



**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**  
**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

# **CURRICULUM**

## **FOR**

### **DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

**(FOURTH SEMESTER)**

**Scheme: Jul.09**

**Implemented from session: 2009-10**

**Under semester system**





**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH  
COURSE CODE: 401  
NAME OF COURSE: ELECTRICAL MACHINE -II

SCHEME: Jul.09  
PAPER CODE: 6235

COMMON WITH PROGRAM (S): E01

### **RATIONALE**

A.C. electrical motors have varied applications in industries and other situations. These motors differ with each other in terms of construction, working principle, operation and control. The electrical technicians are supposed to have an understanding of all these issues in order to do their jobs properly.

### **OBJECTIVES**

At the end of the course, the students will be able to :-

1. Understand the construction, working principle and methods of operation and control of A.C. motors.
2. Explain the behavior of motors under different load conditions.
3. Operate the motors and determine characteristics.



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SEMESTER: FOURTH  
COURSE CODE: 401  
NAME OF COURSE: ELECTRICAL MACHINE -II

SCHEME: Jul.09  
PAPER CODE: 6235

COMMON WITH PROGRAM (S): E01

Lectures: 6Hrs. per week  
Practical: 2Hrs. per week

### SCHEME OF STUDIES

S.No.	Topics	Theory Hrs.	Practical Hrs.	Total
1.	Three phase induction motor	30	08	38
2.	Synchronous generator	15	06	21
3.	Synchronous motor	15	08	23
4.	Single phase induction motor	12	04	16
5.	AC commutator motor	06	02	08
6.	Special purpose motors	12	02	14
		90	30	120



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NAME OF COURSE: ELECTRICAL MACHINE -II

COMMON WITH PROGRAM (S): E01

Lectures: 6Hrs. per week

Practical: 2Hrs. per week

SCHEME: Jul.09

PAPER CODE: 6235

S. No	COURSE CONTENT	Hrs. of study
1.	Three phase Induction Motor - Production of rotating magnetic field, principle, construction and types of induction motors. Equivalent circuit, torque equation, torque-slip characteristics. Types of starters: DOL, Star-delta, Autotransformer type, rotor resistance type, contactor type starter. Speed control. No load and blocked rotor test, losses and efficiency. Braking and applications. Simple numerical.	30
2.	Synchronous motor - Principle, construction, phasor diagram, effect of change in excitation, V curves, synchronous condenser, starting of motors, hunting and its prevention, coding of synchronous machines.	15
3.	Synchronous generator - Principle, construction, salient and cylindrical rotors, speed-frequency relationship, EMF equation, distribution and pitch factor, equivalent circuit, synchronous impedance, regulation, O.C.C. and S.S.C., load characteristics, phasor diagram, parallel operation. Methods of synchronization, power-angle characteristics.	15
4.	Single phase induction motors - Principle, double revolving field theory. Types of motors with their construction, characteristics and applications. Comparison of three phase with single phase induction motors	12
5.	AC commutator motors - Introduction, series motor, compensated series motor, commutating poles, universal motor, repulsion motor.	06
6.	Special purpose machines - Induction motor, stepper motor, PM motor.	12



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NAME OF COURSE: ELECTRICAL MACHINE -II  
COMMON WITH PROGRAM (S): E01

SCHEME: Jul.09  
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Lectures: 6Hrs. per week  
Practical: 2Hrs. per week

### LIST OF PRACTICAL

S. No.	Practical
1	Study of three phase induction motor (parts).
2	Measurement of slip of three phase induction motor.
3	Study of three phase induction motor starters.
4	Study of synchronous machine (parts).
5	OCC and SCC of synchronous generator and determination of regulation.
6	To plot V curves of synchronous motor.
7	Study of different single phase induction motors (construction).
8	Study of AC commutator motors (construction).
9	Study of special purpose motors (construction).
	TOTAL 30



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SCHEME: Jul.09

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COMMON WITH PROGRAM (S): E01

## **REFERENCES**

Name of Book	Author	Publisher
Electrical Technology Vol. II	BL Thereja	Khanna publisher
Electrical Machines	Bhattacharya	T.T.T.I.
Electrical Machines	Nagrath & Kothari	PHI
Electrical Machines Vol. I & II	PS Bhimbra	Khanna publishers
विद्युत मशीनें	एम.के.डियोडिया	हिन्दी ग्रंथ अकादमी
वैद्युत मशीनें	एच.एस.राय	दीपक प्रकाशन



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**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH

COURSE CODE: 402

NAME OF COURSE: ELECTRICAL ELECTRONICS ENGINEERING DRAWING

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

### **RATIONALE**

Reading and interpreting electrical and electronics engineering is an important ability of a technician. All equipment, installations, circuits and other electrical and electronic systems have drawings. In order to have a meaningful interpretation, the technicians must be familiar with national and international practices in drawings.

### **OBJECTIVES.**

At the end of the course, the students will be able to :-

1. Identify and use various symbols and notations.
2. Drawn wiring diagrams of domestic wiring, power wiring and electronics circuits according to standard practices.
3. Interpret the given drawings, draw inferences and workout other technical details.



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SEMESTER: FOURTH

COURSE CODE: 402

NAME OF COURSE: ELECTRICAL ELECTRONICS ENGINEERING DRAWING

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

Lectures: 4Hrs. per week

#### SCHEME OF STUDIES

S.NO.	Topics	Theory hrs
1.	Symbols and notations	08
2.	Domestic wiring	8
3.	Instrument circuits	10
4.	Power wiring	12
5.	Simple electronic circuits	12
6.	CAD	10
	Total	60





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SEMESTER: FOURTH

COURSE CODE: 402

NAME OF COURSE: ELECTRICAL ELECTRONICS ENGINEERING DRAWING

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

Lectures: 4Hrs. per week

S.No.	COURSE CONTENT	Hrs. of study
1.	Symbols and Notations - Symbols of practical units, types of supplies, single phase, three phase three wire, three phase four wire, D.C. supply etc. Accessories like main switches, distribution boards, fans, light fixtures, bell, buzzer, lighting arrestor. All types of motor starters, instruments, electronic components, semiconductor devices, Rating plate of machines.	8
2.	Domestic Wiring - All types of light circuits: Fluorescent tube circuits, intermediate switch circuits, fan circuits. Wiring of a residential building. Sodium vapor lamp, mercury vapor lamp, wiring diagram of electrical bell connection, relays connection, contractor connection	8
3.	Instrument Circuits - Connection of meters in circuits. Ammeter, voltmeter, wattmeter, energy meter, Power factor meter, frequency meter, synchroscope etc. Extension of range using shunt, multiplier, current transformer, potential transformers etc.	10
4.	Power Wiring - Wiring diagrams of D.C. and A.C. motor starters like three point shunt motor starter, direct on line (D.O.L.) starter, star- delta starter, contactor type and auto transformer starter. Plate earthing and Pipe earthing as per I.S.S.	12
5.	Simple Electronic Circuits – Biasing circuits- forward bias and reverse Battery eliminator, battery charger, single stage transistor amplifier, connections of common emitter, collector and base amplifier circuits.	12
6.	CAD –Introduction to general purpose graphics software, auto CAD, Plotting techniques, coordinate systems, line drawing, polygamy and oracle generation, rational and dimensional drawing using computer. Practice of electrical and electronics circuits drawing using Auto CAD electrical software.	10



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COURSE CODE: 402

NAME OF COURSE: ELECTRICAL ELECTRONICS ENGINEERING DRAWING

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

**REFERENCES**

- (1) A text book of Electrical Drawing .by S.L. Uppal (Khanna pub.)
- (2) Electrical Drawing by K.L. Narang.
- (3) Electrical Drawing by C.R. bargain .
- (4) विद्युत अभियांत्रिकी ड्राईंग एम. एस. कुरेशी, दीपक प्रकाशन



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**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH

COURSE CODE: 403

NAME OF COURSE: DIGITAL TECHNIQUES AND APPLICATIONS

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

Lectures: 4Hrs. per week

Practical: 2Hrs. per week

### **RATIONALE**

The rapidity with which digital technology has provided our daily life is more astounding and therefore the need for today's electrical & electronics students and older engineers to gain familiarity with digital circuits is felt very strongly.

This subject forms the foundation of digital electronics to the students of electrical & electronics as the basic requirement to understand the concepts of the numerical machines and computer systems.

With the above objectives the contents of this subject are designed to provide beginning course to the student of the junior level. After mastering the material in this subject the student will possess all necessary tools and concepts for pursuing advanced studies in the areas of switching theories and finite automaton theory of logical machines.

The sequence of the topics in this curriculum has been chosen logically and sufficient amount of new material is added.

Upon successful completion of this course, the student will be able to:

- Use digital integrated circuit logic family chips;
- Perform computational and measuring activities related to digital technology;
- Analyze, explain and connect both sequential and combinational logic circuits.



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SEMESTER: FOURTH

COURSE CODE: 403

NAME OF COURSE: DIGITAL TECHNIQUES AND APPLICATIONS

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

Lectures: 4Hrs. per week

Practical: 2Hrs. per week

### SCHEME OF STUDIES

S.No.	TOPICS	THEORY (HRS.)	PRACTICAL ( HRS.)	TOTAL (HRS)
1.	NUMBER SYSTEM & BINARY CODES	06	02	08
2.	BOOLEAN ALGEBRA & LOGIC GATES	08	06	14
3.	LOGIC FAMILIES	06	04	10
4.	COMBINATIONAL LOGIC	12	06	18
5.	SEQUENTIAL LOGIC CIRCUITS	14	06	20
6.	A/D & D/A CONVERTER	04	02	06
7.	PROGRAMMING LOGIC DEVICES	04	02	06
8.	MEMORIES	06	02	08
	TOTAL	60	30	90



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NAME OF COURSE: DIGITAL TECHNIQUES AND APPLICATIONS

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

Lectures: 4Hrs. per week

Practical: 2Hrs. per week

### CONTENT DETAILS

S.No.	Course Contents	Hrs of Study
01.	<b>Number System and Binary Codes</b> <ul style="list-style-type: none"><li>- Binary, Hexadecimal, Octal, Decimal and their inter conversion</li><li>- 1's complement, 2's complement numbers, 9's complement &amp; 10's complement</li><li>- Introduction to Binary codes, Weighted, Non Weighted codes, Excess 3 code, Grey code, BCD code, Hamming code</li></ul>	06
02	<b>Boolean Algebra &amp; Logic Gates</b> <ul style="list-style-type: none"><li>- Introduction to Boolean Algebra</li><li>- Law of Boolean Algebra,</li><li>- De Morgan's theorem,</li><li>- Basic Logic Gates: Logic Symbols and truth tables of AND, OR, NOT, NAND, NOR, Ex-OR</li><li>- Simplification of Boolean functions with Boolean laws,</li><li>- Karnaugh Map method</li><li>- Simplification of Boolean equation using K-Map( up to four variables)</li><li>- Realization of basic gates using universal gates</li></ul>	08
03.	<b>Logic Families</b> <ul style="list-style-type: none"><li>- Introduction to logic families</li><li>- DTL, ECL, TTL, C-MOS and their comparison on the basis of their characteristics.</li><li>- Familiarization of ICs related to digital circuits like 74 series, 50 series</li></ul>	6



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SCHEME: Jul.09

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COMMON WITH PROGRAM (S):

04.	<b>Combination Logic</b> <ul style="list-style-type: none"><li>- Half adder,</li><li>- Full Adder,</li><li>- Half Subtractor,</li><li>- Full Subtractor,</li><li>- Binary Adder,</li><li>- Binary Subtractor,</li><li>- Encoder,</li><li>- Decoder,</li><li>- Multiplexer,</li><li>- Demultiplexer</li></ul>	12
05.	<b>Sequential Logic Circuits</b> <ul style="list-style-type: none"><li>- Definition of Sequential circuits,</li><li>- Definition of Latch &amp; Flip-Flop and their differences.</li><li>- RS Flip-Flop, JK Flip-Flop, D Flip-Flop, JK Master-Slave Flip-Flop with their timing diagrams and truth tables.</li><li>- Definition of Register, Shift Register, Buffer Register with their timing diagrams and truth tables.</li><li>- Definition of Counters, Synchronous, Asynchronous, Up-Down Counter, Ring Counter.</li></ul>	14
06.	<b>A/D &amp; D/A Converter</b> <ul style="list-style-type: none"><li>- Introduction to A to D and D to A converter, their parameters</li><li>- Successive Approximation method and Ladder N/W method for A/D &amp; D/A conversion.</li></ul>	4
07.	<b>Programming Logic Devices</b> <ul style="list-style-type: none"><li>- Fixed logic verses programmable logic: advantages and disadvantages</li><li>- Introduction to programming logic devices: PAL, PLA, GALs, FPLA, PLD, CPLD, FPGA.</li></ul>	4
08.	<b>Memories</b> <ul style="list-style-type: none"><li>- Introduction to memories.</li><li>- Types of memories: Primary &amp; Secondary.</li><li>- Primary memories : RAM and their types, ROM and their types.</li><li>- Flash memories</li><li>- Secondary memories : Floppy disk, Hard disk, CD-ROM, Blue Ray Disc.</li></ul>	6



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NAME OF COURSE: DIGITAL TECHNIQUES AND APPLICATIONS

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

Practical: 2 Hrs. per week

### LIST OF EXPERIMENTS

S.No.	Name of Experiment	HRS OF PRACTICAL
1.	Verification of Logic Gates- AND, OR, NOT, X-OR, X-NOR. NAND, NOR.	
2.	Implementation of Basic Gates with the help of Universal gates	
3.	Implementation of De Morgan's Theorem.	
4.	Realization of combinational Logic circuits Half Adder, Full Adder, Half Subtractor, Full Subtractor, Encoder, Decoder, Multiplexer, & Demultiplexer.	
5.	Realization of combinational Logic circuits RS flip-flop; D flip flop; JK flip flop; MASTER-SLAVE flip flop; T flip flop ;	
6.	Observation of waveforms of up-down counter .	
7.	Realization of BCD to Seven Segment decoder.	
		30



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NAME OF COURSE: DIGITAL TECHNIQUES AND APPLICATIONS

SCHEME: Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

### **REFERENCES**

1. Digital circuits by Anand Kumar
2. Digital Electronic principles and Integrated circuits by Anil K. Maini
3. Digital Electronics and microcomputers by R.K. Gaur
4. Digital Electronics by Malvino-Leach
5. Digital Design by Morris Mano





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**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH

COURSE CODE: 404

NAME OF COURSE: GENERATION TRANSMISSION & DISTRIBUTION

SCHEME: Jul.09

PAPER CODE: 6238

COMMON WITH PROGRAM (S): E01

### **RATIONALE**

The demands of Electrical energy are growing very fast due to industrial growth and the increase in demands in agriculture and service sectors. A number of Generating stations are coming up with corresponding developments in Transmission and Distribution system. The technicians must be familiar with the latest developments in various systems.

### **OBJECTIVES.**

At the end of the course, the students will be able to :-

1. Describe different methods of power generation different elements of the system.
2. Explain the concept of transmission, types of lines, losses and efficiency of transmission system.
3. Describe the mechanical features of transmission and distribution lines.
4. Explain different types of underground cables, their construction, properties and methods of laying.
5. Calculate different parameters in transmission and distribution systems.



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## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH

COURSE CODE: 404

NAME OF COURSE: GENERATION TRANSMISSION & DISTRIBUTION

SCHEME: Jul.09

PAPER CODE: 6238

COMMON WITH PROGRAM (S):

Lectures: 6Hrs. per week

Practical: 2Hrs. per week

### SCHEME OF STUDIES

S.NO	Topic	Theory hours	Pract. Hours	Total
1.	Non conventional sources of energy	06	06	12
2.	Conventional sources of energy	12	04	16
3.	Economics	12	-	12
4.	Tariffs	06	-	06
5.	Overhead Transmission Line	18	06	24
6.	Transmission Line Calculation	15	04	19
7.	Underground cables	06	02	08
8.	Distribution	15	08	23
	Total	90	30	120



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NAME OF COURSE: GENERATION TRANSMISSION & DISTRIBUTION

COMMON WITH PROGRAM (S):

SCHEME: Jul.09

PAPER CODE: 6238

Lectures: 6Hrs. per week

Practical: 2Hrs. per week

S.No.	COURSE CONTENT	Hrs of study
1.	Non Conventional Sources Of Energy - Concept and need of primary and secondary energy sources, difference between conventional and non-conventional sources of energy, concept of solar , wind, biogas, ocean, tidal, geothermal, fuel cell , MHD and their practical applications.	06
2.	Conventional Sources Of Energy - Detailed study of generating stations - thermal, hydro, nuclear, schematic diagram, site selection main components and auxiliaries for above power stations. Study of gas turbines plant and diesel power plant. Advantages, disadvantages of thermal hydro, nuclear, gas turbine plant and diesel power plant.	12
3.	Concept Of Load - Types of load, load curve, load duration curve, connected load, demand factor, average load, maximum demand, load factor, diversity factor, plant utilization factor, capacity factor, reserve capacity. Simple numerical on above terms.	12
4.	Types of Tariff, flat rate, block rate, two part, maximum demand and power factor tariff. Their merits and demerits. Simple problems on above terms.	06
5.	Concept of Transmission, single line diagram of complete power system, standard voltages of A.C. Transmission, efficiency (no derivation). H.V.D.C. transmission system, line diagram, advantages and Disadvantages of H.V.D.C Sag, causes & effects of sag on transmission line, effect of wind, ice and temperature on sag. Types of line supports, type of joints, looms, earth wires, ground wire and vibration dampers. Importance of R,L,C in transmission line (no derivation), skin effect, transposition, corona, advantages and disadvantages of corona, methods of reducing corona, types of insulators, string efficiency and voltage distribution, grading ring and Arcing horn.	18
6..	Types of Transmission line, T and $\Pi$ network of medium Transmission line, transmission efficiency, Ferranti effect, simple problems of short and medium Transmission line.	15
7.	Difference between overhead line and underground cables. Classification and construction of L.T. and H. T. cables, Methods of laying.	06
8.	Classification of distribution system, ring main, radial and interconnected system. Concept of feeder, distributor and service mains in distribution system. Simple problems.	15



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NAME OF COURSE: GENERATION TRANSMISSION & DISTRIBUTION

SCHEME: Jul.09

PAPER CODE: 6238

COMMON WITH PROGRAM (S):

Lectures: 6Hrs. per week

Practical: 2Hrs. per week

### LIST OF EXPERIMENTS

S. No.	Name of Experiment
1	Study of solar cooker.
2	Study of solar water heater.
3	Study of solar photo-voltaic cells.
4	Study of wind mill.
5	Study of Bio Gas plant.
6	Study of steam power plant, hydro power plant, nuclear power plant.
7	Study of line supports and insulators.
8	Determination of string efficiency of insulator string.
9	Performance of short/ medium transmissions line.
10	Study of L.T. and H.T. Cables and over head conductors.
11	Voltage distribution in radial and ring main system.
12	Visit to a <ul style="list-style-type: none"><li>• Substation.</li><li>• Generating station.</li><li>• Places where solar, wind, Biogas and tidal power plant are installed.</li></ul>
	TOTAL :- 30



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PAPER CODE: 6238

COMMON WITH PROGRAM (S):

**REFERENCE BOOK**

No.	Name of Book
1	Non Conventional energy sources By G.D. Rai, Khanna publisher
2	Electrical Power By S.L.Uppal, Khanna publisher
3	Electrical Power By J.B. Gupta
4	Power System By V.K. Mehta
5	जनन संचरण एवं वितरण_ एम. एफ. कुरेशी दीपक प्रकाशन



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**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH  
COURSE CODE: 411  
NAME OF COURSE: ENTERPRENUERSHIP

SCHEME: Jul.09  
PAPER CODE: 6046

COMMON WITH PROGRAM (S): C/M/E

### **RATIONALE**

Since long entrepreneurship has been recognized as an essential ingredient of economic development. Concept of entrepreneurship has varied from time to time to suit the changing ethos of socio-economic reality. It was applied to business for the first time in 18<sup>th</sup> century, to designate a dealer who buys and sells goods at uncertain prices. Later on an entrepreneur was considered a dynamic agent of change, or the catalyst who transformed increasingly physical, natural and human resources, into corresponding production possibilities. In recent years, managerial aspects of entrepreneurship are being emphasized. It employs innovativeness, an urge to take risk in the face of uncertainties, and intuition, i.e. a capacity of seeing things in a way which afterwards proves to be true.

The course is kept in soft core under DCS, DME and DEE/ Videography/ Arch/CDDM/ Garment/ MOM/ Prod/ RAC/ CTM/ Auto/ Comp/ ETE/ IT/ Opto/ Print/ Textile technology.

To bring to surface certain common characteristics such as perception of economic opportunity, technical and organizational skills, managerial competence, and motivation to achieve result.



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SEMESTER: FOURTH  
COURSE CODE: 411  
NAME OF COURSE: ENTERPRENUERSHIP

SCHEME: Jul.09  
PAPER CODE: 6046

COMMON WITH PROGRAM (S): C/M/E

Lectures: **6** Hrs. per week

### SCHEME OF STUDIES

S.No.	TOPICS	THEORY HRS.	PRACTIC AL HRS.	TOTAL HRS.
1.	INTRODUCTION TO ENTERPRENEURSHIP	11	-	11
2.	INDUSTRIES AND BUSINESS ORGANIZATIONA	11	-	11
3.	INSTITUTIONAL ASSISTANCE	11	-	11
4.	INCENTIVS/ CONCESSION/ FACILITIES AVAILABLE TO SSI ENTERPRENEUR	11	-	11
5.	PLANNING OF INDUSTRIAL UNIT	26	-	26
6.	ACHIVEMENT MOTIVATION	08	-	08
7.	FINANCIAL MANAGEMENT OF AN INDUSTRIAL UNIT (SSI)	12	-	12
	TOTAL	90	-	90



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## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH  
COURSE CODE: 411  
NAME OF COURSE: ENTERPRENUERSHIP

SCHEME: Jul.09  
PAPER CODE: 6046

COMMON WITH PROGRAM (S): C/M/E

Lectures: 6 Hrs. per week

### CONTENT DETAILS

S.No.	Course Contents	Hrs of Study
01.	<b>Introduction to Entrepreneurship</b> <ul style="list-style-type: none"><li>– Definition of Entrepreneur / Entrepreneur</li><li>– Difference between Entrepreneurship / Entrepreneurship</li><li>– Need for Entrepreneurship</li><li>– qualities of successful entrepreneur</li><li>– Myths about Entrepreneurship</li><li>– Classification of entrepreneurs on the basis of different criteria</li><li>– Reasons for the failure of entrepreneurs</li></ul>	11
02.	<b>Industries and Business Organization</b> <ul style="list-style-type: none"><li>– Concept of Industry or Enterprise</li><li>– Classification of Industries<ul style="list-style-type: none"><li>(a) On the basis of capital investment<ul style="list-style-type: none"><li>- Tiny (Micro) Industry</li><li>- Small Scale</li><li>- Medium Scale</li><li>- Large Scale</li></ul></li><li>(b) Others<ul style="list-style-type: none"><li>- Rural Industry</li><li>- Cottage Industry</li></ul></li><li>(c) Forms of Business Organization<ul style="list-style-type: none"><li>- Proprietorship</li><li>- Board &amp; Co-operative</li><li>- Partnership</li><li>- public Ltd.</li><li>- Private Ltd.</li><li>- Jt. Sector</li><li>- Government Co-operative / Undertakings</li></ul></li><li>(d) Tiny small scale Industry<ul style="list-style-type: none"><li>- Definition</li><li>- Its significance in National Development.</li><li>- Govt. policies for SSI promotions</li><li>- Sector / Product for SSI.</li></ul></li></ul></li></ul>	11





# RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH  
 COURSE CODE: 411  
 NAME OF COURSE: ENTERPRENUERSHIP

SCHEME: Jul.09  
 PAPER CODE: 6046

COMMON WITH PROGRAM (S): C/M/E

03.	<b>Institutional Assistance</b> (a) Types of Institutional assistance - Infra - structural assistance - Technical Assistance - Financial assistance - Marketing Assistance (b) Information / guidance & Training - SISI - ASK - MPCON - CSIR - CED- MAP - NRDC (c) Infrastructure - D/C - AVN/AKVN (e) Finance - SIDBI- KVIB MPFC - NABARD - MPWDC NSIC M.P.A.V.V.N. (d) Marketing - MP- AGRO - NSIC - PM.LUN - EXPORT COPPORATION - KVIP - MPHSVN MPLDC (e) Quality Control - BIS - FPO - MPLUN F.D.A. - AG. MKT. Board.	11
04.	<b>Incentives / Concession/ Facilities Available</b> - Seed money - Incentive / subsidies - Others ( Phones, Lands etc)	11



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## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH  
COURSE CODE: 411  
NAME OF COURSE: ENTERPRENUERSHIP

SCHEME: Jul.09  
PAPER CODE: 6046

COMMON WITH PROGRAM (S): C/M/E

05.	<b>Planning of Industrial Unit</b> <ul style="list-style-type: none"><li>– Pre- Planning Stage<ul style="list-style-type: none"><li>- Scanning the environment</li><li>- Market survey</li><li>- Seeking information</li><li>- product / project selection</li></ul></li><li>– Implementation Stage<ul style="list-style-type: none"><li>- PPR Preparation</li><li>- DIC registration</li><li>- Arrangement of Land</li><li>- Arrangement of Power</li><li>- Obtaining NOC / Licenses from various Deptt.</li><li>- DPR Preparation</li><li>- Seeking financial assistance</li><li>- Commercial Production</li></ul></li><li>– Post Implementation stage<ul style="list-style-type: none"><li>- Permanent registration from D.I.C.</li><li>- Availing Subsidies</li><li>- Diversification / Modification</li><li>- Setting up of marketing channel / Distribution.</li></ul></li></ul>	26
06.	<b>Achievement Motivation</b> <ul style="list-style-type: none"><li>– Historical perspective</li><li>– Concept of achievement motivation</li><li>– Significance of achievement motivation</li><li>– Development of achievement motivation</li></ul>	08
07.	<b>Financial Management of an Industrial Unit (SSI)</b> <ul style="list-style-type: none"><li>– Tools of financial analysis</li><li>– Ratio analysis</li><li>– Fund Flow / Cash flow analysis</li><li>– Working capital and Concepts</li><li>– Financial accounting</li></ul>	12



**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH

COURSE CODE: 411

NAME OF COURSE: ENTERPRENUERSHIP

SCHEME: Jul.09

PAPER CODE: 6046

COMMON WITH PROGRAM (S): C/M/E

Lectures: 6Hrs. per week

**In Addition to above , Students are advised to :**

1. To prepare chart to showing various factors affecting entrepreneurship
2. To collect details related to various schemes run by Govt. for self employment and entrepreneurship
3. To identify and select a project and conduct market survey thereof
4. To collect various formats used in industries and Deptts/Institution working in the field of entrepreneurship
5. Visit few small scale industries situated in city, nearby industrial area
6. Discuss the problems related to SSI (Small Scale Industries) With an entrepreneur.
7. Collect information about market rates quality and quantity of goods for their choice.
8. Develop logical and analytical approach to purchase raw material/ finished goods
9. To prepare case study for successful entrepreneurs
10. Prepare a project report for the industry/business they are willing to start



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NAME OF COURSE: ENTERPRENUERSHIP

SCHEME: Jul.09

PAPER CODE: 6046

COMMON WITH PROGRAM (S): C/M/E

### **REFERENCES**

1. Entrepreneurial Development Vol. I,II,III by Vasant Desai Himalaya Publication
2. CEDMAP (Center of Entrepreneurial development Madhya Pradesh)
3. Udyamita Vikas by Anand Prakashan



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**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH

COURSE CODE: 412

NAME OF COURSE: MARKETMANAGMENT

SCHEME: Jul.09

PAPER CODE: 5181

COMMON WITH PROGRAM (S): C/M/E

### **RATIONALE**

In the Era of Globalization and Liberalization, this course of Marketing Management is of utmost important to the entrepreneur, industrialist and people working in the field of Marketing and related work.

This course specially designed to help the students in widening their knowledge and understanding of the current market trends and also helpful to start their career in their respective fields along with the knowledge of marketing.

To produce something is not very difficult but to make people come forward to buy it is very difficult task. This statement shows the importance and need of this course in the present scenario.



# RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH  
COURSE CODE: 412  
NAME OF COURSE: MARKETMANAGMENT

SCHEME: Jul.09  
PAPER CODE: 5181

COMMON WITH PROGRAM (S): C/M/E

Lectures: **6** Hrs. per week

### SCHEME OF STUDIES

S.No.	TOPIC	THEORY HRS.	PRACTICAL HRS.	TOTAL HRS.
1	MARKETING AND CONCE PT	7	-	7
2	MARKETING ENVIRONMENT	4	-	4
3	MARKETIN PLANNING AND ORGANISATION	8	-	8
4	MARKET SEGMENTATION	8	-	8
5	MARKETING MIX	4	-	4
A	PRODUCT MANAGEMENT	11	-	11
B	PLACE MANAGEMENT	9	-	9
C	PRICE MANAGEMENT	8	-	8
D	PROMOTION MANAGEMENT	9	-	9
6	UNDERSTANDING CONSUMERS	7	-	7
7	MARKETING RESEARCH AND SALES FORECASTING	11	-	11
8	SALES MANAGEMENT	4	-	4
	TOTAL	90	-	90



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NAME OF COURSE: MARKETMANAGMENT

SCHEME: Jul.09  
PAPER CODE: 5181

COMMON WITH PROGRAM (S): C/M/E

Lectures: **6** Hrs. per week

### CONTENT DETAILS

S. NO.	DETAILED COURSE CONTENT	Hrs of Study
1.	<p><b>Marketing and Concept</b></p> <ul style="list-style-type: none"><li>– Evolution of marketing-a historical background</li><li>– The stage of barter</li><li>– The stage of money economy</li><li>– The stage of industrial revolution</li><li>– The stage of competition</li><li>– The emergence of marketing</li><li>– <b>Selected definitions of marketing</b></li><li>– Different concept of marketing</li><li>– The exchange concept</li><li>– The production concept</li><li>– The product concept</li><li>– The sales concept</li><li>– The marketing concept</li><li>– <b>Difference between selling &amp; marketing</b></li><li>– Benefits &amp; significance of marketing</li><li>– Helps to remove causes for under development</li><li>– Improve productivity &amp; efficiency</li><li>– Canalize country's economic resources properly</li><li>– Insure better deal for consumer</li><li>– Make economic planning meaningful &amp; relevant etc.</li></ul>	<b>07</b>



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NAME OF COURSE: MARKETMANAGMENT

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PAPER CODE: 5181

COMMON WITH PROGRAM (S): C/M/E

2.	<b>Marketing environment</b> <ul style="list-style-type: none"><li>– Internal &amp; external factors</li><li>– Demographic environment</li><li>– Economic environment</li><li>– Political environment</li><li>– Physical environment</li><li>– Technological environment</li><li>– Competitive environment</li><li>– Social &amp; cultural environment</li><li>– Micro &amp; macro environment</li></ul>	<b>04</b>
3.	<b>Marketing planning &amp; organization</b> <ul style="list-style-type: none"><li>– Scope &amp; importance of planning</li><li>– Steps in marketing planning process</li><li>– Purpose &amp; principle of organization</li><li>– Models of marketing organization</li><li>– Line &amp; staff type</li><li>– Product based organization</li><li>– Territory oriented organization</li><li>– Complex organization</li><li>– Task of chief marketing executive</li><li>– Decentralization</li></ul>	<b>08</b>





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## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

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NAME OF COURSE: MARKETMANAGMENT

COMMON WITH PROGRAM (S): C/M/E

4.	<p>Market segmentation</p> <ul style="list-style-type: none"><li>– Types of market</li><li>– Definitions &amp; benefits of segmentation</li><li>– Method s of segmentation</li><li>– Geographic segmentation</li><li>– Demographic segmentation</li><li>– Psychographic segmentation</li><li>– Buyer behavior Segmentation</li><li>– Volume segmentation</li><li>– Steps in market segmentation</li></ul> <p>Market targeting</p>	08
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SEMESTER: FOURTH  
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NAME OF COURSE: MARKETMANAGMENT

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COMMON WITH PROGRAM (S): C/M/E

5	<b>Market mix</b> <ul style="list-style-type: none"><li>– Definition of market mix</li><li>– Elements of marketing mix (4 P'S)-Product, Place, Price, Promotion</li><li>– Environmental variable (uncontrollable variables)</li><li>– Customer variable</li><li>– Competition variable</li><li>– Trade variable</li><li>– Environmental variable</li><li>– Product management</li><li>– Components of product<ul style="list-style-type: none"><li>– The core or basic constituent</li><li>– The associated features</li><li>– The brand names, package,label</li></ul></li><li>– Types of product<ul style="list-style-type: none"><li>– The generic product</li><li>– The branded product</li><li>– The differentiated product</li><li>– The customized product</li><li>– The augmented &amp; potential product</li></ul></li><li>– The product line &amp; product mix</li><li>– New product development (NPD)</li><li>– Significance &amp; classification of new product</li><li>– Stages in NPD</li><li>– Estimating the demand for new product</li><li>– Test marketing</li><li>– Product life cycle (PLC)</li><li>– Concepts &amp; benefits of PLC</li><li>– Different stages in PLC</li><li>– Strategies used in different stages</li><li>– Place management</li></ul>	41
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SCHEME: Jul.09  
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COMMON WITH PROGRAM (S): C/M/E

	<ul style="list-style-type: none"><li>– Definitions &amp; importance of physical distribution</li><li>– Designing the physical distribution system</li><li>– The distribution channel<ul style="list-style-type: none"><li>– The role &amp; importance of distribution channel</li><li>– Planning &amp; designing of distribution channel</li><li>– Types of distribution intermediaries</li></ul></li><li>– Price management<ul style="list-style-type: none"><li>– The meaning &amp; importance of pricing</li><li>– Objectives of pricing</li><li>– Factors affecting pricing –Internal &amp; external</li><li>– Pricing methods<ul style="list-style-type: none"><li>– Cost based pricing</li><li>– Break even pricing</li><li>– Demand based pricing</li><li>– Competition based pricing</li><li>– Product line pricing</li><li>– Tender pricing</li><li>– Affordability pricing</li><li>– Differentiated pricing</li></ul></li><li>– Pricing policies &amp; setting the price</li></ul></li><li>– Promotion management</li><li>– Sales promotion<ul style="list-style-type: none"><li>– Importance &amp; objectives of sales promotion</li><li>– Tools &amp; techniques of sales promotion</li></ul></li><li>– Advertising<ul style="list-style-type: none"><li>– Role &amp; importance of advertising</li><li>– Types of advertising</li><li>– Deciding on the advertising budget</li><li>– Evaluating advertising effectiveness</li></ul></li></ul> <p>Difference between sales promotion &amp; advertising</p>	
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6.	<b>Understanding consumer</b> <ul style="list-style-type: none"><li>– Factor influencing buyer behavior<ul style="list-style-type: none"><li>– Information from variety of sources</li><li>– Socio-cultural environment of buyer</li><li>– Group influence</li><li>– Religion &amp; language</li><li>– Concern about status</li></ul></li><li>– Buying motives –Product &amp; patronage motive</li><li>– Buying habits – Convenience, shopping and spatiality goods</li></ul>	<b>07</b>
7.	<b>Marketing research &amp; sales forecasting</b> <ul style="list-style-type: none"><li>– Definition &amp; importance of marketing research</li><li>– Steps in marketing research<ul style="list-style-type: none"><li>– Defining problem</li><li>– Problem analysis</li><li>– Developing research design</li><li>– Developing research procedure</li><li>– Data collection –Primary &amp; secondary</li><li>– Analyzing &amp; interpretation</li><li>– Summarizing &amp; preparing the research report</li></ul></li><li>– Method of market research</li><li>– Necessity &amp; purpose of sales forecasting</li><li>– Methods of sales forecasting</li></ul>	<b>11</b>
8.	<b>Sales management</b> <ul style="list-style-type: none"><li>– Designing the sales force</li><li>– Managing the sales force<ul style="list-style-type: none"><li>– Recruitment &amp; selection</li><li>– Training, compensation, control</li><li>– Supervision &amp; direction</li><li>– Motivation of salesman</li></ul></li><li>– Fixing sales quota</li><li>– Duties &amp; responsibilities of sales manager</li></ul>	<b>04</b>



**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH  
COURSE CODE: 412  
NAME OF COURSE: MARKETMANAGMENT

SCHEME: Jul.09  
PAPER CODE: 5181

COMMON WITH PROGRAM (S): C/M/E

### **REFERENCES**

1. Marketing management - Analysis, Planning & Control - Philip Kotler
2. Principles & practice of Marketing in India - C.B.Memoria & R.L.Joshi
3. Contemporary Marketing – Louis & Boone & David L. Kurtz
4. Essential of Management –Koontz
5. Marketing management- S.A. Sherlekar



**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

**DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING**

SEMESTER: FOURTH

COURSE CODE: 406

NAME OF COURSE: TROUBLE SHOOTING & SERVICING

SCHEME : Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S):

### **RATIONALE**

Trouble shooting and servicing is an integral part of maintaining a system in good condition and the skill of servicing and trouble shooting enables the user to work continuously only without break down.

This subject envisages to develop practical skills in operating and handling various tools, accessories , equipments used in fault location, trouble shooting and servicing of electrical and electronic systems . it will also make the student familiar with the measuring instruments and measuring techniques used in electrical and electronic systems.



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## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH

COURSE CODE: 406

NAME OF COURSE: TROUBLE SHOOTING & SERVICING

COMMON WITH PROGRAM (S):

PRACTICAL HOURS : 2 Hrs. per week

SCHEME : Jul.09  
PAPER CODE:

S.No.	Detailed Course Content	Hours of Study
1.	CHAPTER 1 TOOLS USED IN TROUBLE SHOOTING OF ELECTRICAL AND ELECTRONIC SYSTEMS -Different types of cutters - Nose pliers -wire strippers -lead straightners -extractors -soldering iron / soldering gun/station -desoldering pump -crimping tool -screw drivers -spanner set -poker -hammer -hacksaw -hand drill -phase tester -firmer -testing board -logic probe -current tracer -logic pulser -logic comparator	6
2	CHAPTER 2 BASIC ELECTRICAL & ELECTRONIC COMPONENT AND ACCESSORIES -study of different types of wires , cables and their specifications - study of different types of switches , fuse and MCB's - different type resistors , inductors and capacitors - different electrical fixtures used in electrical wiring – conduit ,casing capping , ceiling rose, holders , square and round etc. - identification of components , diodes transistors , FET, UJT,SCR,regulators and transformers	08



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COURSE CODE: 406

NAME OF COURSE: TROUBLE SHOOTING & SERVICING

COMMON WITH PROGRAM (S):

PRACTICAL HOURS : 2 Hrs. per week

SCHEME : Jul.09  
PAPER CODE:

3.	<p>CHAPTER 3</p> <p>ELECTRICAL &amp; ELECTRONIC INSTRUMENTS USED IN TROUBLE SHOOTING</p> <ul style="list-style-type: none"><li>-ammeter</li><li>- voltmeter</li><li>- multimeter</li><li>- insulation tester</li><li>- earth tester</li><li>- tong tester</li><li>- power analyzer</li><li>- CRO</li><li>-function generator</li><li>-Clamp Meter</li></ul>	08
4.	<p>CHAPTER 4</p> <p>TROUBLE SHOOTING CHARTS</p> <ul style="list-style-type: none"><li>-trouble shooting charts for single phase and three phase induction motors.</li><li>- single phase and three phase transformers.</li><li>- trouble shooting techniques for electronic circuits (PCB's)</li></ul>	08





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## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH

COURSE CODE: 406

NAME OF COURSE: TROUBLE SHOOTING & SERVICING

COMMON WITH PROGRAM (S):

PRACTICAL HOURS : 2 Hrs. per week

SCHEME : Jul.09  
PAPER CODE:

01	To identify different tools.	
02	To select tools for specific job.	
03	To use different tools for specific job.	
04	To select proper size of wire for various purpose.	
05	To measure gauge of wire with standard wire gauge.	
06	To select cable and wire size as per current rating	
07	To identify different types of switches.	
08	To select switches for different purpose.	
09	To select MCB'S of proper range.	
10	To read colour coding of resistors.	
11	To read colour coding of capacitors.	
12	To identify different types of resistors.	
13	To select proper resistor for varying uses	
14	To identify different types of wiring.	
15	To select wiring according to purpose and cost.	
16	To identify different types of electrical fixtures.	
17	Identify the types of components (L,CR) and find out the values using LCR meter.	
18	Identify the various wave forms of function generator using CRO.	
19	Use of analog and digital multimeter to measure of AC & DC voltages and current	
20	Use of different display devices- LED Seven segment LCD	
21	Prepare two simple electronics circuit using general purpose PCB's.	
22	Prepare a power supply & test it on a bread board.	
23	Assemble circuit on bread boards and test & verify ( eg- rectifiers, oscillators amplifiers.)	
24	Testing of FET, UJT, SCR.	



# RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH  
COURSE CODE: 407  
NAME OF COURSE: PROFFESINOAL ACTIVITIES

SCHEME : Jul.09  
PAPER CODE:

COMMON WITH PROGRAM (S): C/M/E

Practical: 2 Hrs. per week

### RATIONALE

**Professional Activities** is not a descriptive course, as per conventional norms; therefore specific content for this course cannot be prescribed. It is a group of open-ended activities; where in variety of tasks are to be performed, to achieve objectives. However general guidelines for achieving the target and procedure for its assessment are given under the course content.

As the student has to practice this course in all the six semesters, the guidelines given therein are common and applicable to each semester.

### OBJECTIVES:

- To allow for professional development of students as per the demand of engineering profession.
- To provide time for organization of student chapter activities of professional bodies) i.e. Institute of engineers, ISTE or Computer Society of India etc.)
- TO allow for development of abilities in students for leadership and public speaking through organization of student's seminar etc.
- To provide time for organization of guest lectures by expert engineers/eminent professionals of industry.
- To provide time for organization of technical quiz or group discussion or any other group activity.
- To provide time for visiting library or using Internet.
- To provide time for group discussion or solving case studies.
- To provide time for personality development of students.
- To provide time for working for social cause like awareness for environmental and ecology etc.



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## DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER: FOURTH

COURSE CODE: 407

NAME OF COURSE: PROFFESINOAL ACTIVITIES

SCHEME : Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S): C/M/E

### DETAILED INSTRUCTIONS TO CONDUCT PROFESSIONAL ACTIVITIES:

- A. Study hours, if possible should be given greater time slot with a minimum of two hrs/week to a maximum of four hrs/week.
- B. This course should be evaluated on the basis of grades and mark sheet of students, should have a separate mention of the grade awarded. There will be no pass/fail in professional activities (PA).
- C. Following grade scale of evaluation of performance in PA has been established.

<u>Grades</u>	<u>Level of performance</u>
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A	Excellent
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B	Good
---	------

C	Fair
---	------

D	Average
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E	Below Expectations
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- D. Grades once obtained in a particular examination shall become final and no chance of improvement in grades will be given to the students.
- E. Assessment of performance in PA is to be done internally by the Institution, twice in a Semester/Term through a simultaneous evaluation of the candidate by a group of three teachers, of the deptt. Concerned. Group of teachers will jointly award the grade to candidate in the assessment. Best of the grades obtained by the student in these two assessments shall be finally taken on the mark sheet of the respective Semester/Term.

Candidate abstaining from the prescribed course work and/or assessment planned at the Institute shall be marked ABSENT in the mark sheet, instead of any grade.

- F. While awarding the grades for performance in PA, examining teacher should reach the final consensus based on the attendance, punctuality, interest, presentation skills in seminar on the topic assigned (collection of relevant data, observations, analysis, findings/conclusion) and its written report, awareness of latest developments in the chosen programme of study.
- G. Institution shall maintain the record of grades awarded to all the students in PA for a period of 1 year.



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SCHEME : Jul.09

PAPER CODE:

COMMON WITH PROGRAM (S): C/M/E

- H. It shall be mandatory for students to submit a compendium for his PA in the form of a Journal.
- I. Compendium shall contain following:
  - 1. Record of written quiz.
  - 2. Report/write up of seminar presented
  - 3. Abstract of the guest lectures arranged in the Institution.
  - 4. Topic and outcome of the group discussion held.
  - 5. Report on the problems solved through case studies.
  - 6. Report on social awareness camps (organized for social and environmental prevention).
  - 7. Report on student chapter activities of professional bodies like ISTE, IE (India), CSI etc.
- J. PA is not a descriptive course to be taught in the classroom by a particular teacher. Various activities involved in the achievement of objectives of this course should be distributed to a number of teachers so that the talent and creativity of group of teacher's benefit the treatment of the course content. These activities should preferably be conducted in English language to maintain continuity and provide reinforcement to skill development.

Small groups shall be formed like in tutorials, group discussion, case studies, seminar, project methods, roll play and simulation to make the development of personality affective.

Treatment of PA demands special efforts, attention, close co-operation and creative instinct on the part of teachers of department concerned. Since this course is totally learner centered, many of the activities planned under this course shall come out from the useful interaction of student, among themselves and with the teachers. The guide teacher/s shall best act as a facilitator of these creative hunts/ exercises, which unfold many of the hidden talents of the students or bring out greater amount of confidence in them, to execute certain activity.

