

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over- utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.



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UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

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UNIT V HUMAN POPULATION AND THE ENVIRONMENT

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Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health – Case studies.

TOTAL: 45 PERIODS

OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
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OBJECTIVE:

- To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization .

UNIT I INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS 9

Definition of Management – Science or Art – Manager Vs 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.

UNIT II PLANNING 9

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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

UNIT IV DIRECTING 9

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.

UNIT V CONTROLLING 9

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.

TOTAL: 45 PERIODS**OUTCOME:**

- Upon completion of the course, students will be able to have clear understanding
- Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management



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OBJECTIVE :

- To sensitize the Engineering students to various aspects of Human Rights.

UNIT I

9

Human Rights – Meaning, origin and Development. Notion and classification of Rights – Natural, Moral and Legal Rights. Civil and Political Rights, Economic, Social and Cultural Rights; collective / Solidarity Rights.

UNIT II

9

Evolution of the concept of Human Rights Magna carta – Geneva convention of 1864. Universal Declaration of Human Rights, 1948. Theories of Human Rights.

UNIT III

9

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance.

UNIT IV

9

Human Rights in India – Constitutional Provisions / Guarantees.

UNIT V

9

Human Rights of Disadvantaged People – Women, Children, Displaced persons and Disabled persons, including Aged and HIV Infected People. Implementation of Human Rights – National and State **Human Rights** Commission – Judiciary – Role of NGO's, Media, Educational Institutions, Social Movements.

TOTAL: 45 PERIODS**OUTCOME:**

- Engineering students will acquire the basic knowledge of human rights.

REFERENCES:

- Kapoor S.K., "Human Rights under International law and Indian Laws", Central Law Agency, Allahabad, 2014.
- Chandra U., "Human Rights", Allahabad Law Agency, Allahabad, 2014.
- Upendra Baxi, The Future of Human Rights, Oxford University Press, New Delhi.




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OBJECTIVE:

- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT I HUMAN VALUES

10

Morals, values and **Ethics** – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self-confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II ENGINEERING ETHICS

9

Senses of 'Engineering **Ethics**' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles – Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION

9

Engineering as Experimentation – Engineers as **responsible** Experimenters – Codes of **Ethics** – A Balanced Outlook on Law.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

9

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk – Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination.

UNIT V GLOBAL ISSUES

8

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership – Code of Conduct – Corporate Social Responsibility.

TOTAL: 45 PERIODS**OUTCOME:**

- ❖ Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.

TEXT BOOKS:

1. Mike W. Martin and Roland Schinzinger, "Ethics in Engineering", Tata McGraw Hill, New Delhi, 2003.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

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3. Charles B. Fledder man, "Engineering Ethics", Pearson Prentice Hall, New Jersey, 2004.
4. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering

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Ethics — Concepts and Cases”, Cengage Learning, 2009.

5. John R Boatright, “Ethics and the Conduct of Business”, Pearson Education, New Delhi, 2003
6. Edmund G See bauer and Robert L Barry, “Fundamentals of Ethics for Scientists and Engineers”, Oxford University Press, Oxford, 2001.
7. Laura P. Hartman and Joe Desjardins, “Business Ethics: Decision Making for Personal Integrity and Social Responsibility” Mc Graw Hill education, India Pvt. Ltd., New Delhi,2013.
8. World Community Service Centre, ‘ Value Education’, Vethathiri publications, Erode, 2011.

Web sources:

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2. www.nspe.org
3. www.globalethics.org
4. www.ethics.org



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OBJECTIVES

- ❖ Understanding of the concept and importance of strategy planning for manufacturing industries
- ❖ To apply principles and techniques in the identifiable formulation and implementation of manufacturing strategy for competitive in global context.

UNIT I INDUSTRIAL DECLINE AND ASCENDANCY

9

Manufacturing excellence - US Manufacturers - French **Manufacturers** - Japan decade - American decade - Global decade

UNIT II BUILDING STRENGTH THROUGH CUSTOMER- FOCUSED PRINCIPLES

9

Customer - Focused principles - General principles - Design - Operations - **Human** resources - Quality and Process improvement - Promotion and Marketing

UNIT III VALUE AND VALUATION

9

Product Costing - Motivation to improve - Value of the enterprises **QUALITY** - The Organization: Bulwark of stability and effectiveness - Employee stability - Quality Individuals Vs. Teams - Team stability and cohesiveness - Project cohesiveness and stability

UNIT IV STRATEGIC LINKAGES

9

Product decisions and customer service - Multi-company planning - Internal manufacturing planning - Soothing the demand turbulence

UNIT V IMPEDIMENTS

9

Bad plant design - Mismanagement of capacity - Production Lines - Assembly Lines - Whole Plant Associates Facilitators Teams man ship Motivation and reward in the age of continuous Improvement

TOTAL: 45 PERIODS**OUTCOMES:**

- ❖ Able to understand the concept and the importance of manufacturing strategy for industrial enterprise competitiveness.
- ❖ Apply appropriate techniques in the analysis an devaluation of company's opportunities for enhancing competitiveness in the local regional and global context.
- ❖ Identify formulation and implement strategies for manufacturing and therefore enterprise competitiveness

TEXT BOOKS:

1. By Richard B. Chase, Nicholas J. Aquilano, F. Robert Jacobs - "Operations v Management for Competitive Advantage", McGraw-Hill Irwin, ISBN 0072323159
2. Moore Ran, "Making Common Sense Common Practice: Models for Manufacturing Excellence", Elsevier Multiworth
3. Narayanan V. K., "Managing Technology & Innovation for Competitive Advantage", Pearson Education Inc.
4. Korgaonkar M. G., "Just In Time Manufacturing", MacMillan Publishers India Ltd.,
5. Sahay B. S., Saxena K. B. C., Ashish Kumar, "World Class Manufacturing", MacMillan Publishers



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OBJECTIVES:

• To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms.

UNIT I INTRODUCTION TO MANAGEMENT

9

Organization- Management- Role of managers- Evolution of management thought- Organization and the environmental factors- Managing globally- Strategies for International business.

UNIT II PLANNING

9

Nature and purpose of planning- Planning process- Types of plans- Objectives- Managing by Objective (MBO) strategies- Types of strategies — Policies — Decision Making- Types of decision- Decision making process- Rational decision making process- Decision making under different conditions.

UNIT III ORGANISING

9

Nature and purpose of organizing- Organization structure- Line and staff authority- Departmentation- Span of control- Centralization and decentralization- Delegation of authority- Staffing- Selection and Recruitment- Career development- Career stages- Training- Performance appraisal

UNIT IV DIRECTING

9

Managing people- Communication- Hurdles to effective communication- Organization culture- Elements and types of culture- Managing cultural diversity.

UNIT V CONTROLLING

9

Process of controlling- Types of control- Budgetary and non-budgetary control techniques - Managing productivity- Cost control- Purchase control- Maintenance control- Quality control- Planning operations.

TOTAL: 45 PERIODS**OUTCOMES:**

- ❖ The students should be able to describe and discuss the elements of effective management,
- ❖ Discuss and apply the planning, organizing and control processes, iii) describe various theories related to the development of leadership skills, motivation techniques, team work and effective communication, iv) communicate effectively through both oral and written presentation.

REFERENCES:


1. Andrew J. Dubrin, Essentials of Management, Thomson Southwestern, 9th edition, 2012.
2. Samuel C. Certo and Tervis Certo, Modern management: concepts and skills, Pearson education, 12th edition, 2012.
3. Harold Koontz and Heinz Weihrich, Essentials of management: An International & Leadership Perspective, 9th edition, Tata McGraw-Hill Education, 2012.
4. Don Hellriegel, Susan E. Jackson and John W. Slocum, Management- A competency-based approach, Thomson South Western, 11th edition, 2008.



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5. Heinz Wehrich, Mark V Cannice and Harold Koontz, Management- A global entrepreneurial perspective, Tata McGraw Hill, 13th edition, 2010.
6. Stephen P. Robbins, David A.De Cenzo and Mary Coulter, Fundamentals of Management, Prentice Hall of India, 2012.




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OBJECTIVE:

• To provide an overview of theories and practices in organizational behavior in individual, group and organizational level.

UNIT I FOCUS AND PURPOSE

5

Definition, need and importance of organizational behaviour — Nature and scope — Frame work — Organizational behaviour models.

UNIT II INDIVIDUAL BEHAVIOUR

12

Personality – types – Factors influencing personality – Theories – Learning – Types of learners – The learning process – Learning theories – Organizational behaviour modification.

Misbehaviour – Types – Management Intervention. Emotions - Emotional Labour – Emotional Intelligence – Theories. Attitudes – Characteristics – Components – Formation – Measurement- Values. Perceptions – Importance – Factors influencing perception – Interpersonal perception- Impression Management. Motivation – Importance – Types – Effects on work behavior.

UNIT III GROUP BEHAVIOUR

10

Organization structure – Formation – Groups in organizations – Influence – Group dynamics – Emergence of informal leaders and working norms – Group decision making techniques – Team building - Interpersonal relations – Communication – Control.

UNIT IV LEADERSHIP AND POWER

8

Meaning – Importance – Leadership styles – Theories – Leaders Vs Managers – Sources of power – Power centers – Power and Politics.

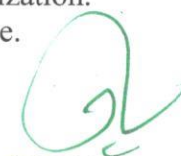
UNIT V DYNAMICS OF ORGANIZATIONAL BEHAVIOUR

10

Organizational culture and climate – Factors affecting organizational climate – Importance. Job satisfaction – Determinants – Measurements – Influence on behavior. Organizational change – Importance – Stability Vs Change – Proactive Vs Reaction change – the change process – Resistance to change – Managing change. Stress – Work Stressors – Prevention and Management of stress – Balancing work and Life. Organizational development – Characteristics – objectives – Organizational effectiveness Developing Gender sensitive workplace

TOTAL: 45 PERIODS**OUTCOME:**

• Students will have a better understanding of human behavior in organization. They will know the framework for managing individual and group performance.


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REFERENCES :

1. Stephen P. Robins, Organisational Behavior, PHI Learning / Pearson Education, Edition 17, 2016 (Global edition)



2. Fred Luthans, Organisational Behavior, McGraw Hill, 12th Edition,
3. Mc Shane & Von Glinov, Organisational Behaviour, 4th Edition, Tata Mc Graw Hill, 2007.
4. Nelson, Quick, Khandelwal. ORGB — An innovative approach to learning and Teaching Cengage, 2nd edition. 2012
5. Ivancevich, Konopaske & Maheson, Oranisional Behaviour & Management, 7th edition, Tata McGraw Hill, 2008.
6. Udai Pareek, Understanding Organisational Behaviour, 3rd Edition, Oxford Higher Education, 2011.
7. Jerald Greenberg, Behaviour in Organization, PHI Learning. 10th edition. 2011.




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OBJECTIVE:

- To learn the quality philosophies and tools in the managerial perspective.

UNIT I INTRODUCTION

9

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.

UNIT II PRINCIPLES AND PHILOSOPHIES OF QUALITY MANAGEMENT

9

Overview of the contributions of Deming, Juran Crosby, Masaaki Imai, Feigenbaum, Ishikawa, Taguchi techniques — introduction, loss function, parameter and tolerance design, signal to noise ratio. Concepts of Quality circle, Japanese 5S principles and 8D methodology.

UNIT III STATISTICAL PROCESS CONTROL

9

Meaning and significance of statistical process control (SPC) — construction of control charts for variables and attributed. Process capability — meaning, significance and measurement — Six sigma - concepts of process capability. Reliability concepts — definitions, reliability in series and parallel, product life characteristics curve. Total productive maintenance (TMP), Terotechnology. Business process Improvement (BPI) — principles, applications, reengineering process, benefits and limitations.

UNIT IV TOOLS AND TECHNIQUES FOR QUALITY MANAGEMENT

9

Quality functions development (QFD) — Benefits, Voice of customer, information organization, House of quality (HOQ), building a HOQ, QFD process. Failure mode effect analysis (FMEA) — requirements of reliability, failure rate, FMEA stages, design, process and documentation. Seven Tools (old & new). Bench marking and POKA YOKE.

UNIT V QUALITY SYSTEMS ORGANIZING AND IMPLEMENTATION

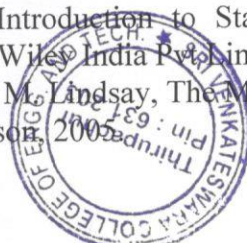
9

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 - TQM framework, benefits, awareness and obstacles.

TOTAL: 45 PERIODS**OUTCOME:**

- To apply quality philosophies and tools to facilitate continuous improvement and ensure customer delight.

1. Dale H. Besterfield, Carol Besterfield — Michna, Glen H. Besterfield, Mary Besterfield — Sacre, Hermant — Urdhwarsheshe, Rashmi Urdhwarsheshe, Total Quality Management, Revised Third edition, Pearson Education, 2011
2. Shridhara Bhat K, Total Quality Management — Text and Cases, Himalaya Publishing House, II Edition 2010
3. Douglas C. Montgomery, Introduction to Statistical Quality Control, Wiley Student Edition, 4th Edition, Wiley India Pvt. Limited, 2008.
4. James R. Evans and William M. Lindsay, The Management and Control of Quality, Sixth Edition, Thomson, 2002.



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5. Poornima M.Charantimath, Total Quality Management, Pearson Education, Second Edition , 2011
6. Indian standard – quality management systems – Guidelines for performance improvement (Fifth Revision), Bureau of Indian standards, New Delhi.




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OBJECTIVE:

• To provide knowledge about management issues related to staffing, training, performance, compensation, human factors consideration and compliance with human resource requirements.

UNIT I PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT 5

Evolution of human resource management — The importance of the human factor — Challenges — Inclusive growth and affirmative action -Role of human resource manager — Human resource policies — Computer applications in human resource management — Human resource accounting and audit.

UNIT II THE CONCEPT OF BEST FIT EMPLOYEE 8

Importance of Human Resource Planning — Forecasting human resource requirement — matching supply and demand - Internal and External sources. Recruitment - Selection — induction — Socialization benefits.

UNIT III TRAINING AND EXECUTIVE DEVELOPMENT 10

Types of training methods — purpose- benefits- resistance. Executive development programmes — Common practices - Benefits — Self-development — Knowledge management.

UNIT IV SUSTAINING EMPLOYEE INTEREST 12

Compensation plan — Reward — Motivation — Application of theories of motivation — Career management — Development of mentor — Protégé relationships.

UNIT V PERFORMANCE EVALUATION AND CONTROL PROCESS 10

Method of performance evaluation — Feedback — Industry practices. Promotion, Demotion, Transfer and Separation — Implication of job change. The control process — Importance — Methods — Requirement of effective control systems grievances — Causes — Implications — Redressal methods.

TOTAL: 45 PERIODS**OUTCOME:**

- ❖ Students will gain knowledge and skills needed for success as a human resources professional

REFERENCES :

1. Dessler Human Resource Management, Pearson Education Limited, 14th Edition, 2015.
2. Decenzo and Robbins, Fundamentals of Human Resource Management, Wiley, 11th Edition, 2013.
3. Luis R.Gomez-Mejia, David B.Balkin, Robert L Cardy. Managing Human Resource, PHI Learning. 2012
4. Bernadin , Human Resource Management ,Tata Mcgraw Hill ,8th edition 2012. Wayne Cascio, Managing Human Resource, McGraw Hill, 2007.
5. Ivancevich, Human Resource Management, McGraw Hill 2012.
6. Uday Kumar Haldar, Juthika Sarkar. Human Resource management. Oxford. 2012


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OBJECTIVE:

To understand the need and importance of maintaining a good customer relationship.

UNIT I INTRODUCTION

9

Definitions - Concepts and Context of relationship Management – Evolution - Transactional Vs Relationship Approach – CRM as a strategic marketing tool – CRM significance to the stakeholders.

UNIT II UNDERSTANDING CUSTOMERS

9

Customer information Database – Customer Profile Analysis - Customer perception, Expectations analysis – Customer behavior in relationship perspectives; individual and group customer's - Customer life time value – Selection of Profitable customer segments.

UNIT III CRM STRUCTURES

9

Elements of CRM – CRM Process – Strategies for Customer acquisition – Retention and Prevention of defection – Models of CRM – CRM road map for business applications.

UNIT IV CRM PLANNING AND IMPLEMENTATION

9

Strategic CRM planning process – Implementation issues – CRM Tools- Analytical CRM – Operational CRM – Call center management – Role of CRM Managers.

UNIT V TRENDS IN CRM

9

e- CRM Solutions – Data Warehousing – Data mining for CRM – an introduction to CRM software packages.

TOTAL: 45 PERIODS**OUTCOME :**

To use strategic customer acquisition and retention techniques in CRM.

REFERENCES :

1. G.Shainesh, Jagdish, N.Sheth, Customer Relationship Management A Strategic Prespective, Macmillan 2010
2. Alok Kumar et al, Customer Relationship Management : Concepts and applications, Biztantra, 2008
3. H.Peeru Mohamed and A.Sahadevan, Customer Relation Management, Vikas Publishing,2005.
4. Jim Cathart, The Eight Competencies of Relationship selling, Macmillan India, 2005.
5. Assel, Consumer Behavior, Cengage, 6th Edition.
6. Kumar, Customer Relationship Management - A Database Approach, Wiley India, 2007.
7. Francis Buttle, Customer Relationship Management : Concepts & Tools, Elsevier, 2004.
8. Zikmund. Customer Relationship Management, Wiley 2012 ..


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OBJECTIVE:

- To develop and strengthen entrepreneurial quality and motivation in students. To impart basic entrepreneurial skills and understandings to run a business efficiently and effectively.

UNIT I ENTREPRENEURIAL COMPETENCE

6

Entrepreneurship concept — Entrepreneurship as a Career — Entrepreneurial Personality - Characteristics of Successful, Entrepreneur — Knowledge and Skills of Entrepreneur.

UNIT II ENTREPRENEURIAL ENVIRONMENT

12

Business Environment - Role of Family and Society - Entrepreneurship Development Training and Other Support Organisational Services - Central and State Government Industrial Policies and Regulations - International Business.

UNIT III BUSINESS PLAN PREPARATION

12

Sources of Product for Business - Prefeasibility Study - Criteria for Selection of Product - Ownership - Capital - Budgeting Project Profile Preparation - Matching Entrepreneur with the Project - Feasibility Report Preparation and Evaluation Criteria.

UNIT IV LAUNCHING OF SMALL BUSINESS

10

Finance and Human Resource Mobilization Operations Planning - Market and Channel Selection - Growth Strategies - Product Launching — Incubation, Venture capital, IT startups.

UNIT V MANAGEMENT OF SMALL BUSINESS

5

Monitoring and Evaluation of Business - Preventing Sickness and Rehabilitation of Business Units- Effective Management of small Business.

TOTAL: 45 PERIODS**OUTCOME:**

- Students will gain knowledge and skills needed to run a business.

REFERENCES:

1. Hisrich, Entrepreneurship, Edition 9, Tata McGraw Hill, New Delhi, 2014
2. S. S. Khanka, Entrepreneurial Development, S. Chand and Company Limited, New Delhi, (Revised Edition) 2013.
3. Mathew Manimala, Entrepreneurship Theory at the Crossroads, Paradigms & Praxis, Biztrantra, 2nd Edition, 2005
4. Prasanna Chandra, Projects — Planning, Analysis, Selection, Implementation and Reviews, Tata McGraw-Hill, 1996.
5. P. Saravanavel, Entrepreneurial Development, Ess Pee kay Publishing House, Chennai, 1997.
6. Arya Kumar. Entrepreneurship. Pearson, 2012.
7. Donald F Kuratko, T.V Rao. Entrepreneurship: A South Asian perspective. Cengage, 2012.



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OBJECTIVE:

- To explore contemporary knowledge and gain a conceptual understanding of industrial relations.

UNIT I INDUSTRIAL RELATIONS

7

Concepts – Importance – Industrial Relations problems in the Public Sector – Growth of Trade Unions – Codes of conduct.

UNIT II INDUSTRIAL CONFLICTS

12

Disputes – Impact – Causes – Strikes – Prevention – Industrial Peace – Government Machinery – Conciliation – Arbitration – Adjudication.

UNIT III LABOUR WELFARE

8

Concept – Objectives – Scope – Need – Voluntary Welfare Measures – Statutory Welfare Measures – Labour – Welfare Funds – Education and Training Schemes.

UNIT IV INDUSTRIAL SAFETY

9

Causes of Accidents – Prevention – Safety Provisions – Industrial Health and Hygiene – Importance – Problems – Occupational Hazards – Diseases – Psychological problems – Counseling – Statutory Provisions.

UNIT V WELFARE OF SPECIAL CATEGORIES OF LABOUR

9

Child Labour – Female Labour – Contract Labour – Construction Labour – Agricultural Labour – Differently abled Labour – BPO & KPO Labour – Social Assistance – Social Security – Implications.

TOTAL: 45 PERIODS**OUTCOME:**

- Students will know how to resolve industrial relations and human relations problems and promote welfare of industrial labour.

REFERENCES :

- Mamoria C.B., Sathish Mamoria, Gankar, Dynamics of Industrial Relations, Himalaya Publishing House, New Delhi, 2012.
- Arun Monappa, Ranjeet Nambudiri, Patturaja Selvaraj. Industrial relations & Labour Laws. Tata McGraw Hill. 2012.
- Ratna Sen, Industrial Relations in India, Shifting Paradigms, Macmillan India Ltd., New Delhi, 2007.
- C.S.Venkata Ratnam, Globalisation and Labour Management Relations, Response Books, 2007.
- Srivastava, Industrial Relations and Labour laws, Vikas, 2007.
- P.N.Singh, Neeraj Kumar. Employee relations Management. Pearson. 2011.
- P.R.N Sinha, Indu Bala Sinha, Seema Priyadarshini Shekhar. Industrial Relations, Trade Unions and Labour Legislation. Pearson. 2004.



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OBJECTIVE:

- To help students understand the transformation in the role of HR functions from being a support function to strategic function.

UNIT I HUMAN RESOURCE DEVELOPMENT**10**

Meaning — Strategic framework for HRM and HRD — Vision, Mission and Values — Importance — Challenges to Organisations — HRD Functions - Roles of HRD Professionals - HRD Needs Assessment - HRD practices – Measures of HRD performance – Links to HR, Strategy and Business Goals – HRD Program Implementation and Evaluation – Recent trends – Strategic Capability , Bench Marking and HRD Audit.

UNIT II E-HRM**6**

e- Employee profile– e- selection and recruitment - Virtual learning and Orientation — e - training and development — e- Performance management and Compensation design — Development and Implementation of HRIS – Designing HR portals – Issues in employee privacy – Employee surveys online.

UNIT III CROSS CULTURAL HRM**7**

Domestic Vs International HRM - Cultural Dynamics - Culture Assessment - Cross Cultural Education and Training Programs — Leadership and Strategic HR Issues in International Assignments - Current challenges in Outsourcing, Cross border Mergers and Acquisitions - Repatriation etc - Building Multicultural Organisation - International Compensation.

UNIT IV CAREER & COMPETENCY DEVELOPMENT**10**

Career Concepts — Roles — Career stages — Career planning and Process — Career development Models– Career Motivation and Enrichment –Managing Career plateaus– Designing Effective Career Development Systems – Competencies and Career Management – Competency Mapping Models – Equity and Competency based Compensation.

UNIT V EMPLOYEE COACHING & COUNSELING**12**

Need for Coaching — Role of HR in coaching — Coaching and Performance — Skills for Effective Coaching – Coaching Effectiveness– Need for Counseling – Role of HR in Counseling - Components of Counseling Programs – Counseling Effectiveness – Employee Health and Welfare Programs – Work Stress — Sources - Consequences — Stress Management Techniques.- Eastern and Western Practices - Self Management and Emotional Intelligence.

TOTAL: 45 PERIODS**OUTCOME:**

- Students will have a better understanding of the tools and techniques used by organizations to meet current challenges.

REFERENCES :

1. Randy L. Desimone, Jon M. Werner — David M. Mathis, Human Resource Development, Cengage Learning, Edition 6, 2012.
2. Paul Boselie. Strategic Human Resource Management. Tata McGraw Hill. 2012.
3. Jeffrey A Mello, Strategic Human Resource Management, Cengage, Southwestern 2007.

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4. Robert L. Mathis and John H. Jackson, Human Resource Management, Cengage, 2007.
5. Monir Tayeb. International Human Resource Management. Oxford. 2007
6. Randall S Schuler and Susan E Jackson. Strategic Human Resource Management. Wiley India. 2nd edition
7. McLeod. The Counsellor's workbook. Tata McGraw Hill. 2011.




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OBJECTIVES:

- ❖ To make the students conversant with different aspects of the types, sources, generation, storage, collection, transport, processing and disposal of municipal solid waste.

UNIT I SOURCES AND TYPES

8

Sources and types of municipal solid wastes-waste generation rates-factors affecting generation, characteristics-methods of sampling and characterization; Effects of improper disposal of solid wastes-Public health and environmental effects. Elements of solid waste management –Social and Financial aspects – Municipal solid waste (M&H) rules – integrated management-Public awareness; Role of NGO's.

UNIT II ON-SITE STORAGE AND PROCESSING

8

On-site storage methods – Effect of storage, materials used for containers – segregation of solid wastes – Public health and economic aspects of open storage – waste segregation and storage – case studies under Indian conditions – source reduction of waste – Reduction, Reuse and Recycling.

UNIT III COLLECTION AND TRANSFER

8

Methods of Residential and commercial waste collection – Collection vehicles – Manpower– Collection routes – Analysis of collection systems; Transfer stations – Selection of location, operation & maintenance; options under Indian conditions – Field problems- solving.

UNIT IV OFF-SITE PROCESSING

12

Objectives of waste processing – Physical Processing techniques and Equipments; Resource recovery from solid waste composting and biomethanation; Thermal processing options – case studies under Indian conditions.

UNIT V DISPOSAL

9

Land disposal of solid waste; Sanitary landfills – site selection, design and operation of sanitary landfills – Landfill liners – Management of leachate and landfill gas- Landfill bioreactor– Dumpsite Rehabilitation

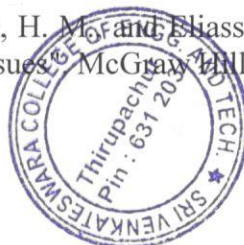
TOTAL: 45 PERIODS**OUTCOMES:**

The students completing the course will have

- ❖ an understanding of the nature and characteristics of municipal solid wastes and theregulatory requirements regarding municipal solid waste management
- ❖ ability to plan waste minimisation and design storage, collection, transport, processing anddisposal of municipal solid waste

TEXTBOOKS:

- 1 .Tchobanoglous, G., Theisen, H. M. and Eliassen, R. "Solid. Wastes: Engineering Principles and Management Issues" McGraw Hill, New York, 1993.

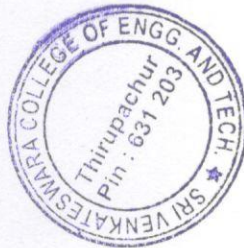


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2. Vesilind, P.A. and Rimer, A.E., "Unit Operations in Resource Recovery Engineering", Prentice Hall, Inc., 1981
3. Paul T Willams, "Waste Treatment and Disposal", John Wiley and Sons, 2000

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1. Government of India, "Manual on Municipal Solid Waste Management", CPHEEO, Ministry of Urban Development, New Delhi, 2000.
2. Bhide A.D. and Sundaresan, B.B. "Solid Waste Management Collection", Processing and Disposal, 2001
3. Manser A.G.R. and Keeling A.A., "Practical Handbook of Processing and Recycling of Municipal solid Wastes", Lewis Publishers, CRC Press, 1996
4. George Tchobanoglous and Frank Kreith "Handbook of Solidwaste Management", McGraw Hill, New York, 2002




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OBJECTIVES :

- ❖ To facilitate the understanding of Quality Management principles and process.

UNIT INTRODUCTION

9

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Quality statements - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention - Costs of quality.

UNIT II TQM PRINCIPLES

9

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.

UNIT III TQM TOOLS AND TECHNIQUES I

9

The 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.

UNIT IV TQM TOOLS AND TECHNIQUES II

9

Control Charts - Process Capability - Concepts of Six Sigma - Quality Function Development (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.

UNIT V QUALITY SYSTEMS

9

Need for ISO 9000 - ISO 9001-2008 Quality System - Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 - Concepts, Requirements and Benefits - TQM Implementation in manufacturing and service sectors..

TOTAL: 45 PERIODS**OUTCOMES:**

- ❖ The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

TEXTBOOK:

1. Dale H. Besterfield, et al., "Total quality Management", Pearson Education Asia, Third Edition, Indian Reprint, 2006.

REFERENCES:

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



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OBJECTIVES:

- To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization .

UNIT I INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS 9

Definition of Management – Science or Art – Manager Vs 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.

UNIT II PLANNING 9

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.

UNIT III ORGANISING 9

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.

UNIT IV DIRECTING 9

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.

UNIT V CONTROLLING 9

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.

TOTAL: 45 PERIODS**OUTCOMES:**

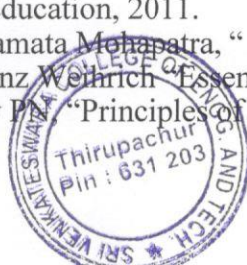
- Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

TEXTBOOKS:

- Stephen P. Robbins & Mary Coulter, “Management”, 10th Edition, Prentice Hall (India) Pvt. Ltd., 2009.
- JAF Stoner, Freeman R.E and Daniel R Gilbert “Management”, 6th Edition, Pearson Education, 2004.

REFERENCES:

- Stephen A. Robbins & David A. Decenzo & Mary Coulter, “Fundamentals of Management” 7th Edition, Pearson Education, 2011.
- Robert Kreitner & Mamata Mohapatra, “ Management”, Biztantra, 2008.
- Harold Koontz & Heinz Weihrich “Essentials of management” Tata McGraw Hill, 1998.
- Tripathy PC & Reddy P “Principles of Management”, Tata McGraw Hill, 1999.



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OBJECTIVES:

- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT I HUMAN VALUES

10

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II ENGINEERING ETHICS

9

Senses of „Engineering Ethics“ – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg’s theory – Gilligan’s theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION

9

Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

9

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk – Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination

UNIT V GLOBAL ISSUES

8

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership – Code of Conduct – Corporate Social Responsibility

TOTAL: 45 PERIODS**OUTCOMES:**

- Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society

TEXTBOOKS:

1. Mike W. Martin and Roland Schinzinger, “Ethics in Engineering”, Tata McGraw Hill, New Delhi, 2003.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, “Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.



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OBJECTIVES:

- To analyze the various concepts behind renewable energy resources.
- To introduce the energy saving concept by different ways of illumination.
- To understand the different methods of electric heating and electric welding.
- To introduce knowledge on Solar Radiation and Solar Energy Collectors
- To introduce concepts of Wind Energy and its utilization

UNIT I ELECTRIC DRIVES AND TRACTION**9**

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.

UNIT II ILLUMINATION**9**

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 - indoor lighting schemes - factory lighting halls - outdoor lighting schemes - flood lighting - street lighting - energy saving lamps, LED.

UNIT III HEATING AND WELDING**9**

Introduction - advantages of electric heating — modes of heat transfer - methods of electric heating - resistance heating - arc furnaces - induction heating - dielectric heating - electric welding — types - resistance welding - arc welding - power supply for arc welding - radiation welding.

UNIT IV SOLAR RADIATION AND SOLAR ENERGY COLLECTORS**9**

Introduction - solar constant - solar radiation at the Earth's surface - solar radiation geometry — estimation of average solar radiation - physical principles of the conversion of solar radiation into heat — flat-plate collectors - transmissivity of cover system - energy balance equation and collector efficiency - concentrating collector - advantages and disadvantages of concentrating collectors performance analysis of a cylindrical - parabolic concentrating collector — Feeding Invertors.

UNIT V WIND ENERGY**9**

Introduction - basic principles of wind energy conversion - site selection considerations - basic components of a WECS (Wind Energy Conversion System) - Classification of WECS - types of wind Turbines - analysis of aerodynamic forces acting on the blade - performances of wind.

**TOTAL : 45 PERIODS****PRINCIPAL**

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OUTCOMES:

- Ability to understand and analyze power system operation, stability, control and protection.
- Ability to handle the engineering aspects of electrical energy generation and utilization.

TEXT BOOKS:

1. N.V. Suryanarayana, "Utilisation of Electric Power", Wiley Eastern Limited, New Age International Limited, 1993.
2. J.B.Gupta, "Utilisation Electric power and Electric Traction", S.K.Kataria and Sons, 2000.




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OBJECTIVES:**To the study of nature and the facts about environment.**

- ❖ To find and implement scientific, technological, economic and political solutions to environmental problems.
- ❖ To study the interrelationship between living organism and environment.
- ❖ To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- ❖ To study the dynamic processes and understand the features of the earth's interior and surface.
- ❖ To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY**12**

Definition, scope and importance of Risk and hazards; Chemical hazards, Physical hazards, Biological hazards in the environment – concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers-Oxygen cycle and Nitrogen cycle – energy flow in the ecosystem – ecological succession processes – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT II ENVIRONMENTAL POLLUTION**10**

Definition – causes, effects and control measures of: (a) Air pollution (Atmospheric chemistry- Chemical composition of the atmosphere; Chemical and photochemical reactions in the atmosphere - formation of smog, PAN, acid rain, oxygen and ozone chemistry;- Mitigation procedures- Control of particulate and gaseous emission, Control of SO₂, NO_x, CO and HC) (b) Water pollution : Physical and chemical properties of terrestrial and marine water and their environmental significance; Water quality parameters – physical, chemical and biological; absorption of heavy metals - Water treatment processes. (c) Soil pollution - soil waste management: causes, effects and control measures of municipal solid wastes – (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – role of an individual in prevention of pollution – pollution case studies – Field study of local polluted site – Urban / Rural / Industrial / Agricultural.



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UNIT III NATURAL RESOURCES

10

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people — Water resources: Use and overutilization of surface and ground water, dams-benefits and problems — Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies — Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies — Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Energy Conversion processes — Biogas — production and uses, anaerobic digestion; case studies — Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and

desertification — role of an individual in conservation of natural resources — Equitable use of resources for sustainable lifestyles. Introduction to Environmental Biochemistry: Proteins — Biochemical degradation of pollutants, Bioconversion of pollutants.
Field study of local area to document environmental assets — river/forest/grassland/hill/mountain.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

7

From unsustainable to **sustainable** development — urban problems related to energy — water conservation, rain water harvesting, watershed management — resettlement and rehabilitation of people; its problems and concerns, case studies — role of non-governmental organization- environmental ethics: Issues and possible solutions — 12 Principles of green chemistry- nuclear accidents and holocaust, case studies. — wasteland reclamation — consumerism and waste products — environment production act — Air act — Water act — Wildlife protection act — Forest conservation act — The Biomedical Waste (Management and Handling) Rules; 1998 and amendments- scheme of labeling of environmentally friendly products (Ecomark). enforcement machinery involved in environmental legislation- central and state pollution control boards- disaster management: floods, earthquake, cyclone and landslides. Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

6

Population growth, variation among nations — population explosion — family welfare programme — environment and human health — 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 — Case studies.

TOTAL: 45 PERIODS

OUTCOMES:

Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.

- Public awareness of environment at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions.
- Development and improvement in standard of living has lead to serious



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environmental disasters.\

TEXT BOOKS:

1. Gilbert M. Masters, "Introduction to Environmental Engineering and Science", 2nd Edition, Pearson Education, 2004.
2. Benny Joseph, „Environmental Science and Engineering“, Tata Mc Graw-Hill, New Delhi, 2006.

REFERENCES:

1. R.K. Trivedi, "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standard", Vol. I and II, Enviro Media.
2. Cunningham, W.P. Cooper, T.H. Gorhani, "Environmental Encyclopedia", Jaico Publ., House, Mumbai, 2001.
3. Dharmendra S. Sengar, "Environmental law", Prentice Hall of India PVT LTD, New Delhi, 2007.
4. Rajagopalan, R, "Environmental Studies-From Crisis to Cure", Oxford University Press 2005




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OBJECTIVES:

- At the end of the course, the students are expected to identify the new methodologies /technologies for effective utilization of renewable energy sources.

UNIT I INTRODUCTION

9

World Energy Use – Reserves of Energy Resources – Environmental Aspects of Energy Utilisation – Renewable Energy Scenario in Tamil nadu, India and around the World – Potentials - Achievements / Applications – Economics of renewable energy systems.

UNIT II SOLAR ENERGY

9

Solar Radiation – Measurements of Solar Radiation - Flat Plate and Concentrating Collectors – Solardirect Thermal Applications – Solar thermal Power Generation - Fundamentals of Solar Photo Voltaic Conversion – Solar Cells – Solar PV Power Generation – Solar PV Applications.

UNIT III WIND ENERGY

9

Wind Data and Energy Estimation – Types of Wind Energy Systems – Performance – Site Selection –Details of Wind Turbine Generator – Safety and Environmental Aspects

UNIT IV BIO - ENERGY

9

Biomass direct combustion – Biomass gasifiers – Biogas plants – Digesters – Ethanol production – Bio diesel – Cogeneration - Biomass Applications

UNIT V OTHER RENEWABLE ENERGY SOURCES

9

Tidal energy – Wave Energy – Open and Closed OTEC Cycles – Small Hydro-Geothermal Energy –Hydrogen and Storage - Fuel Cell Systems – Hybrid Systems.

TOTAL : 45 PERIODS**OUTCOMES:**

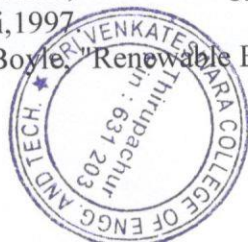
- Upon completion of this course, the students can able to identify the new methodologies /technologies for effective utilization of renewable energy sources.

TEXT BOOKS:

- Rai. G.D., "Non Conventional Energy Sources", Khanna Publishers, New Delhi, 2011.
- Twidell, J.W. & Weir, A., "Renewable Energy Sources", EFN Spon Ltd., UK, 2006.

REFERENCES:

- Sukhatme. S.P., "Solar Energy", Tata McGraw Hill Publishing Company Ltd., NewDelhi, 1997.
- Godfrey Boyle, "Renewable Energy, Power for a Sustainable Future", Oxford University



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Press,U.K., 1996.

- 3.Tiwari. G.N., Solar Energy — "Fundamentals Design, Modelling & Applications", NarosaPublishing House, New Delhi, 2002.
- 4.Freris. L.L., "Wind Energy Conversion Systems", Prentice Hall, UK, 1990.
- 5.Johnson Gary, L. "Wind Energy Systems", Prentice Hall, New York, 1985
- 6.David M. Mousdale — "Introduction to Biofuels", CRC Press, Taylor & Francis Group, USA2010
- 7.Chetan Singh Solanki, Solar Photovoltaics, "Fundamentals, Technologies and Applications",PHI Learning Private Limited, New Delhi, 2009.



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COURSE OUTCOME:

The students should be able to describe and discuss the elements of effective management, ii) discuss and apply the planning, organizing and control processes, iii) describe various theories related to the development of leadership skills, motivation techniques, team work and effective communication, iv) communicate effectively through both oral and written presentation.

UNIT I INTRODUCTION TO MANAGEMENT 9

Organization- Management- Role of managers- Evolution of management thought- Organization and the environmental factors- Managing globally- Strategies for International business.

UNIT II PLANNING 9

Nature and purpose of planning- Planning process- Types of plans- Objectives- Managing by Objective (MBO) strategies- Types of strategies – Policies – Decision Making- Types of decision- Decision making process- Rational decision making process- Decision making under different conditions. organization- Line and staff authority- Departmentation- Span of control- Centralization and decentralization- Delegation of authority- Staffing- Selection and Recruitment- Orientation- Career development- Career stages- Training- Performance appraisal

UNIT IV DIRECTING 9

Managing people- Communication- Hurdles to effective communication- Organization culture- Elements and types of culture- Managing cultural diversity.

UNIT V CONTROLLING 9

Process of controlling- Types of control- Budgetary and non-budgetary control techniques- Managing productivity- Cost control- Purchase control- Maintenance control- Quality control- Planning operations.

TOTAL: 45 PERIODS**COURSE OBJECTIVE:**

To expose the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms.

TEXT BOOKS:

1. Andrew J. Dubrin, Essentials of Management, Thomson Southwestern, 9th edition, 2012.
2. Samuel C. Certo and Tervis Certo, Modern management: concepts and skills, Pearson education, 12th edition, 2012.
3. Harold Koontz and Heinz Weihrich, Essentials of management: An International & Leadership Perspective, 9th edition, Tata McGraw-Hill Education, 2012.

4. Charles W.L Hill and Steven L McShane, Principles of Management, McGraw Hill Education, Special Indian Edition, 2007.




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REFERENCES:

1. Don Hellriegel, Susan E. Jackson and John W. Slocum, Management- A competency-based approach, Thompson South Western, 11th edition, 2008.
2. Heinz Weihrich, Mark V Cannice and Harold Koontz, Management- A global entrepreneurial perspective, Tata McGraw Hill, 12th edition, 2008.
3. Stephen P. Robbins, David A. De Cenzo and Mary Coulter, Fundamentals of management, Prentice Hall of India, 2012.




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COURSE OBJECTIVE:

To learn the quality philosophies and tools in the managerial perspective.

UNIT I INTRODUCTION

9

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.

UNIT II PRINCIPLES AND PHILOSOPHIES OF QUALITY MANAGEMENT

9

Overview of the contributions of Deming, Juran Crosby, Masaaki Imai, Feigenbaum, Ishikawa, Taguchi techniques – introduction, loss function, parameter and tolerance design, signal to noise ratio. Concepts of Quality circle, Japanese 5S principles and 8D methodology.

UNIT III STATISTICAL PROCESS CONTROL

9

Meaning and significance of statistical process control (SPC) – construction of control charts for variables and attributed. Process capability – meaning, significance and measurement – Six sigma - concepts of process capability. Reliability concepts – definitions, reliability in series and parallel, product life characteristics curve. Total productive maintenance (TMP), Terotechnology. Business process Improvement (BPI) – principles, applications, reengineering process, benefits and limitations.

UNIT IV TOOLS AND TECHNIQUES FOR QUALITY MANAGEMENT

9

Quality functions development (QFD) – Benefits, Voice of customer, information organization, House of quality (HOQ), building a HOQ, QFD process. Failure mode effect analysis (FMEA) – requirements of reliability, failure rate, FMEA stages, design, process and documentation. Seven Tools (old & new). Bench marking and POKA YOKE.

UNIT V QUALITY SYSTEMS ORGANIZING AND IMPLEMENTATION

9

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 - TQM framework, benefits, awareness and obstacles.

TOTAL: 45 PERIODS

COURSE OUTCOME:

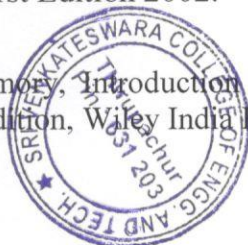
To apply quality philosophies and tools to facilitate continuous improvement and ensure customer delight.

TEXT BOOKS

1. Dale H. Besterfield, Carol Besterfield – Michna, Glen H. Besterfield, Mary Besterfield – Sacre, Hermant – Urdhwarsh, Rashmi Urdhwarsh, Total Quality Management, Revised Third edition, Pearson Education, 2011
2. Shridhara Bhat K, Total Quality Management – Text and Cases, Himalaya Publishing House, First Edition 2002.

REFERENCES

1. Douglas C. Montgomery, Introduction to Statistical Quality Control, Wiley Student Edition, 4th Edition, Wiley India Pvt Limited, 2008.



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COURSE OBJECTIVE:

To provide knowledge about management issues related to staffing, training, performance, compensation, human factors consideration and compliance with human resource requirements.

UNIT I PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT 5

Evolution of human resource management – The importance of the human factor – Challenges – Inclusive growth and affirmative action – Role of human resource manager – Human resource policies – Computer applications in human resource management – Human resource accounting and audit.

UNIT II THE CONCEPT OF BEST FIT EMPLOYEE 8

Importance of Human Resource Planning – Forecasting human resource requirement – matching supply and demand – Internal and External sources. Recruitment – Selection – induction – Socialization benefits.

UNIT III TRAINING AND EXECUTIVE DEVELOPMENT 10

Types of training methods – purpose- benefits- resistance. Executive development programmes – Common practices – Benefits – Self development – Knowledge management.

UNIT IV SUSTAINING EMPLOYEE INTEREST 12

Compensation plan – Reward – Motivation – Application of theories of motivation – Career management – Development of mentor – Protégé relationships.

UNIT V PERFORMANCE EVALUATION AND CONTROL PROCESS 10

Method of performance evaluation – Feedback – Industry practices. Promotion, Demotion, Transfer and Separation – Implication of job change. The control process – Importance – Methods– Requirement of effective control systems grievances – Causes – Implications – Redressal methods.

TOTAL: 45 PERIODS**COURSE OUTCOME:**

Students will gain knowledge and skills needed for success as a human resources professional

TEXT BOOKS

1. Dessler Human Resource Management, Pearson Education Limited, 2007
2. Decenzo and Robbins, Human Resource Management, Wiley, 8th Edition, 2007.

REFERENCES

1. Luis R. Gomez-Mejia, David B. Balkin, Robert L. Cardy. Managing Human Resource. PHI Learning. 2012
 2. Bernadin, Human Resource Management, Tata McGraw Hill, 8th edition 2012.
 3. Wayne Cascio, Managing Human Resource, McGraw Hill, 2007.
 4. Ivancevich, Human Resource Management, McGraw Hill 2012.
- Uday Kumar Haldar, Juthika Sarkar, Human Resource management. Oxford 2013



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COURSE OBJECTIVE:

To explore contemporary knowledge and gain a conceptual understanding of industrial relations.

UNIT I INDUSTRIAL RELATIONS

7

Concepts – Importance – Industrial Relations problems in the Public Sector – Growth of Trade Unions – Codes of conduct.

UNIT II INDUSTRIAL CONFLICTS

12

Disputes – Impact – Causes – Strikes – Prevention – Industrial Peace – Government Machinery – Conciliation – Arbitration – Adjudication.

UNIT III LABOUR WELFARE

8

Concept – Objectives – Scope – Need – Voluntary Welfare Measures – Statutory Welfare Measures – Labour – Welfare Funds – Education and Training Schemes.

UNIT IV INDUSTRIAL SAFETY

9

Causes of Accidents – Prevention – Safety Provisions – Industrial Health and Hygiene – Importance – Problems – Occupational Hazards – Diseases – Psychological problems – Counseling – Statutory Provisions.

UNIT V WELFARE OF SPECIAL CATEGORIES OF LABOUR

9

Child Labour – Female Labour – Contract Labour – Construction Labour – Agricultural Labour – Differently abled Labour – BPO & KPO Labour – Social Assistance – Social Security – Implications.

TOTAL: 45 PERIODS**COURSE OUTCOME:**

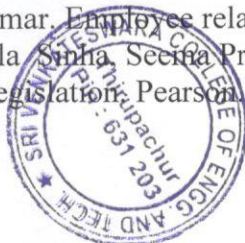
Students will know how to resolve industrial relations and human relations problems and promote welfare of industrial labour.

TEXT BOOKS

1. Mamoria C.B. and Sathish Mamoria, Dynamics of Industrial Relations, Himalaya Publishing House, New Delhi, 2007.
2. Arun Monappa, Ranjeet Nambudiri, Patturaja Selvaraj. Industrial relations & Labour Laws. TataMcGraw Hill. 2012

REFERENCES

1. Ratna Sen, Industrial Relations in India, Shifting Paradigms, Macmillan India Ltd., New Delhi, 2007.
2. C.S.Venkata Ratnam, Globalisation and Labour Management Relations, Response Books, 2007.
3. Srivastava, Industrial Relations and Labour laws, Vikas, 2007.
4. P.N.Singh, Neeraj Kumar. Employee relations Management. Pearson. 2011.
5. P.R.N Sinha, Indu Bala Sinha, Seema Priyadarshini Shekhar. Industrial Relations, Trade Unions and Labour Legislation. Pearson. 2004



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