

# SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

## MECHANICAL ENGINEERING DEPARTMENT

### Mid Semester Exam 1 Syllabus - Summer - 2018

Date: 03/1/2018

Name of Subject : COMPUTER AIDED DESIGN  
Subject Code : 2161903  
Semester & Division : 6<sup>th</sup> (Div. A, B, C, D, E, F, G, H)  
**Percentage of Mid Semester Exam Syllabus: 35 %**

Chapter No.	Topic Name
1	<b>Introduction:</b> A typical product cycle, CAD tools for the design process of product cycle, CAD / CAM system evaluation criteria, Input / Output devices; Graphics Displays: Refresh display, DVST, Raster display, pixel value and lookup table, estimation of graphical memory, LCD, LED fundamentals. Concept of Coordinate Systems: Working Coordinate System, Model Coordinate System, Screen Coordinate System. Line and Curve generation algorithm: DDA, Bresenham's algorithms. Graphics exchange standards and Database management systems.
2	<b>Curves and Surfaces:</b> Parametric representation of lines: Locating a point on a line, parallel lines, perpendicular lines, distance of a point, Intersection of lines. Parametric representation of circle, Ellipse, parabola and hyperbola.
5	<b>Finite Element Analysis:</b> Review of stress-strain relation and generalized Hooke's Law, Plane stress and Plane strain conditions; Concept of Total Potential Energy; Basic procedure for solving a problem using Finite Element Analysis.

Mr. Jay Patel  
Mr. Vicky Thakor  
Subject Coordinators

Prof. Mit K.Shah  
Dr. Pina S. Bhatt  
HODs, Mech. Engg. Dept.

# SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

## MECHANICAL ENGINEERING DEPARTMENT

### Mid Semester Exam 1 Syllabus – Winter - 2018

Date: 26/12/2017

Name of Subject : Dynamics of Machine  
Subject Code : 2161901  
Semester & Division : 6<sup>th</sup> (Div. A, B, C, D, E, F, G, H)

**Percentage of Mid Semester Exam Syllabus: 40%**

Topic No.	Topic Name
1	<b>Balancing of Rotating Masses:</b> Concept of static and dynamic balancing, Analysis of effect of unbalanced masses in single and multiple planes in rotating elements, Bearing reactions. Approaches and equipment for measurement of unbalanced masses.
2	<b>Introduction to Mechanical Vibrations:</b> Elements of simple harmonic motion, concept of natural frequency, types of vibrations, Basic elements and lumping parameters of a vibratory system, lumping of physical systems, Concept of Degrees of Freedom (DOF).
3	<b>Single Degrees of Freedom System (Linear and Torsional):</b> Undamped free vibrations, equivalent stiffness, equivalent systems, determination of natural frequency; Coulomb and Viscous damping, Types of dampers, Damping coefficient, damping effects: under, over and critically damped system, Damping factor, damped natural frequency and logarithmic decay; Analytical solution of Forced vibrations with harmonic excitation system and vector representation, Dependence of Magnification Factor, Phase difference and Transmissibility on frequency of excitation for various damping factors, Concept of vibration isolation, effect of base excitation.

Mr. Abhigyanam Mishra (Shift – I)  
Mr. Devendra Parmar (Shift – II)  
Subject Coordinator

Dr. Pina Bhatt  
Prof. Mit Shah  
HODs, Mech. Engg. Dept.

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**MECHANICAL ENGINEERING DEPARTMENT**

**MID SEMESTER-1 EXAMINATION SYLLABUS**

**NAME OF SUBJECT:** INTERNAL COMBUSTION ENGINE

**SUBJECT CODE:** 2161902

**SEMESTER:** VI

**PERCENTAGE OF MID SEM EXAM SYLLABUS:** 25 %

<b>CH. NO.</b>	<b>TOPIC</b>
<b>1</b>	<b>Introduction:</b> Basic components and terminology of IC engines, working of four stroke/two stroke - petrol/diesel engine, classification and application of IC engines, engine performance and emission parameters.
<b>2</b>	<b>Fuel Air Cycles and Actual Cycles:</b> Assumptions for fuel-air cycles, Reasons for variation of specific heats of gases, change of internal energy and enthalpy during a process with variable specific heats, isentropic expansion with variable specific heats,
<b>5</b>	<b>Ignition and Governing System:</b> Battery and magneto ignition system, spark plug, firing order, quality, quantity & hit and miss governing.

Mr. Dixit Patel  
Mr. Umang Vora

**Subject Coordinators**

Dr. Pina Bhatt  
Prof. Mit K. Shah

**Head, Mech. Engg. Dept.**

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**MID SEMESTER-1 EXAMINATION SYLLABUS**

**NAME OF SUBJECT: INDUSTRIAL ENGINEERING**

**SUBJECT CODE: 2161907**

**SEMESTER: 6**

**PERCENTAGE OF MID SEM EXAM SYLLABUS: 30 %**

<b>CH. NO.</b>	<b>TOPIC</b>
<b>1</b>	<b>Location Selection and Plant Layout:</b> Nature of Location Decision, Importance of Plant Location, Dynamic Nature of Plant Location, Choice of site for selection, Comparison of location, Principles of Plant layout and Types, factors affecting layout, methods, factors governing flow pattern, travel chart, analytical tools of plant layout, layout of manufacturing shop floor, repair shop, services sectors and process plant. Quantitative methods of Plant layout: CRAFT and CORELAP, Relationship diagrams
<b>2</b>	<b>Production Planning and Control:</b> Types of Production systems and their Characteristics, functions and objectives of Production Planning and Control, Sales forecasting: Techniques and Applications
<b>3</b>	<b>Productivity and Work Study:</b> Definition of productivity, application and advantages of productivity improvement tools, reasons for increase and decreases in productivity. Areas of application of work study in industry. Reaction of management and labour to work study. Method Study: Objectives and procedure for methods analysis, Recording techniques, Operations Process Chart, Flow Process Chart, Man-Machine , Multiple Activity Chart

Kajal Hardasani  
Darshak Shah  
**Subject Coordinators**

Dr. Pina Bhatt  
Prof. Mit K. Shah  
**Head, Mech. Engg. Dept.**

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**MID SEMESTER-1 EXAMINATION SYLLABUS**

**NAME OF SUBJECT : PRODUCTION TECHNOLOGY**

**SUBJECT CODE : 2161909**

**SEMESTER & DIVISION: VI**

**PERCENTAGE OF MID SEM EXAM SYLLABUS: 36 %**

<b>Chapt er</b>	<b>Topic Name</b>
1	<b>Metal Cutting:</b> Principles of metal cutting, classification of Metal cutting/machining processes: Orthogonal and oblique cutting, Effect of tool geometry and other cutting parameters, Mechanisms of formation of chips, types of chips formed, chip Breakers, concept of specific cutting pressure, The forces acting on the cutting tool and their measurement, Merchant's circle diagram, force dynamometer, force and velocity relationship, Tool wear, Factors causing wear, tool life, variables affecting tool life, economical cutting speed, machinability of metals.
2	<b>Thermal Aspects in Machining:</b> Sources of heat generation in machining and its effects
6	<b>Non-conventional Machining:</b> LBM, AJM, EDM, ECM, USM, process principle

Prof. Jaychandra Vichare  
Prof. Dhruval Kotadiya  
**Subject Coordinators**

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**MID SEMESTER-1 EXAMINATION SYLLABUS**

**NAME OF SUBJECT:** REFRIGERATION & AIR CONDITIONING

**SUBJECT CODE:** 2161908

**SEMESTER:** VI

**PERCENTAGE OF MID SEM EXAM SYLLABUS:** 31 %

CH. NO.	TOPIC
1	<b>Introduction:</b> Brief history and need of refrigeration and air conditioning, methods of producing cooling, ton of refrigeration, coefficient of performance, types and application of refrigeration and air conditioning systems.
2	<b>Refrigerants:</b> Classification, nomenclature, desirable properties, secondary refrigerants, future industrial refrigerants
3	<b>Air refrigeration:</b> Reversed Carnot cycle and its limitation, Bell-Coleman cycle, aircraft refrigeration, working and analysis of Simple; Bootstrap; Reduced ambient and Regenerative air refrigeration systems
4	<b>Vapour Compression system:</b> Simple system on P-h and T-s diagrams, analysis of the simple cycle, factors affecting the performance of the cycle, actual cycle <b>Compound Compression System:</b> Compound compression with intercooler, flash gas removal and flash intercooler, multiple evaporators with back pressure valves and with multiple expansion valves without flash inter cooling, analysis of two evaporators with flash intercooler and individual expansion valve and multiple expansion valve, cascade refrigeration system

Prof. Vijay Bhendwade  
Prof. Kaushik savaliya  
**Subject Coordinators**

Dr. Pina Bhatt  
Prof. Mit K. Shah  
**Head, Mech. Engg. Dept.**