Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru

Course Title: : Professional Practice		Course Code: 15MC57P
Mode(L:T:P) : 0:2:4	Credits: 3	Core/ Elective: core
Type of Course: Lectures, Practice & Activities		Total Contact Hours: 78
CIE= 25 Marks		SEE= 50Marks

Prerequisites: Knowledge of First to Fifth semester courses of Diploma in Mechatronics Engineering program

Course Objective: To make students to participate in seminars, group discursion, and related activities

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

1. Survey relevant information from various sources and interpret the data
2. Take part in a seminar on the given topic
3. Take part in sharing and discussing the thoughts with peer group
4. Examine a report on expert lecture and similar activities
5. Take part in teams in executing a given task

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Survey relevant information from various sources and interpret the data	Analysing	2,10	10
CO2	Take part in a seminar on the given topic	Analysing	2,9	15
CO3	Take part in sharing and discussing the thoughts with peer group	Analysing	9	10
CO4	Expert a report on expert lecture and similar activities	Analysing	2,9	28
CO5	Take part in teams in executing a given task	Analysing	8	15
Total		**78 Hours**		

Mapping of Course Outcomes with Program Outcomes.

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
Programmable Logic controller	-	3	-	-	-	-	-	3	3	1

Contents

Unit-I

Information Search and interpretation of Data

Information search and interpretation of data should be done through manufacturer's catalogue, websites, magazines, books etc. and submit a report on any two topic.

Following topics are suggested (Any Similar topics may be considered):

- Engine lubricants & additives
- Automotive gaskets and sealants
- Engine coolants and additives
- Power steering
- Different drives/Transmission systems in vehicles
- Heat Exchangers
- Maintenance procedure for solar equipment
- 3G & 4G mobile communications
- E-waste disposal
- Artificial Intelligence
- Biometric Systems
- PLC Applications
- Microcontrollers and its application
- Machine vision
- Recycling of plastics and other waste material
- Pneumatic tools and equipments
- Rain water harvesting
- Nano technology
- Traffic Control System
- Cloud computing

Methodology

1. The student should individually select the topic, and search the information related to the topic.
2. The report is strictly hand written document to have knowledge of precise writing and report making based on data interpretation
3. Carry out presentation using power point presentation.
4. Asses the student based of Appropriate Rubrics

Unit-II

Seminars

Seminar on any Two advanced technical topic should to be presented by individual student. Before the seminar the student should submit a report of at least 10 pages and deliver a seminar by using power point presentation(Presentation time – min10 minutes)

Methodology

1. The student should individually select the topic, and get it approved from Course coordinator
2. The student should prepare a report and get it corrected from Course coordinator before Presentation
3. Carry out presentation using power point presentation
4. Asses the student based of Appropriate Rubrics

Unit-III

Group Discussion

The students should discuss in a group of six to eight and write a brief report on the same. Two topics for group discussions may be selected by the faculty members.

Some of the suggested topics are (Any Similar topics may be considered):

- Sports
- Current news items
- Discipline and House Keeping
- Current topics related to Mechatronics engineering field.
- Solar Vehicles / Electric Vehicles.
- Auto Vehicles – Comparison.
- Recycling of plastics and other waste material
- Creativity and innovativeness
- Energy conservation in institutes
- Value engineering
- Revolution in communication technology
- CNG versus LPG as a fuel.
- Load shading and remedial measures.
- Rain water harvesting.
- Disaster management.
- Safety in day to day life.
- Energy Saving in Institute.
- Nano technology.
- Polythene bags must be banned
- Do we really need smart cities
- E – Books or Printed books

- Globalization and its impact on Indian Culture.
- Analytically evaluate the solutions to traffic problems
- Global warming is caused more by developed countries
- Rain forests help in maintaining the earth's ecosystem
- How to deal with terrorism
- Water resources should be nationalized
- Nuclear power is a safe source of energy
- Electronic media vs. print media
- Privatization will lead to less corruption.
- China market - a threat to Indian market
- Smaller businesses and start-ups have more scope
- Freedom of press should exist
- India needs a strong dictator
- Mobile phones - requirement of the day.
- The medium of teaching in schools should be English
- E-Learning is good for the education system and society

Methodology

1. The course coordinator should allot a topic for a group of six to eight students
2. The course coordinator should give an introductory talk on Ways and rules to carry out group discussion
3. The placement officer , any other senior faculty of the institute, HOD of other department should be invited and they should act as observing members, apart from course coordinator
4. The course coordinator should fix up the time duration for conducting the activity
5. Asses the student based of Appropriate Rubrics

Unit-IV
Lectures by Professional / Industrial Expert

The students should participate in Lectures by Professional / Industrial Expert and write a brief report on the same. (Minimum Two Lectures should be arranged in a semester)
Some of the suggested topics are (Any Similar topics may be considered):

- Pollution control.
- Non destructive testing.
- Acoustics.
- Illumination / Lighting system.
- Fire Fighting / Safety Precautions and First aids.
- Computer Networking and Security.
- Traffic Control System
- Communication in Industry
- Yoga and Meditation
- Aids awareness and health awareness
- micro processor based instrumentation in Automobiles

- Earth moving machines.
- Automated Guided Vehicles (AGV)
- Career opportunities in Service sector, Marketing, Surveyor, Insurance, R&D, call canters, CAD, NDT, Railways, Defence, Aeronautics, Marine, Software development, Information Technology etc
- Continuing education / Open university Programs
- Use of a plastics in automobiles
- Nonferrous Metals and alloys for engineering application
- Selection of electric motors for various applications.
- Computer aided drafting.
- Industrial hygiene.
- Composite Materials.
- Heat treatment processes
- Safety Engineering and Waste elimination
- Interview Techniques.
- Transducer application in automobiles.
- Vehicle aerodynamics & design.
- Biotechnology
- Nanotechnology
- Rapid prototyping
- Programmable logic controllers
- TQM
- MPFI
- Hybrid motor vehicles
- Packaging technology
- Cloud computing
- Safety awareness on driving
- Program on Personality development
- Computer Networking and Security

Methodology

1. The course coordinator should fix up the date for guest lecture.
2. The HOD of the department should chair the event.
3. The students are allowed participating in the session.
4. Each students should prepare the brief hand written report on the guest lecture and submit to the course coordinator
5. Record of the guest lecture by using any smart devices.

Unit-V

Students Activities in a Team

The students in a group of 3 to 4 should perform any Two activities and present a report as a part of term work:

Some of the suggested topics are (Any Similar topics may be considered):

- Collect and study IS code for Engineering Drawing.
- Collecting information from Market regarding Nomenclatures and specifications of engineering materials.
- Draw orthographic projections of a given simple machine element using and CAD software
- Collect and study Failure data for automobile / machines / equipments.
- Study of Hydraulic system for any one application like – dumpers, Earth moving equipment, Auto service station.
- Survey of oils used for hydraulic circuits – specifications, properties, costs, manufacturers names etc.
- Study any one type of CNC machining center and prepare report on tooling and tool holding devices
- For a given job write a sequence of operations performed by automated manufacturing system. Draw a block diagram of control system to perform above operations
- Compare non traditional methods on the basis of working principles, accuracy , MRR, Applications and limitations a) EBM b) PAM C)AJM d)WJM
- Collection of data regarding loan facilities or other facilities available through different organizations / banks to budding entrepreneurs
- Survey and interviews of successful entrepreneurs in near by areas
- Survey of opportunities available in thrust areas identified by Government
- Measuring Screw thread parameters on floating carriage dial micrometer and select the optimum diameter of wire.
- Survey of data regarding different types of pumps with specifications from manufacturers catalogue, local markets, end users (any other engineering products may be considered for survey
- Survey for local social problems such as mal nutrition, unemployment, cleanliness, illiteracy etc

Methodology

1. The student should individually select the topic, and get it approved from Course coordinator
2. The student should prepare a report on performance of an activity and get it corrected from Course coordinator before Presentation
3. Carry out presentation using power point presentation

4. Asses the student based of Appropriate Rubrics

Course Assessment Pattern

Particulars			Max Marks	Evidence	Course outcomes
Direct Assessment	**CIE**	Each unit of activities (5 marks each)	25	Reports	1,2,3,4,5
	SEE	As per the Scheme of Valuation	50	Answer scripts at BTE	1,2,3,4,5
Indirect Assessment	**Student Feedback on course**	Middle of the course		Feedback forms	1, 2and3
		End of the course		Feedback forms	1,2,3, 4, 5

Sample Rubrics

Dimension	Unsatisfactory	Developing	Satisfactory	Good	Exemplary	Student Score
	1	2	3	4	5	
Collection of data	Does not collect any information relating to the topic	Collects very limited information; some relate to the topic	Collect much information; but very limited relate to the topic	Collects some basic information; most refer to the topic	Collects a great deal of information; all refer to the topic	Ex: 4
Fulfill team's roles & duties	Does not perform any duties assigned to the team role	Performs very little duties but unreliable.	Performs very little duties	Performs nearly all duties	Performs all duties of assigned team roles	5
Shares work equally	Always relies on others to do the work	Rarely does the assigned work; often needs reminding	Usually does the assigned work; rarely needs reminding	Normally does the assigned work	Always does the assigned work without having to be reminded.	3
Listen to other Team mates	Is always talking; never allows anyone else to speak	Usually does most of the talking; rarely allows others to speak	Talks good; but never show interest in listening others	Listens, but sometimes talk too much	Listens and speaks a fair amount	2
Average / Total marks=(4+5+3+2)/4=14/4=3.5=4						

Note:

1. The I A Verifier should verify Student activities report for 25 marks
2. The I A Verifier should verify the three years records of students activity to prevent duplication of the activity.

Scheme of Valuation for SEE

Serial no	Description	Marks
1	Survey report on Information Search and Data Interpretation	10
2	Participation report on seminars	10
3	Recording of Group discussions made by any smart devices	10
4	Participation report on expert lecture and similar activities	10
5	Report on team work	10
	TOTAL	**50**

Note: The Examiner should award marks on the basis of Reports/Documents submitted by the student duly attested by Lecturer In Charge, HOD and Principal