

## **S. V. NATIONAL INSTITUTE OF TECHNOLOGY, SURAT**

### **E.D.Cell**

#### **LIST OF PROPOSED COURSES TO EARN EXTRA CREDITS FOR FAST LEARNERS UG STUDENTS**

**EVEN-SEMESTER (January to May 2012)**

**(Senate Meeting Resolution item no 9 –Dated- 17-12-2011)**

**(Scheme -3L+1T-125 marks-4 credit)**

<b><u>Sr. No.</u></b>	<b><u>Course Title</u></b>	<b><u>Course Coordinator</u></b>	<b><u>Course Eligibility</u></b>
1.	<b><u>VALUE ENGINEERING &amp; VALUE ANALYSIS</u></b>	Dr. D.V.Bhatt (MED)	All Discipline
2.	<b><u>INNOVATION &amp; ENTREPRENEURSHIP</u></b>	Dr.H.Bulsara (ASHD)	All Discipline
3.	<b><u>INDUSTRIAL MAINTENANCE MANAGEMENT</u></b>	Dr. D.V.Bhatt (MED)	All Discipline
4.	<b><u>SAFETY, HEALTH AND ENVIRONMENT</u></b>	Dr. J. K. Parikh (CHED)	All Discipline

Course registration co-ordinator **Dr. Jyoti Meghnani, (MED),**

**Dr. Vipul Kheraj(ASHD)**

#### **ELGIBILTY:-**

- 1) Interested Student of 3<sup>rd</sup> year /4<sup>th</sup> year UG B.Tech can Join one Course whose CGPA is equal to or more than 6.5 . CGPA 7.5 and above will be given first preference to register.
- 2) Course Fee – Rs. 3500/Course per student.
- 3) Registration at E.D.Cell, CAD LAB-1, SVNIT SURAT between 11am to 5pm till 15 January 2012. [edcell@svnit.ac.in](mailto:edcell@svnit.ac.in) .
- 4) Course will start from 16<sup>th</sup> January 2012
- 5) Timings -5:30pm to 7:30pm- twice a week
- 6) Examination – After one week of Regular MID/SEM exam.
- 7) Batch size 40-45 no. of Students.

**Sardar Vallabhbhai National Institute of Technology, Surat**

**SUB: - VALUE ENGINEERING & VALUE ANALYSIS (125 MARKS)**

**(3L-0P-1T) 4 CREDIT**

**SUBJECT – CO-ORDINATOR – Dr.D.V.BHATT (MED)**

<b>SR. NO.</b>	<b>TOPICS</b>	<b>HRS</b>
1	<b>INTRODUCTION TO VE AND VA:-</b> Definition, undue cost, customer, factors to be considered, etc	04
2	<b>VALUE ENGINEERING CONCEPT, THEORY AND FUNDAMENTALS:-</b> Orientation, What is & What is not, Factors, Team members, Information Phase, Area – Production, Design, maintenance, supply, life cycle, ABC analysis	04
3	<b>VALUE ANALYSIS CONCEPT, THEORY AND FUNDAMENTALS:-</b> Orientation, What is & What is not, Factors, Team members, Information Phase, Area – Production, Design, maintenance, supply, life cycle, ABC analysis	04
4	<b>VALUE ENGINEERING APPLICATION TECHNIQUES:-</b> Darsiri method, Functional Phase, Value potentials, Scope, Illustration, etc.	04
5	<b>VALUE – ANALYSIS APPLICATION TECHNIQUES:-</b> Darsiri method, Functional Phase, Value potentials, Scope, Illustration, etc.	04
6	<b>INNOVATION THROUGH VE/VA:-</b> Definition, idea creation Phase – Brain Storming, check list, morphological analysis, Jug’s Approach, Evaluation Phase – Filter, ranking, weight age factor, Decision matrix, short list, Audit, Implementation,	04
7	<b>CASE – STUDIES</b>  Engineering Industries, Process Industries, Automotive Industries ,Electronic Industries, Agricultural Industries, Public Transportation & Construction Industries, MSME – sector, Finance Sector	16
	<b>TOTAL HRS</b>	<b>44</b>

**Ref:-**

- Getting more at less cost – the value engineering way (By Jagannatnn G)
- Short term course VE for working professional (By Indian Society for technical education)
- Value engineering in project management (Krishnan P.)
- Value engineering in manufacturing (by American Society to tool & manufacturing engineers)
- VE cost cycle of iron & steel pipes (by Institute for steel development & growth)
- Value Engineering (By AICTE)
- Value stream management: Eight steps for planning, mapping & sustaining lean improvements (by Tapping.D.)
- Value Engineering (by S.S.Iyer) New –Age International Publisher

**Sardar Vallabhbhai National Institute of Technology, Surat**

**SUB:- INNOVATION & ENTREPRENEURSHIP**

**(125 MARKS)**

**(3L-0P-1T) 4Credit**

**SUBJECT – CO-ORDINATOR – Dr. H.P.BULSARA (ASHD)**

<b>SR.NO.</b>	<b>TOPICS</b>	<b>HRS</b>
1	<b>INTRODUCTION TO CONCEPTS OF ENTREPRENEURSHIP:</b> <ul style="list-style-type: none"> <li>➤ Scope of Entrepreneurship, Definitions of Entrepreneurship and entrepreneur, Characteristics of an Entrepreneur, Entrepreneurial Development models and Theories, Entrepreneurs Vs Managers</li> <li>➤ Classification of Entrepreneurs</li> <li>➤ Major types of Entrepreneurship – Techno Entrepreneurship, Women Entrepreneurship, Social Entrepreneurship, Intrapreneurship (Corporate entrepreneurship, Rural Entrepreneurship, Family Business etc.</li> <li>➤ Problems for small scale enterprises and Industrial Sickness</li> <li>➤ Entrepreneurial Tests</li> <li>➤ Entrepreneurial Environment – Political, Legal, Technical, Natural, Economic, Socio – cultural etc.</li> </ul>	06
2	<b>INFORMATION SUPPORT SYSTEM:-</b> Government schemes, NGO, state/central motivation Policy, CED, IDI, EDI, MSME, etc	04
3	<b>BUSINESS OPPORTUNITY IDENTIFICATION:-</b> Types of organization, Market Scenario, Customer Attitude, Change in technology, Media information system, product classification, Location Merit De-Merit, Govt. Policy flexibility, environment, Demand supply gap, etc	04
4	<b>FUNCTIONAL MANAGEMENT AREA IN ENTREPRENEURSHIP:</b> <ul style="list-style-type: none"> <li>➤ <u>Marketing Management:</u> Core Concepts Of Marketing, Marketing Mix (4p), Segmentation – Targeting – Positioning, Marketing Research, Marketing Information System, Concept Of International Marketing, Difference Between Domestic Marketing &amp; International Marketing, Buying Behavior</li> <li>➤ <u>Operations Management:</u> Introduction To Operations Management, Types Of Operation Systems, Types Of Layouts, Material Handling, Purchasing &amp; Store System, Inventory Management, Location problem</li> <li>➤ <u>Personnel Management:</u> Roles &amp; Functions Of Personnel Manager, Recruitment, Selection, Training, Industrial Dispute, Collective Bargaining</li> <li>➤ <u>Financial Management:</u> Goal Of Financial Management, Key Activities In Financial Management, Organization Of Financial Management, Financial Institutions, Financial Instruments, Sources Of Finance, Ratio Analysis, Capital Budgeting, Working capital Management</li> </ul>	10
5	<b>INNOVATION &amp; MOTIVATION:-</b> Concept of Idea, Motivation Factors, Brain Storming, Incentives, Product innovation, Value potential, R & D importance, customer choice, motivational theory, etc.	04
6	<b>BUSINESS PLAN:-</b> Project Report, Information related to product, cost	04

	elements, product process, plant & machinery, Finance sources, secured/unsecured loan, Logistics aspects, etc	
7	<b>SMALL BUSINESS MANAGEMENT:-</b> Types of organization, policy, resources management, Job specification, job description, recruitment policy, welfare, MIS system, etc.	04
8	<b>STATUTORY REQUIREMENT:-</b> Statutory laws of state & central Govt. for Registration, ESI, Factory Act 1948, etc.	04
9	<b>PATENT, COPY RIGHT &amp; TRADE MARK LAWS:-</b> Patent Acts for Design, IC circuit layout, Literacy, Art, copy right, Trade mark, PCT, Patent definition, patentable & non-patentable, merits & de-merits, Patent procedure, Monitoring system, Govt. agencies, patent norms, etc	04
<b>TOTAL HRS</b>		<b>44</b>

**Ref:-**

- Managing technical Innovation (by Twiss.B.C.)
- Innovation & entrepreneurship practice & principles (by Drucker.P.F.)
- Management of technical innovation (by Rastogi .P.N)
- New product development : successful innovation in market place (by Brooke.M.Z)
- Entrepreneurship & technology (by Desai, Vasant)
- Development of entrepreneurship (by Batra G.S)
- Small scale industries & entrepreneurship (by Desai, Vasant)
- Impact making entrepreneurs ( by Gautam Jain, M. Akbar Ansari EDI-A'bad)
- Entrepreneurship and Small Business ( by J.S. Saini, S.K. Dhameja
- Entrepreneurship Development Programme in India & its Relevance to developing countries (By V.G. Patel)
- Changing Frontiers of Techno-Entrepreneurship (by Nagendra P. Singh)

**Sardar Vallabhbhai National Institute of Technology, Surat**

**SUB: -INDUSTRIAL MAINTENANCE MANAGEMENT (125 MARKS)**

**(3L-0P-1T) 4Credit**

**SUBJECT – CO-ORDINATOR – Dr.D.V.BHATT (MED)**

<b>SR. NO.</b>	<b>TOPICS</b>	<b>HRS</b>
1	<b>INTRODUCTION &amp; OBJECTIVE:</b> - Types industries, Why maintenance?, objectives, profit centre, technology, tribological parameters, MTTF, MTTR, bath tub curve, product life cycle etc.	04
2	<b>QUALITY, RELIABILITY AND MAINTAINABILITY:-</b> Productivity, Quality circle in Maint, Engineering reliability assurance, Reliability thr'o Redundancy, Maintainability & improvement, Reliability V/S maintainability	04
3	<b>MAINTENANCE JOBS &amp; TECHNOLOGY:-</b> Dismantling & Assembling, Inspection & Adjustment, Lubrication, Repairing, Replacement, Routine maintenance, Fixed type maintenance,	04
4	<b>TYPE OF MAINTENANCE:-</b> Predictive maint, planned-unplanned maintenance, corrective maintenances, Breakdown maintenance, opportunity maintenances, Preventive maintenance, conditioned based maintenance, Design out maintenance, application case studies, online-offline maintenance	04
5	<b>MAINTENANCE PLANNING &amp; SCHEDULING:-</b> Job planning, Job manuals, job scheduling Techniques, charts & networks, short term plan, Long term plan, major repair, capital repair, and Annual overhauls, Renovation, Repairing & modernization, application case studies	04
6	<b>COMPUTER APPLICATION TO MAINTENANCE JOB:-</b> Objectives, benefits of computer application, scope of computerization, equipment classification, codification, material codifications, codification of maint. activities, materials mgt, codification of spares & consumables, standardization, work centre, Route card, job card, work-order etc.	04
7	<b>TOTAL PRODUCTIVE MAINTENANCE:-</b> Introduction & concept, basic system of TPM, procedure & steps, productivity circle, TPM V/S TQM, Benefits of TPM, illustrations.	04
8	<b>MAINTENANCE ORGANIZATION:-</b> Objectives, types of maintenance system, Formal/Informal organization, Line & staff organizations, Functional organization, centralized & De-centralized organization, merits-demerits, Functional responsibilities, Delegation of authority & power etc.	04
9	<b>MAINTENANCE AUDIT &amp; HOUSE KEEPING:-</b> Documentation, various forms for communications, evaluations, storage system, MIS, Accident reports, Analysis, down time analysis, housekeeping, Audit team, Audit methods, etc	04

10	<b>MAINTENANCE, BUDGETING, COSTING &amp; COST CONTROL:-</b> Maintenance cost, budget, cost elements, cost control parameters, system documentation for monitoring system, maint cost saving as profit centre, cost estimation of various jobs etc.	04
11	<b>TRAINING (HRD) OF MAINTENANCE PERSONNEL:-</b> Need, types of training for improving productivity, motivation, Skill-development etc planning & implementation of various training modules, category of maintenance personnel etc.	04
	<b>TOTAL HRS</b>	<b>44</b>

**Ref:-**

- 1) Industrial Maintenance Management By S.Kumar Srivastav
- 2) Reliability engineering theory & Practice By A. Birolini
- 3) Maintenance Planning & Control By Anthony Kelly
- 4) Reliability Engineering – By L.S. Srinath (Third Edition)
- 5) Maintenance of Industrial equipment By B. Gelberg, G.Pekelis
- 6) Industrial Maintenance By H.P. Garg.

**SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY SURAT**

**SUB: - SAFETY, HEALTH AND ENVIRONMENT (125 MARKS)**

**(3L-0P-1T) 4Credit**

**SUBJECT – CO-ORDINATOR - Dr. JIGISHA PARIKH (CHED)**

Sr. No.	Topics	Hours
1	<b>Work place Safety Management</b> - Need for Safety (Humanitarian, Legal and Economic, Accidents and Total Loss Control Concept, Cost of Accident and calculations, Safety Management System (OHSAS-18001-2007 standard), Safety & Productivity, Behaviour Based safety	04
2	<b>Process Safety Management (PSM):-</b> <b>1.Process Safety Design-</b> Inherent Plant Safety Design ,SIL (Safety Integrity Level) Criteria, ESDS, Safety aspects in flare & PSV design and blow-down system, Built-in protections with alarms & trips logics, OSHA's and API's PSM elements , Pressure vessel safety in operations, SOP and SMP, Operating Manual. <b>2.Plant Protection System-</b> Plant Lay out criteria, Fire& Gas detection system, Hazardous area classifications and Control of ignition sources(explosion-proof designs), DCS Control station & Ergonomics, Hazmat Storage & Transportation safety, Permit –to –Work, Colour coding of process piping, Hazards of materials -MSDS, Reactivity Matrix , Product Safety- TREM card	12
3	<b>Hazard Identification &amp; Risk Assessment:-</b> Hazard –vis-à-vis- Risk, HAZOP, HAZAN, HAZID techniques, Process Hazard Analysis (PHA), What-if technique, Fault-Tree and Event-Tree Analysis, Cause – Consequence Diagram, Consequence Analysis, Process Explosions e.g. BLEVE, UCVCE etc, Case studies on Process failures, Chemical Disaster Planning	06
4	<b>Occupational Health &amp; Industrial Hygiene:-</b> Definition of Health & Occupational Health <b>Toxicology</b> - Routes of entry, Toxicity effects, Acute & Chronic effects, BTLVs (biological TLVs), Biological process, Threshold Limit Values (TLVs), Toxic risks (Dow & Mond indices), Dose-response relationship, Biological Monitoring, Fugitive emission Monitoring, Periodical medical check up and Action level for Carcinogens, Chemical exposure in laboratory	06
5	<b>Industrial Hygiene:</b> - Identification of physical, chemical and biological hazards, Work environment monitoring, Measurements (noise, vibration, illumination, gases/vapours etc), Evaluation of exposures against Permissible exposure limits, Control methods, Numerical	04
6	<b>Environment Management:-</b> <b>Air Environment</b> – An overview of air pollution and its effects, Air Emissions (Sox/NOx/CO/HC/SPM etc), Ambient and Clean air standards , Ambient and Stack monitoring system, Emission control techniques, Odour pollution and control  <b>Water Environment</b> – An Overview of Water Pollution and its effects, Industrial Effluent Treatment Plants, its operations, Municipal waste	12

	<p>water treatment, Reuse &amp; recycle, Disposal standards (MINAS) and options</p> <p><b>Land Environment</b> – Solid waste generation and characterization, Hazardous waste and its categorization, Municipal Solid waste (MSW) and its disposal, Reuse &amp; Recycle, Transportation of hazardous waste, Design and operations of a Waste disposal site</p> <p><b>Noise Pollution</b> – Fundamentals, sources, types of noise, Effects of Noise (auditory and non-auditory), Measurements, Noise control principles (at source, at path and at receiver), Noise control methods / vibration damping, Numerical</p> <p style="text-align: right;"><b>TOTAL HRS</b></p>	<b>44</b>
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**Books :**

Crowl, D. A. and Louvar J. F., “Chemical Process Safety – Fundamentals

with Applications”, 2<sup>nd</sup> Ed., PHI, NJ, 2001.

Davis Mackenzie, Cornwell David, “Introduction to Environmental Engineering”, 2<sup>nd</sup> Ed., MGH

Rao, C. S., “*Environmental Pollution Control Engg.*”, New Age Int. (P) Ltd.

Masters, G. M., “Introduction to Environmental Engg and Science”, Prentice-Hall, India.

Fundamental of Industrial Safety and Health by Dr. K U Mistry