

**GP  
Kangra**

**Department:** Electrical Engg. **Subject:** BASICS OF MANAGEMENT & ENTREPRENEURSHIP DEVELOPMENT

**Course :** Diploma

**Duration:** 3 Yrs.

**SYLLABUS  
COVERAGE**

Total Periods: 56

Theory : 56

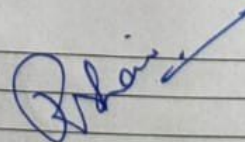
Sr No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	5(1-5)	<b>Introduction to Management</b>	<p>Definitions and concept of Management</p> <p>1.2 Functions of management- planning, organizing, staffing, coordinating and controlling.</p> <p>1.3 Various areas of management</p> <p>1.4 Structure of an Organization</p>	<p>Generic Skill Development Manual, MSBTE, Mumbai</p>	<p>A Handbook of Entrepreneurship. Edited by B S Rathore and Dr. J S Saini</p>	
2.	8(6-13)	<b>Self-Management and Development</b>	<p>2.1 Life Long Learning Skills, Concept of Personality Development, Ethics and Moral values</p> <p>2.2 Concept of Physical Development; Significance of health, hygiene, body gestures</p> <p>2.3 Time Management Concept and its importance</p> <p>2.4 Intellectual Development: Reading skills, speaking, listening skills, writing skills (Note taking, rough draft, revision, editing and final drafting), Concept of Critical Thinking and Problem Solving (approaches, steps and cases).</p> <p>2.5 Psychological Management: stress, emotions, anxiety and techniques to manage these.</p> <p>2.6 ICT &amp; Presentation skills; use of IT tools for good and impressive presentations.</p>	<p>Lifelong Learning, Policy Brief(<a href="http://www.oecd.org">www.oecd.org</a>)</p> <p>Towards Knowledge Society, UNESCO Publication, Paris</p> <p>Entrepreneurship Development by CB Gupta and P Srinivasan: Sultan Chand and sons: New Delhi</p>		
3.	8(14-21)	<b>Team Management</b>	<p>3.1 Concept of Team Dynamics, Team related skills, managing cultural, social and ethnic diversity in a team.</p> <p>3.2 Effective group communication and conversations.</p> <p>3.3 Team building and its various stages like forming, storming, norming, performing and adjourning</p>			

4.	4(22-25)	<b>Project Management</b>	<p>3.4 Leadership, Qualities of a good leader</p> <p>3.5 Motivation, Need of Motivation, Maslow's theory of Motivation</p> <p>4.1 Stages of Project Management; initiation, planning, execution, closing and review (through case studies), SWOT analysis concept.</p>
5.	9(26-34)	<b>Introduction to Entrepreneurship</b>	<p>5.1 Entrepreneurship, Need of entrepreneurship, and its concept, Qualities of a good entrepreneur</p> <p>5.2 Business ownerships and its features; sole proprietorship, partnership, joint stock companies, cooperative, private limited, public limited, PPP mode.</p> <p>5.3 Types of industries: micro, small, medium and large</p>
6.	07(35-41)	<b>Entrepreneurial Support System (Features and Roles in Brief)</b>	<p>6.1 District Industry Centers (DICs), State Financial Corporations (SFCs), NABARD.</p> <p>6.2 MSME (Micro, Small, Medium Enterprises) – its objectives &amp; list of schemes</p>
7.	07(42-48)	<b>Market Study and Opportunity Identification</b>	Types of market study: primary and secondary, product or service identification, assessment of demand and supply, types of survey and their important features
8.	08(49-56)	<b>Project Report Preparation</b>	8.1 Preliminary Report, Techno-Economic Feasibility Report, Detailed Project Report (DPR).

Approved  
Date:

10-08-2023

HOD Sign.



## PLANNED SYLLABUS COVERAGE (Theory)

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<b>GP Kangra</b> <b>SYLLABUS COVERAGE</b>		Department: Electrical Engineering		Subject : EM-III		
		Course : Diploma		Duration: 3 Yrs.		
		Total Period: 70		Theory : 70		
Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	20 (1-20)	<b>Three Phase Induction Motors</b>	1.1 Constructional features of squirrel cage and wound rotor induction motors, comparison of cage and wound rotor Induction motors 1.2 Production of rotating magnetic field in a three phase winding 1.3 Principle of operation of induction motor, slip, significance of slip 1.4 Effect of slip on various parameters of rotor circuit: rotor resistance, rotor inductance, rotor current, rotor frequency 1.5 Torque developed in 3-phase induction: starting torque, condition for maximum torque, running torque and maximum toque 1.6 Torque-slip and torque-speed curve 1.7 Effect of rotor resistance upon torque slip relationship of slip ring induction motor 1.8 Starting of 3-phase induction motors using DOL, Star-delta .and Autotransformer 1.9 Speed control methods of 3-phase induction motor 1.10 Testing of 3-phase motor on no load and blocked rotor test to find Efficiency 1.11 Effect of induction motors on system power factor 1.12 Double cage rotor induction motor and its applications 1.13 Applications of induction motors	Electrical Engineering by JB Gupta, S K Kataria and Sons, New Delhi	Electrical Machines by S K Sahdev, Unique International Publications, Jalandhar	

2.	20 (21-41)	<b>Synchronous Generator (Alternator)</b>	<p>2.1 Construction Feature of synchronous machine, salient and cylindrical type rotor synchronous machine, comparison between salient and cylindrical rotor machine</p> <p>2.2 Advantages of rotating field system</p> <p>2.3 Different types of excitation system for synchronous machine: dc excitation system, static excitation system and brushless excitation system</p> <p>2.4 EMF equation of alternator</p> <p>2.5 Concentrated and distributed windings, Concept of distribution factor and coil span factor and pitch factor</p> <p>2.6 Effect of armature reaction on terminal voltage</p> <p>2.7 Concept of synchronous reactance and synchronous impedance</p> <p>2.8 Phasor diagram of alternator on load: resistive, inductive and capacitive load</p> <p>2.9 Effect of power factor on the terminal voltage of alternator</p> <p>2.10 Voltage regulation of alternator, determination of voltage regulation using synchronous impedance method</p> <p>2.11 Need and necessary conditions for parallel operation of alternators.</p> <p>2.12 Synchronization of alternators with bus bars using Synchroscope method and lamps method.</p>	.-----do- -----	-----do-----
3.	16 (42-57)	<b>Synchronous Motor</b>	<p>3.1 Introduction: Construction, operating principle</p> <p>3.2 Starting methods of synchronous motor</p> <p>3.3 Equivalent circuit diagram of synchronous motor</p> <p>3.4 Effect of change in excitation of a synchronous motor, V-curve of synchronous motor</p> <p>3.5 Concept of hunting, causes and prevention of hunting in Synchronous Motor</p> <p>3.6 Application of synchronous motor as synchronous condenser, other applications of synchronous motor</p>		

3	10 (21-30)	<b>Electrical Aspects of Transmission Line</b>	<p>3.1 Choice of working voltage for transmission</p> <p>3.2 Economic size of line conductor- Kelvin's law.</p> <p>3.3 Inductance of a conductor due to internal flux and external flux.</p> <p>3.4 Inductance of a single phase two-wire line and of three phase line.</p> <p>3.5 Capacitance of three phase line, charging current due to capacitance</p> <p>3.6 Skin effect, Ferranti effect, proximity effect in conductors of transmission line</p> <p>3.7 Corona: factor affecting, advantages and disadvantages, corona power losses and methods to reduce the corona</p>	-----do-----	-----do-----
4	08 (31-38)	<b>Substation and Distribution System</b>	<p>4.1 Substation: Indoor and outdoor substations, equipment for substation, auxiliary supply.</p> <p>4.2 Distribution Systems: Radial, ring mains and inter-connected distribution system</p> <p>4.3 Comparison of AC and DC distribution system</p>	-----do-----	-----do-----
5	06 (39-44)	<b>Underground Distribution System</b>	<p>5.1 Advantages and disadvantages of underground system with respect to overhead system</p> <p>5.2 Underground Cables: Types of cables, construction of cables, grading of cables, capacitance, ratings, thermal characteristics and applications</p>	-----do-----	-----do-----

**PLANNED SYLLABUS COVERAGE (Theory)**  
**Government Polytechnic Kangra**

<b>GP Kangra</b>		Department: Electrical Engineering		Subject : EPS-II		
		Course :Diploma		Duration: 3 Yrs.		
<b>SYLLABUS COVERAGE</b>		Total Period:56		Theory : 56		
Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remark
1	8 (1-8)	<b>Electrical Power Supply System</b>	1.1 Single line diagram of Electrical Power Supply System 1.2 Advantages of high voltage transmission 1.3 Various systems of electrical power transmission: DC system, 1- phase AC system, 2-phase ac system, 3- phase AC system 1.4 Comparison between AC and DC system for transmission of electrical power	Electrical Power Systems by C L Wadhva (New Age Publications)  Principles of Power Systems by V.K. Mehta (S. Chand Publications)	Electrical Power Systems by Ashfaq Husain  A course in Power Systems by JB Gupta (SK Kataria)	
2	12 (09-20)	<b>Mechanical Design of Overhead Transmission Line</b>	2.1 Types of line supports, types of conductors, earth wire and their accessories. 2.2 Insulator, selection of insulator, string efficiency of suspension type insulator. 2.3 ACSR Conductor, Bundled conductors, Transposition of 3- phase line. 2.4 Span length, Sag and stress calculation, Stringing chart, Sag template, effects of wind and ice on Sag (numerical)	-----do-----	-----do-----	

3	10 (21-30)	<b>Electrical Aspects of Transmission Line</b>	<p>3.1 Choice of working voltage for transmission</p> <p>3.2 Economic size of line conductor- Kelvin's law.</p> <p>3.3 Inductance of a conductor due to internal flux and external flux.</p> <p>3.4 Inductance of a single phase two-wire line and of three phase line.</p> <p>3.5 Capacitance of three phase line, charging current due to capacitance</p> <p>3.6 Skin effect, Ferranti effect, proximity effect in conductors of transmission line</p> <p>3.7 Corona: factor affecting, advantages and disadvantages, corona power losses and methods to reduce the corona</p>	-----do-----	-----do-----
4	08 (31-38)	<b>Substation and Distribution System</b>	<p>4.1 Substation: Indoor and outdoor substations, equipment for substation, auxiliary supply.</p> <p>4.2 Distribution Systems: Radial, ring mains and inter-connected distribution system</p> <p>4.3 Comparison of AC and DC distribution system</p>	-----do-----	-----do-----
5	06 (39-44)	<b>Underground Distribution System</b>	<p>5.1 Advantages and disadvantages of underground system with respect to overhead system</p> <p>5.2 Underground Cables: Types of cables, construction of cables, grading of cables, capacitance, ratings, thermal characteristics and applications</p>	-----do-----	-----do-----

6	07 (45-51)	<b>Extra High Voltage AC and DC Transmission System</b>	6.1 Necessity of EHV Transmission 6.2 Limitation of EHV-AC Transmission System 6.3 Basic Concepts of HVDC System 6.4 Limitation of HVDC Transmission 6.5 Comparison between EHV-AC and HV-DC Transmission	-----do-----	-----do-----	
7	05 (52-56)	<b>Role of Power Factor in Power System</b>	7.1 Concept of power factor 7.2 Causes and effects of low power factor in power system 7.3 Methods to improve power factor: Synchronous condenser, Static capacitor bank and VAr Static Compensators	-----do-----	-----do-----	

Approved Date:	HOD Sign.
<i>Asher</i> 8-8-2023	



## PLANNED SYLLABUS COVERAGE (Theory)

GP Kangra SYLLABUS COVERAGE		Department: Electrical Engineering		Subject : PE&CD		
		Course : Diploma		Duration: 3 Yrs.		
		Total Period: 56		Theory : 56		
Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	16 (1-16)	<b>Power Semiconductor Devices</b>	1.1 Advantages of Power Electronics devices based control over conventional control 1.2 Construction, Operation, Symbol & V-I Characteristics of Silicon Controlled Rectifier (SCR) 1.3 Thyristor Specifications and Ratings: Voltage Ratings, Current Ratings, Power Ratings and Temperature Ratings, Turn ON & Turn- OFF time 1.4 Thyristor Turn On (Triggering) Methods: Voltage Triggering, Gate Triggering, dv/dt Triggering and Radiation Triggering. 1.5 Thyristor Turn off Process (Commutation techniques) 1.6 Series and Parallel Connections of SCRs: it's need and criteria 1.7 Heat Sinks- Function/need of Heat Sink, Types of Mountings 1.8 Thyristor Family: Symbols, Construction, Operation & V-I Characteristics of TRIAC, DIAC, and UJT 1.9 UJT Relaxation Oscillator: Circuit description and Working	Power Electronics by Dr. P. S. Bhimbhra, Khanna Publisher, New-Delhi	Power Electronics by B. R. Gupta & V. Singhal, KATSON Publication, New Delhi	
2.	14 (17-30)	<b>Converters (Controlled Rectifiers)</b>	2.1 Difference between Uncontrolled rectifier & Controlled rectifier 2.2 Single Phase Half Wave Controlled Converter - With Resistive Load - With RL Load and Freewheeling Diode 2.3 Single Phase Fully Controlled Full Wave Converter - With Resistive Load - With RL Load (with & without freewheeling diode)			

			<p>2.1 Difference between Uncontrolled rectifier &amp; Controlled rectifier</p> <p>2.2 Single Phase Half Wave Controlled Converter - With Resistive Load - With RL Load and Freewheeling Diode</p> <p>2.3 Single Phase Fully Controlled Full Wave Converter - With Resistive Load - With RL Load (with &amp; without freewheeling diode)</p> <p>2.4 Three Phase Fully Controlled Bridge Converter</p> <p>2.5 Comparison of 3 phase and 1-Phase Converters</p> <p>2.6 Cycloconverters (50 Hz to 25 Hz, 16.33Hz, 12.5Hz): Introduction, classification, working principle and applications</p> <p>2.7 Dual Converters (1-phase &amp; 3-phase): Classification, working principle and applications</p>	-----do- -----	-----do-----
3.	8 (31-38)	<b>Inverters</b>	<p>3.1 Working Principle of Inverter</p> <p>3.2 Series Inverter - Operation of Series Inverter Circuit</p> <p>3.3 Parallel Inverter - Operation of Parallel Inverter Circuit</p> <p>3.4 Single Phase Bridge Inverter - Half Bridge Inverter - Full Bridge Inverter</p>		
4.	10 (39-48)	<b>Choppers (DC to DC Converters)</b>	<p>4.1 Working Principle of Chopper, Duty Cycle of Chopper</p> <p>4.2 Types of Duty Cycle Control - Constant Frequency System - Variable Frequency System</p> <p>4.3 Classification of Choppers Class A, Class B, Class C, Class D and Class E: Their Circuit description and Working</p> <p>4.4 Applications of Choppers</p>	-----do-- -----	-----do-----
5.	6 (49-54)	<b>Power Electronic Applications in Control of Drives</b>	<p>5.1 DC Drives: Speed control of DC motors with Single phase and Three-phase controlled converters. Speed Control of DC motors using Chopper circuit.</p> <p>5.2 AC Drives: Speed control of three-phase Induction Motor with Variable voltage, and variable frequency (VVVF Drives) using power electronics devices</p>		

APPROVED	H. O. D. SIGN
DATE:-	

## PLANNED SYLLABUS COVERAGE (Theory)

GP Kangra		Department: Electrical Engineering		Subject : NCER		
SYLLABUS COVERAGE		Course : Diploma		Duration: 3 Yrs.		
SYLLABUS COVERAGE		Total Period: 56		Theory : 56		
Sr. No.	Period No's	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1	05 (01-05)	<b>Introduction</b>	1.1 Importance of Non-conventional sources of energy 1.2 Present energy scenario, 1.3 Role of non-conventional or renewable energy sources in present energy scenario	Energy Management by Dr. Sanjeev Singh & Dr. Umesh Rathore, KATSON Publications New Delhi	Renewable Energy Source and Conversion Technology NK Bans Manfred Kleemann, Michael Meli	
2	09 (06-14)	<b>Solar Energy</b>	2.1 Principle of conversion of solar radiation into heat, Photo-Voltaic Cell 2.2 Electricity generation using Solar Energy 2.3 Applications of Solar Energy: Solar water heaters, Solar Furnaces, Solar cookers, Solar lighting, Solar pumping.		Tata McGraw Hill Publishing Co. Ltd New Delhi	
3	07 (15-21)	Hydro Energy	3.1 Main elements of small (Mini and Micro) hydro-electric power generation system 3.2 control requirements in small hydro power plants 3.3 advantages of small hydro power plants over large hydro power generation systems	-----do-----	-----do-----	
4	09 (22-30)	Bio-Energy	4.1 Bio-mass Conversion Technologies: Wet and Dry processes 4.2 Methods for obtaining energy from biomass 4.3 Power generation using biomass gasifier			
5	09 (31-39)	Wind Energy	5.1 Wind Energy Conversion system 5.2 Types of wind mills 5.3 electricity generation using wind mills 5.4 control mechanism in wind energy conversion system and energy storage systems	-----do-----	-----do-----	

6	07 (40-46)	<b>Geo- Thermal and Tidal Energy</b>	6.1 Geo-thermal sources 6.2 Ocean thermal electric conversion 6.3 open and closed cycles, hybrid cycles. Tidal power basics and schemes of electricity generation using tidal power	-----do-----	-----do-----
7	03 (47-49)	Magneto Hydro Dynamic (MHD) Power Generation	7.1 Introduction 7.2 working principle and MHD system		
8	03 (50-52)	Chemical Energy	8.1 Principle of working of fuel cell 8.2 conversion efficiency 8.3 work output and emf of fuel cells 8.4 applications of fuel cells	-----do-----	-----do-----
9	04 (53-56)	Thermo Electric Power	9.1 Basic working principle of thermo- electric power 9.2 Thermo-electric power generation 9.3 thermoelectric materials and their application.	-----do-----	-----do-----

Approved

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