COURSE NAME : DIPLOMA IN MECHANICAL ENGINEERING

COURSE CODE : ME/PT/PE/AE

SEMESTER/YEAR : FIFTH

SUBJECT TITLE : PROFESSIONAL PRACTICES - V

SUBJECT CODE :

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
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 # - External **@ - Internal** *** On Line Examination**

Rationale:

Overall professional development of diploma mechanical engineers is the need of the day for enabling them to sustain in competitive global environment.

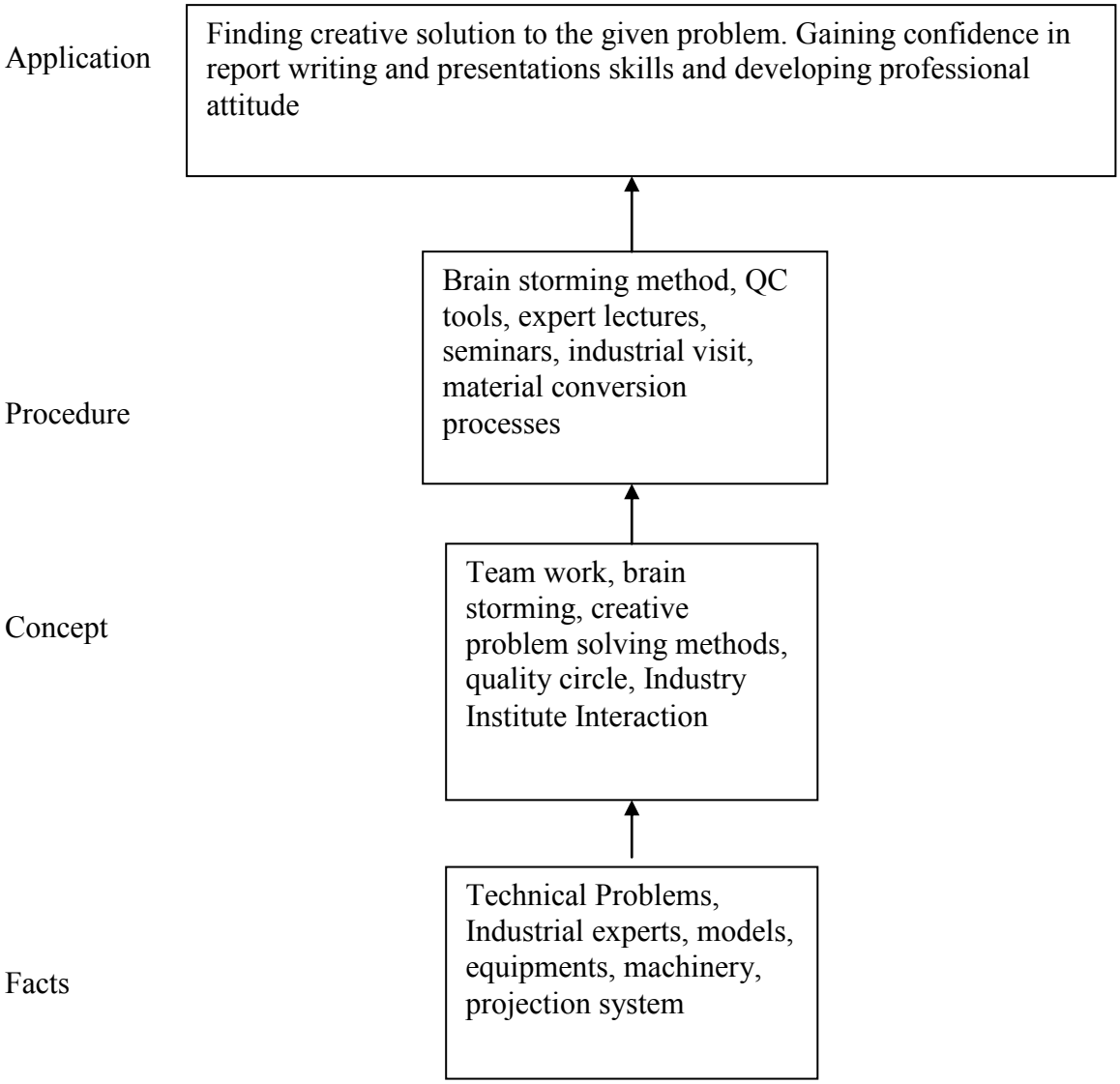
Professional development of Diploma engineering students is to be done by exposing them to various simulative situations in the industries. This can be achieved by inculcating attitude to face the problems, get alternative solutions and validation of the selected alternatives. This is achieved by involving students in activities such as inviting experts from various industries for sharing their experiences, arranging industrial visits, quality circles, seminars and mini projects activities etc.

General Objectives:

Student will be able to:

1. Identify, select and solve the problems.
2. Acquire information from different sources.
3. Prepare technical report and present seminar using power projection system.
4. Interact with peers to share thoughts.
5. Make them work with their own hands
6. Work in a team and develop team spirit

Learning Structure



Activity	Practical Hours
1. Idea Generation for final semester Project selection:- The student should use innovation principles for Idea generation .These ideas should lead to selection of Project. Head of Department should allot the project guides for the activity and form groups of four students per project. Following are some of the guidelines for projects selection. • Development of working models. • Development of attachments to machine tools. • Reconditioning of existing equipments, machines in the Institute. • Industrial Problem Solving. • Interdisciplinary Projects. • Use of Non conventional Energy sources. • Use of appropriate technology. • Agro based projects to reduce drudgery of farmers. • Ergonomic equipments • Jig, fixtures, dies, special purpose tools • Any project on Low Cost Automation • Automation Problems in industries • Experimental setups required in laboratories for measurement of parameters and component performance. • Any other project suitable for Industry and Institute. Note:-The project group should submit their progress report, activity planning, any preliminary calculations to evaluate the project to be submitted at the end of the semester. The student should submit a report for the project which will have proportional weightage in the term work	**06**
2. Industrial Visits Structured industrial visits be arranged and report of the same shall be submitted by the individual student, to form a part of the term work. Following are the **suggested** types of Industries/ Fields. The subject teacher(s) have liberty to select nearby organization/industry i) Automobile manufacturing / press component/ auto component manufacturing units to observe the working of SPM/Non Conventional Manufacturing process/CNC/FMS/Robots ii) Refrigeration and air conditioning manufacturing / servicing units / industries / workshops iii) Automobile service stations for four wheelers/Wheel Balancing unit for light and/or heavy motor vehicles/exhaust gas analysis and vehicle testing/PWD /ST workshop. iv) Co-ordinate measuring machine to observe its construction working specifications and applications. v) Engine Testing unit to gather details regarding the testing procedures/parameters etc. vi) Food processing/ Dal mill/ Oil Mill/ Automated bakery unit. vii) Textile industry / Textile machinery manufacturing / garment manufacturing / embroidery / textile printing and dying units. viii) Hydro electric and Thermal power plants. ix) Automotive Research Association of India, Pune, Central Institute of	**06**

Road Transport, Pune, Vehicle Research and Development establishment , Ahmednagar. x) Safety museum at Central Labour Institute, Sion, Mumbai xi) Common Facility Center by MSME, GOI. xii) Auto Cluster projects of MSME , GOI. xiii) CIPET and IGTR Aurangabad xiv) Tyre retreading, paint manufacturing, foundries, forging unit, heavy fabrication unit, steel and wooden furniture manufacturing xv) Agricultural equipments manufacturing units. xvi) Hardware and Machinery stores selling agro equipments xvii) Plastic injection moldings, extrusion, blow molding. xviii) Stone crushers / hot mix plant/ service stations of JCBs and other earthmoving equipments Note:- **One Industrial visit be arranged per practical batch of students.**	
3. The Professionals/ Industrial Expert Lecture/s Experts/Professionals from different field/industries are invited to deliver lectures of 2 Hrs duration at least TWO occasions. The topics may be selected by the teacher / industry expert to develop required skills .The following topics may serve guidelines. a) Vehicle testing. Vehicle aerodynamics & design. b) Modern automobiles systems, Hybrid motor vehicles, electric vehicles, MPFI, ABS etc. c) Environmental pollution & control, Automobile pollution, norms, act. d) Earth moving machines. e) Biotechnology f) Nanotechnology g) CAD, CAM, Computer Integrated Manufacturing, Material resources planning, Enterprise resources planning h) Product design and modeling, Rapid prototyping i) Programmable logic controllers, Automation, Robotics, Automated Guided Vehicles, Non industrial robots, j) TQM, 5S, JIT, KAIZEN, Lean Manufacturing., World class Manufacturing., Pokayoke, Total Productive Maintenance, Six Sigma. k) Packaging technology l) Appropriate technology m) LPG / CNG conversion kit. n) Current HR Policies, Labor Act, o) ISO implementation, p) Import – Export policies and procedures, Taxation. q) IPO, Mutual Fund, FPO, Share- Commodity trading and Investment. r) Role of Insurance, Value Assessors in industry and society, Vehicle valuers, s) Trends in modern agriculture engineering t) Sustainable development, Green Environment, Solar and alternative fuels, Rain water harvesting, Disaster management. u) Innovation Principles. v) Opportunities in software industries. w) Supply chain management. E-commerce. x) Energy Audit. y) Road Safety, Road Signs, Prevention of accidents on Roads, First aid. Note : The brief report to be submitted on these lectures by each student as a part of Term work	**06**

4. Students Quality Circles: The students should form Quality Circles consisting of group of six to eight students and brain storm on various problems faced by students, use QC tools to find root causes and alternative solutions. Following are some of the problems undertaken by students Quality Circle— Poor vocabulary of Diploma Engineering students Poor practical skills of Diploma Engineering students Poor Journal preparation of Diploma Engineering students Poor Entrepreneurial abilities of Diploma Engineering students Students and teacher can select different problems according to their priorities. The students should prepare QC register and Case Study presentation. Present this case study in the class. Such Quality Circles can participate in State level and National Level Conventions organized by Quality Circle Forum of India. For additional information visit website www.qcfihq.com	**12**
5.Seminar : Seminar topic may be related to the subjects of fifth semester / topics from guest lectures. Students shall submit a report of at least 5 typed pages (font size 12 all Margins 1" A4 size) (Presentation time – 10 minutes per student)	**06**
6.Mini Projects : (in a group of 4-5 students) Students can choose any mini project of their interest. Mini Projects means a short term project which may be completed in 2 to 3 months and with a limited scope. Suggestive topics for guidance are as follows : CNC Programming and manufacturing, Advanced mechanism, Model making--conveyors, agro equipments, wax/ thermocol prototypes, factory layouts, string diagrams,. Standard Operating Procedures for various machines Students and teachers are **free to select any** techno-viable mini project. Students shall arrange exhibition of all mini projects in the class/hall and present the task to the audience/ experts/examiners. The student shall submit a brief report (Max. 5 pages) of the mini project.	**12**
Total	**48**

Contents:-

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publisher
01	NRDC,Publication Bi Monthly Journal	Invention Intelligence Journal	National Research Development Corportion,GOI.
02	DK Publishing	How things works encyclopedia	DK Publishing

03	QCFI Publication, Secunderabad	Quality Circle Concepts and Implementation, 5S, KAIZEN 6 SIGMA TRIZ TQM SPC TPM SMED ERP	QCFI Publication, Secunderabad Visit website www.qcfihq.com for details
04	Paul Trott	Innovation Management and New Product Development 4th Ed.(2008)	Pearson Education
05	Joe Tidd	Managing Innovation,3rd Ed.	Wiley India

2.CD-ROM :

Federation of Indian Chambers of Commerce and Industries (FICCI) has developed 7 internationally acclaimed CD-ROM titles on various aspects of Quality Management & Business Excellence, which enable the organizations in achieving their 'mission critical objectives' in a cost-effective manner.

- Developing continuous improvement as an organizational strategy
- Strategies for becoming a customer driven organization
- Six Sigma - A breakthrough strategy
- Seven steps to World Class Manufacturing.
- Maximizing business results and competitive advantages
- Concise Encyclopedia of Business Excellence
- Developing a passion to excel

  For more details log on to: www.ficci.com/fqf03/index.htm

3. Web sites

www.start2think.com
www.Innovationgoldmine.com
www.engineeringforchange.org
www.qcfihq.com
www.wikipedia.com
www.slideshare.com
www.teachertube.com