INSTITUTE OF TECHNOLOGY

GURU GHASIDAS VISHWAVIDHALAYA

(A CENTRAL UNIVERSITY ESTABLISHED BY THE CENTRAL UNIVERSITY ORDINANCE 2009, NO3 OF 2009)

DEPARTMENT OF INDUSTRIAL & PRODUCTION ENGINEERING

STUDY & EVALUATION SCHEME

W.E.F. SESSION 2012-2013

Year: B.Tech. IV year

SEMESTER: VII

Sl. No.	Course No.	SUBJECT	PERIODS			EVALUATION SCHEME			Credits
(THEORY)			**L**	**T**	**P**	**SESSIONAL EXAM / INTERNAL ASSESSMENT**	**ESE**	**SUB TOTAL**	
1.	IPE-471	COMPUTER AIDED DESIGN AND MANUFACTURING (CAD/CAM)	3	1	-	40	60	100	4
2.	IPE-472	Welding Engineering	3	1	-	40	60	100	4
3.	IPE-473	Production Planning & Control	3	1	-	40	60	100	4
4.	IPE-474	Organization Management	4	-	-	40	60	100	4
5.	IPE-475	Elective-I**	3	1	-	40	60	100	4
(PRACATICALS)		**Total**	16	04					
6.	IPE-476	Welding Engineering	-	-	5	30	20	-	2
7	IPE-477	Project	-	-	5	50	-	-	2
8	IPE-478	Summer Training** (About 30 days)	-	-	-	50	-	-	2
Total					10				06

**Summer Training about 30days after sixth semester end semester examination and submission of detailed report/ presentation during the seventh semester.

IPE-475A	Enterprise resource planning
IPE-475B	Internal combustion engine
IPE-475C	Marketing management

Total Credits: 26

Total Contact Hour: 30

Total Marks: 650

*** INTERNAL ASSESSMENT**-(MSE- Mid Semester Examination of 20 Marks, Two Class Test/Assignment/Quizzes /Group Discussion Etc.)

L-LECTURE, T-TUTORIAL, P-PRACTICAL, CT-CLASS TEST, E.S.E –END SEMESTER EXAMINATION

Category of Course	Course Code	Course Title	Periods/Week				Theory Paper
			L	T	P	C	
Industrial & Production Engg. B. TECH VII Sem	IPE-471	COMPUTER AIDED DESIGN AND MANUFACTURING (CAD/CAM)	3	1	-	4	Max Marks-60 Min Marks- Duration-3Hrs

IPE-471 COMPUTER AIDED DESIGN AND MANUFACTURING (CAD/CAM)

UNIT-I

Basics of CAD: Computer hardware, input and output devices, software, random and raster scan, resolutions, line drawing algorithms, circle drawing algorithms, basic of curves.

UNIT- II

Geometric Transformation: Computer Aided Design (CAD) methodology, coordinate system, theory and applications, wireframe, surface of revolution, sweep surface, development surface and solid modeling, methods of solid modeling, CSG, B-Rep, advantages and disadvantages of CAD, 2D and 3D transformation, homogeneous transformation, concatenation, rapid prototype.

UNIT - III

Basics of CAM : Basic concept of numerical control (NC) System, NC coordinate system, NC motion control, Application of NC, concepts of computer numeric control(CNC) system, concept of distributed numeric control (DNC) system, problems with conventional, NC, CNC and DNC, advantages and disadvantages of NC,CNC and DNC, concurrent engineering.

UNIT- IV

Part Programming: Introduction to NC part programming, manual part programming, computer assisted part programming, Automatically Programming Tool (APT) language, statements and code of APT, programming methods, advantages of CAD/CAM programming.

UNIT- V Advance Manufacturing System : Concept of computer integrated method (CIM), Flexible manufacturing system(FMS), benefits and applications of CIM and FMS, group technology(GT), parts classification and coding systems, benefits and applications of GT, automated storage and retrieval system (AS/RS), Automated guided vehicle(AGV).

Text Books:

1. CAD/CAM. Groover & Zimmer, Prentice Hall, India
2. Production System & Automation, Groover, Prentice Hall, India
3. Computer Graphics & CAD, Ramamurthy, T.M.H.
4. Industrial Robotics & CIM, Surendra Kumar I.B.H.
5. CAD/CAM, P.N.Rao, Prentice Hall, India.
6. CAD/CAD Theory & Practice-I.Zeid & R. Sivasubramanium, TMH
7. CAM T.C. Chang & Wang, Pearson

Category of Course	Course	Course Title	Periods/Week	Theory Paper

	Code		L	T	P	C	
Industrial & Production Engg. B. TECH VII Sem	IPE-472	WELDING ENGINEERING	3	1	-	4	Max Marks-60 Min Marks- Duration-3Hrs

IPE-472 WELDING ENGINEERING

UNIT I-

Classification of welding, gas welding, Arc Welding and Equipments, types of welding Flames, Welding Techniques, Welding Torches and Blowholes.

Submerged Arc Welding, TIG, MIG, Plasma Arc Welding and its Application.

UNIT II-

Arc Welding: Arc Welding Power Sources, Selection Factor for Power Sources, DC-Generator, rectifiers, Constant Current & Constant Voltage Machines, welding Transformers.

Welding Electrodes, Types, Electric Coating, Selection of Electrode, Classification, Coating of Mild Steel and Alloy Steel Electrode, Metal Transfer in Arc Welding.

UNIT III –

Resistance welding Process: Spot Welding, Seam, Projection, Butt Welding, Flash Butt Welding, Precision Welding.

Solid State Welding Process: Cold Welding, Diffusion Welding, Ultrasonic Welding, Explosive Welding, And Friction Welding.

Radiant Energy Welding Process: Electrical Beam Welding, Laser Beam Welding.

UNIT IV-

Brazing, Soldering and their Application.

Weld ability of Metals: Introduction, Welding of Cast Iron, Stainless Steel, Aluminum, Copper and its Alloys, Hydrogen Induced Cracking.

Welding Distortion: Distortion and Residual Stresses, Types, Control of welding Distortion, Various discontinuities in welds, Trouble shooting.

UNIT V-

Design of Weldment: Weld Geometry, Eccentric Loading Designing Torsion and bending, Designing welding fixtures.

Testing, Inspection and Specification: Destructive and Non-destructive methods of testing Weldment, WPS, PQR, and ASME section IX Welding.

Robotics and Automation in Welding: Modes of Automation, Positioners, Welding Fixtures, and Arc Motion Devices, Under Water Welding.

Recommended Books:

1. American Welding Society, book VII Edition Vol. II.
2. Nadkarni S.V., Modern Arc Welding..
3. Welding Engg. , Little, TMGH.
4. Khanna O.P., Welding Technology, Dhanpat Rai & Sons.
5. Parmar R.S., Welding Processes & Technology, Khanna Publishers.
6. Parmar R.S., Welding Engg. & Technology, Khanna Publishers.
7. P.N.Rao, Manufacturing Technology Vol-I

Category of Course	Course Code	Course Title	Periods/Week				Theory Paper
			L	T	P	C	
Industrial & Production Engg. B. TECH VII Sem	IPE-473	PRODUCTION PLANNING AND CONTROL	3	1	-	4	Max Marks-60 Min Marks- Duration-3Hrs

IPE-473 PRODUCTION PLANNING AND CONTROL

UNIT - I

Introduction: Introduction to various Types of Production System viz. Mass Production, Job Shop, Batch Production System, Continuous Production System, Concept of Production and Operation Management, Objective & functions of PPC.

Forecasting: Time Series method, moving average, weighted average, Trend, Seasonality, Regression Technique, Delphi Method.

UNIT - II

Aggregate Planning: Definition, Strategies, Pure and mixed strategies, methods.

Master Production Schedule: objective and functions, Design of MPS, Bill of Materials.

Material Requirement Planning: objectives, functions, MRP, MRP-II, limitations.

Capacity Requirement Planning: Definition, Objectives, Process of CRP, Process Sheet, Rough Cut Capacity Planning, Loading, and Preparation of CRP chart.

UNIT - III

Scheduling: Types, Single Machine Scheduling, Job shop Scheduling, Flow Scheduling; **Sequencing:** various priority rules; Line of Balancing: Rank and positional weight method, Kilbridge westner method.

Facility location and facility location problems: Factors affecting plant locations, single facility locations problems and its methods.

UNIT - IV

Types of layout- layouts design procedure such as CORELAP, CRAFT etc.

Material handling system & their classification, principles.JIT & KANBAN.

Depreciation & methods of depreciation.

UNIT-V

Maintenance Management: Types of maintenance strategies, Breakdown and Preventive Maintenance, Predictive and Total Productive Maintenance, Condition monitoring, Individual and group replacement policies. Make or Buy Decision, concept of original equipment effectiveness.

Recommended Books:

1.Production and operation management, O.Paneerselvem, TMH.
2. Production and operation management, Adem Ebert
3. Production and operation management, Charry S.N. TMH
4. Production and operations management Theory and practice Mahadevan.B
5. Production and operation management, Joseph .G. Monks, TMH
6. Handbook of Material Handling, Ellis Horwood limited

7. Operations Management: Design Planning and control for the manufacturing and services Lawrence.P.Atkin, James B. Dilworth Tata Mc Graw Hill
8. Production and Operations management, R.B Khanna, PHI.
9. Production operations management S.N.Buffa, PHI.

Category of Course	Course Code	Course Title	Periods/Week				Theory Paper
			L	T	P	C	
Industrial & Production Engg. B. TECH VII Sem.	IPE-474	ORGANIZATION & MANAGEMENT	3	1	-	4	Max Marks-60 Min Marks- Duration-3Hrs

IPE-474 ORGANIZATION & MANAGEMENT

UNIT-I

Introduction: Origin of management concept, Management process. Principles of management, various approaches to management, the scientific management.

Planning: Concept, nature & process of planning, types of planning, instrument of planning, strategies, policies, rules, methods standards, programmes, budgets.

UNIT- II

Decision making: theory, types of decisions. Organization, its role and importance, principles related to organization, Theories of organization, Departmentation, Delegation & Decentralization Span of control, line and staff relationship.

UNIT- III

Motivation and Leadership: Need analysis, theories of motivation, Different approaches to leadership.

Management control: concept and process of control, performance standards, measurement of performance against standards, types of controls, principles.

UNIT – IV Job evaluation: objectives and methods of job evaluation, job description, job classification, job analysis and their applications.

Salary and wage administration: wage curve, salary structure and number of grades, merit rating.

UNIT – V

Personnel Management: Role and functions of personnel management, Organization of personnel dept., Personnel problems and their solution welfare techniques. Manpower Selection and Development: Sources of recruitment, Selection methods, Interviewing and testing, Training methods, Performance appraisal and its methods.

Text Books:

1. Essential of management, Koontz & O'Donnel, McGraw-Hill.
2. Organizational Behavior, Stephen P. Robbins, PHI.
3. Organization and Management, Agrawal R.D, TMH.
4. Management, Stonner and Phillips, PHI.
5. Principles of Management, Terry & Francklin, Richard – Frwin

Category of Course	Course Code	Course Title	Periods/Week				Theory Paper
			L	T	P	C	
Industrial & Production Engg. B. TECH VII Sem	IPE-475 A	Enterprise Resource Planning	3	1	-	4	Max Marks-60 Min Marks- Duration-3Hrs

IPE-475 A Enterprise Resource Planning

UNIT –I

Introduction to Enterprise resource planning, Evolution of ERP, MRP, MRP-II, e-ERP, Generic business model with reference to ERP, Structure of ERP Two tier architecture client, server, Three tier architecture, repository, RDBMS, Operating systems, Generic model of ERP system - Design tree node structure, Design of, Role/Activity Diagrams, Benchmarking, Types of Benchmarking, Process of Benchmarking.

UNIT –II

Introduction to Business Process Re-engineering, Procedure of BPR, Principle of BPR, Process improvement Process redesign

UNIT-III

Introduction : Supply chain Management and ERP, understanding the supply chain with case examples, Supply chain performance with measures, Achieving strategic fit and scope, Supply chain drivers,

Supply chain obstacles, ERP Vs SCM, Benefits of supply chain improvement, Introduction of Logistics

Types of Logistics, Types of Logistics, Benefits of Logistics.

UNIT-IV

Integrated SAP model, Integrated Data, Master Data, Transactional Data, Integrated processes, Evolution Electronic Data Interchange (EDI), Use of EDI, and Benefits of EDI, Selection of ERP: Introduction

Opportunities and problems in ERP selection, Approach to ERP selection of ERP.

UNIT-V

Origins of SAP, SAP's Markets, SAP architecture and integration, SAP Business structure, Customization of SAP, SAP R/3 material Management, Sales and Distribution, Production, Plant Maintenance, Quality Management, Methodology for ERP implementation, Implementation phases, Implementation of Life cycle

Implementation failure

Recommended Books:

1. Enterprise Resource Planning: Theory and practice by Rahul V. , PHI Publication.
2. Enterprise Resource Planning: Concepts and practice by V.K. Garg, TMH Publication.
3. Enterprise Resource Planning by Alexis Leon, McGraw-Hill Publication.

Category of Course	Course Code	Course Title	Periods/Week				Theory Paper
			L	T	P	C	
Industrial & Production Engg. B. TECH VII Sem	IPE-475 B	I.C.ENGINE	3	1	-	4	Max Marks-60 Min Marks- Duration-3Hrs

IPE-475 B I.C.ENGINE

UNIT I- Introduction of internal combustion engines, classification of I.C. engines, engines components, basic engine nomenclature, four stroke S.I. and C.I. engine, two stroke engines, comparison of two stroke and four stroke engines, comparison of S.I. and C.I. engines, application of IC engines.

Air Standard Cycle: Otto cycle, diesel cycle, dual cycle, comparison between otto, diesel and dual cycles, fuel-air cycles and actual-cycles, effect of variable specific heats and dissociation on indicator diagram.

UNIT II- Combustion in S.I. Engines: Flame development and its propagation ,ignition lag, effect of engine parameters on ignition delay ,preignition,knocking in S.I. engines,variables affecting knock,combustion chambers.

Carburetor: Principle of carburetion,elements of carburetor,parameters affecting carburetion,air-fuel mixtures, expression for air-fuel ratio.

Fuel ignition system: Battery and coil igination system, magneto iginition system, firing order, spark advancing.

Combustion in S.I. Engines: Flame development and Propagation, ignition lag, effect of air density, temperature, engine speed, turbulence, and ignition timings, physical and chemical aspect of detonation, effect of engine and fuel variable on knocking tendency, knock rating of volatile fuels, octane number, H.U.C.R., Action of dopes, pre-ignition, its causes and remedy, salient features of various types of combustion chambers, valve timing and firing order.

UNIT III- Combustion in C.I. Engines

Combustion phenomenon in C.I. engines, p- v diagram and their study for various stage of combustion, delay period, detonation in C.I. engines, parameters affecting detonation.

Fuel Injection System

Air and solid injection, fuel pump and injectors.

UNIT IV- Engine Friction and Lubrication:

total engine friction, blow by losses, pumping losses, factors effecting engine friction, mechanism of lubrication, lubrication system.

Cooling system: Pistion and cylinder temperature distribution, parameters affecting engine heat transfer, principles and various methods of cooling.

Two Stroke Engine: Constructional details, scavenging parameters, models and performance of scavenging system, advantages and disadvantages of two stroke engines.

UNIT V-

Supercharging: effect of altitude on mixture strength and output of SI engines, low and high pressure supercharging, exhaust, gas turbo-charging, supercharging of two stroke engines.

Engine friction and lubrication, Engine cooling system.

Recommended Books;

1. Mathur M.L. and R.P. Sharma, A Course in IC Engines.
2. Ganesan.V, Internal Combustion Engines, TMGH.
3. Taylor G.F., Internal Combustion Engines: Theory and Practice.
4. Stone, Richard, Introduction to IC Engine

Category of Course	Course Code	Course Title	Periods/Week				Theory Paper
			L	T	P	C	
Industrial & Production Engg. B. TECH VII Sem	IPE-475 C	MARKETING MANAGEMENT	3	1	-	4	Max Marks-60 Min Marks- Duration-3Hrs

IPE-475 C MARKETING MANAGEMENT

UNIT I-

Introduction to Product Design: Design by Evolution, Design by Innovation, Essential Factors of Product Design, Morphology of design, Three S, Standardization, simplification, Specialization and Diversification, Basic Design and Consideration, Role of Aesthetics in Product Design.

UNIT II-

Introduction to marketing management: what is marketing? The core concept, need, wants, demands, product, value cost its functions.

Marketing management: Production concept, product concept, and selling, marketing concept, role of marketing in modern organization, marketing philosophies.

UNIT III-

The nature of high performance business, corporate and division strategic planning, business strategic planning, marketing process. Analyzing consumer markets & buying behavior.

UNIT IV-

The product life cycle: conditions and strategies in different phases. Marketing strategies through PLC.

New Product Decisions: Definitions and factors contributing to new production development, new product development process.

UNIT V-

Deciding on the marketing Program: Product, promotion, pricing, place (Distribution Channel), Managing Advertising, Sales promotion, & public relation

Developing & managing development program, sales promotion, public relation.

Recommended Books:

1. Product Design and Manufacturing, Chitale & Gupta, PHI.
2. Marketing Management, Philip Kotler