GUJARAT TECHNOLOGICAL UNIVERSITY
Shantilal Shah Engineering College, Bhavnagar
OPERATION RESEARCH (2171901)
BE Mechanical
Semester- VII
PAT SYLLEBUS- ODD TERM 2020

Sr. No.	Course Content
1.	**Operation Research:** Origin of Operation Research, Historical standpoint, Methodology, Different Phases, Characteristics, Scope and Application of Operation Research
2.	**Linear Programming Problem:** Introduction, Requirement of LP, Basic Assumptions, Formulation of LP, General Statement of LP, Solution techniques of LP: Graphical methods.
3.	**Transportation and Assignment:** Transportation problem definitions, Linear form, North west corner method, Least cost method, Vogel's approximation method, Degeneracy in Transportation, Modified Distribution method, Unbalanced problem, Profit maximization problem, Transshipment problem
4	**Game Theory:** Introduction, Characteristics of Game Theory, Two Person Zero Sum Games, Pure strategy, Dominance Theory, Mixed strategy, Algebraic and Graphical methods

Subject Coordinator

Dr. P.V.Parekh

SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR

MECHANICAL ENGINEERING DEPARTMENT

Academic Year: 2020-21 (ODD)   Subject:
                                  CAM (2171903)

Date: 26/08/2020

Syllabus for Progressive Assessment Test (PAT) – Sept. 2020

1   **Computer Aided Manufacturing:** CAM Concepts, Objectives & scope, Nature & Type of manufacturing system, Evolution, Benefits of CAM, Role of management in CAM, Concepts of Computer Integrated Manufacturing, Impact of CIM on personnel, Role of manufacturing engineers, CIM Wheel to understand basic functions.

2   **NC/CNC Machine Tools:** NC and CNC Technology: Types, Classification, Specification and components, Construction Details, Axis designation, NC/CNC tooling. Fundamentals of Part programming.

3   **Group Technology and CAPP:** Introduction, part families, part classification and coding, machining cells, Benefits of group technology.

4   **Flexible Manufacturing System:** Introduction & Component of FMS, Needs of FMS, general FMS consideration, Objectives, Types of FMS, advantages of FMS, Automated material movement & AS/RS AGVS , RGV Manufacturing Cells, Cellular & Flexible manufacturing, JIT & GT applied to FMS, FMC & FMS, Tool Management, Tool supply system, Tool Monitoring System, Work piece Handling, Flexible Fixturing, Flexible Assembly Systems, Flexibility. FMS scheduling, sequencing, FMS lay out and essentials.

Subject Co-ordinator

(Prof. V. J. Pandya)

Syllabus for Mid-Sem Test
Sem :- VII (Mech).
Sub :- Machine Design, Year- 2020

Code : 2171909.,

Main Topics :-

(1) Gear Design

(2) Gear Box Design For
Machine Tools upto ray diagram

(3) Introduction to Cylinder design
and piston design.

(R. A. Mehta)
Sub. Co-ordinator.

Subject : - Metal Forming Analysis (2171913),   B.E. Mechanical Semester- VII
AY 2020 – 2021 (Odd Term)

PAT SYLABUS

Sr. No.	Course Content
1.	Introduction to hot forming, cold forming, warm forming its advantages and disadvantages Typical stress strain diagram for ductile materials Forming properties of metals and alloys (yield strength/flow stress, ductility, strain hardening, strain rate sensitivity, effect of temperature and hydrostatic pressure on yield strength) Classification of forming processes and advantages of metal forming
2.	Stress of stress at a point, stresses on an inclined plane, Principal stress, Two dimensional Mohr's circle for stress analysis, Deformation and strain, Stress of strain at a point
3.	Yield conditions, Von Mises' hypothesis of yielding, Tresca's hypothesis of yielding, graphical representation of yield criteria, Elastic stress strain relations for isotropic elastic materials, Idealized stress strain relations in plastic deformations, Isotropic and kinematic work hardening
4.	Introduction to; (i). Theory of slip lines, (ii). upper bound theorem and (iii). lower bound theorem
5.	FORGING processes: Introduction, classification of forging, forging machines, metal flow in forging, Analysis of plane strain compression, analysis of compression of circular disc with slab method
6.	ROLLING Processes: Classification, types of mill, Analysis of longitudinal strip or sheet rolling process (calculation of roll separating force, torque & power, angle of bite, maximum reduction in rolling), rolling defects, roll flattening, roll camber

Subject Co-ordinator   **H.O.D**

SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR

MECHANICAL ENGINEERING DEPARTMENT

7TH SEMESTER
September-2020
PAT SYLLABUS

Subject: POWER PLANT ENGINEERING (Code: 2171910)

MARKS: - 20

Sr. No.	Topics
1.	**Thermal Power Plant:** General layout of modern thermal power plant, Site selection
2.	**High Pressure Boilers:** Unique features and advantages of high-pressure boilers, La-Mont; Benson; Velox, Loeffler and Schmidt-Hartmann boilers
5.	**Steam Nozzles:** Types of nozzles, velocity of steam, discharge through nozzle, critical pressure ratio and condition for maximum discharge, physical significance of critical pressure ratio, nozzle efficiency
6.	**Steam turbine:** Principle of operation, types of steam turbines, compounding of steam turbines, impulse turbine – velocity diagram, calculation of work, power and efficiency, condition for maximum efficiency, Reaction turbines – velocity diagram, degree of reaction, governing of steam turbine – throttle, nozzle and bypass governing
8.	**Feed Water Treatment:** Necessity of feed water treatment, Different impurities found in feed water, Effect of impurities, pH & its role in corrosion and scale formation

EXAM WILL BE TAKEN IN MCQ FORMAT

Subject Convener: A.D.KALANI