

**Lesson Planning for the semester started w.e.f**

Jän.18

Name of Institute :Aravali College of Engg. and Management  
 Name of teacher with designation :Mr.Sameer Ansari  
 Subject :Automatic Control  
 Semester :6th  
 Department :ME (6th)

| Month    | Class | Topic/Chapter covered   | Academic activity           | Test/assignment |
|----------|-------|---|-----------------------------|-----------------|
| January  | 1     | Introduction And Applications: Types of control systems   | ppt                         | Assignment 1    |
| January  | 2     | Typical Block Diagram   | ppt                         |                 |
| January  | 3     | Performance Analysis  |                             |                 |
| January  | 4     | Applications – Machine Tool Control, Boiler Control   |                             |                 |
| January  | 5     | Applications – Engine Governing, Aerospace Control, Active Vibration Control                                      |                             |                 |
| January  | 6     | Representation of Processes & Control Elements – Mathematical Modeling  |                             |                 |
| February | 7     | Block Diagram   | Control aystem applications | Test 1          |
| February | 8     | Representation of Systems or Processes  |                             |                 |
| February | 9     | Comparison Elements   |                             |                 |
| February | 10    | Representation of Feedback Control systems  |                             |                 |
| February | 11    | Block Diagram & Transfer Function Representation  |                             |                 |
| February | 12    | Representation of a Temperature, Control System   |                             | Assignment 2    |
| February | 13    | Signal Flow Graphs  |                             |                 |
| February | 14    | Problems  |                             |                 |
| February | 15    | Types of Controllers  |                             |                 |
| February | 16    | Introduction : Types of Control Action; Hydraulic Controllers   |                             |                 |
| February | 17    | Electronic Controllers; Pneumatic Controllers   |                             |                 |
| February | 18    | compounding of steam engine   |                             |                 |
| March    | 19    | Problems  |                             | Assignment 3    |
| March    | 20    | Transient And Steady State Response   |                             |                 |
| March    | 21    | Time Domain Representation; Laplace Transform Representation  |                             |                 |
| March    | 22    | System with Proportional Control  | PDI Controller              |                 |
| March    | 23    | Proportional – cum – Derivative control   |                             |                 |
| March    | 24    | Proportional – cum – Integral Control   |                             |                 |
| March    | 25    | Frequency Response Analysis: Introduction; Closed and Open Loop Transfer Function; Polar Plots; Rectangular Plots |                             |                 |
| March    | 26    | Stability Of Control Systems : Introduction; Characteristic Equation  |                             |                 |
| March    | 27    | Routh's Criterion   |                             |                 |
| March    | 28    | Nyquists Criterion, Gain & Phase Margins: Problems  |                             | Test 2          |
| March    | 29    | Root loci of a Second Order System; General Case; Rules for Drawing Forms of Root loci                            | State space analysis        |                 |
| March    | 30    | Relation between Root Locus Locations and Transient Response  |                             |                 |
| April    | 31    | Representation of Sampled Signal; Hold Device; Pulse Transfer Function  |                             |                 |
| April    | 32    | Routh's Stability Criterion   |                             |                 |
| April    | 33    | Root Locus Method   |                             |                 |
| April    | 34    | State Space Analysis Of Control Systems   |                             |                 |
| April    | 35    | Techniques for Deriving System State – Space Equations; Transfer Function from State Equations                    |                             |                 |
| April    | 36    | Solution of State Vector Differential Equations; Discrete Systems   |                             |                 |

(Signature of the teacher concerned with date)

**Lesson Planning for the semester started w.e.f jan-april 2018**

Name of Institute **Aravali institute of engineering and management**  
 Name of teacher with designation **Mr. Sanjay kumar (Assistant professor)**  
 Subject **Automobile Engineering**  
 Semester **6th**  
 Department **Mechanical**

| Month | Class | Topic/Chapter covered   | Academic activity    | Test/assignment |
|-------|-------|---|----------------------|-----------------|
| JAN   | 1     | <b>Introduction to Automobiles</b> : Classification, Components Four Wheel Drive Vehicles       | engine overhauling   | ppt             |
| JAN   | 2     | Vehicle Frame, Separate Body & Frame, Unitised Body, Car Body Styles,                           | engine overhauling   | ppt             |
| JAN   | 3     | Requirements of Automobile Body   | engine overhauling   | ppt             |
| JAN   | 4     | Commercial Vehicle Body Types   | engine overhauling   | ppt             |
| JAN   | 5     | Bus Body &; Front Engine Rear Drive & Front Engine Front Drive Vehicles,                        | engine overhauling   | assignment 1    |
| JAN   | 6     | Safety considerations; Safety features of latest vehicle; Future trends in automobiles          | engine overhauling   | assignment 1    |
| JAN   | 7     | <b>Clutches</b> : Requirement of Clutches – Principle of Friction Clutch – Wet Type & Dry Types | engine overhauling   | assignment 1    |
| JAN   | 8     | Cone Clutch, Single Plate Clutch,   | clutche overhauling  | assignment 1    |
| JAN   | 9     | Diaphragm Spring Clutch, Multi plate Clutch, Centrifugal Clutches                               | clutche overhauling  | assignment 1    |
| JAN   | 10    | Electromagnetic Clutch,   | clutche overhauling  | assignment2     |
| JAN   | 11    | Over Running Clutch; Clutch Linkages  | clutche overhauling  | assignment2     |
| JAN   | 12    | <b>Power Transmission</b> : Requirements of transmission,                                       | clutche overhauling  | assignment2     |
| JAN   | 13    | General Arrangement of Power Transmission system; Object of the Gear Box                        | gear box overhauling | assignment2     |
| JAN   | 14    | types of Gear Boxes; Sliding Mesh   | gear box overhauling | assignment2     |
| JAN   | 15    | Constant Mesh, Synchro- mesh Gear Boxes; Epi-cyclic Gear Box                                    | gear box overhauling | assignment2     |
| JAN   | 16    | Freewheel Unit. Overdrive unit-Principle of Overdrive   | gear box overhauling | ppt             |
| FEB   | 17    | Advantage of Overdrive, Transaxle, Transfer cases. Drive Lines                                  | gear box overhauling | ppt             |

|     |    |  |                      |                   |
|-----|----|--|----------------------|-------------------|
| FEB | 18 | <b>Joint, Differential and Drive Axles</b>   | gear box overhauling | ppt               |
| FEB | 19 | Different Effect of driving thrust and torque reactions; Hotchkiss Drive                             | joint overhauling    | ppt               |
| FEB | 20 | Torque Tube Drive and radius Rods; Propeller Shaft, Universal Joints, Slip Joint                     | joint overhauling    | ppt               |
| FEB | 21 | Constant Velocity Universal Joints   | joint overhauling    | ppt               |
| FEB | 22 | Front Wheel Drive; Principle, Function   | joint overhauling    | assignment3       |
| FEB | 23 | System Construction & Operation of Differential; Rear Axles, Types of load coming on Rear Axles      | joint overhauling    | assignment 3      |
| FEB | 24 | Full Floating, Three quarter Floating and Semi Floating Rear Axles                                   | joint overhauling    | assignment 3      |
| FEB | 25 | <b>Suspension Systems</b> : Need of Suspension System, , Suspension Spring                           | joint overhauling    | assignment 3      |
| FEB | 26 | Types of Suspension; factors influencing ride comfort  | suspension overhau   | ppt               |
| MAR | 27 | Constructional details and characteristics of leaf springs.  | suspension overhau   | ppt               |
| MAR | 28 | <b>Steering System</b> : Front Wheel geometry & Wheel alignment viz. Caster                          | suspension overhau   | ppt               |
| MAR | 29 | Camber, King pin Inclination, Toein/Toe-out; Conditions for true rolling                             | steering overhauling | ppt               |
| MAR | 30 | motions of Wheels during steering; Different types of Steering Gear Boxes                            | steering overhauling | visit of industry |
| MAR | 31 | Steering linkages and layout   | steering overhauling | assignment 4      |
| APR | 32 | Rack & Pinion Power Steering Gear, Electronics steering  | steering overhauling | assignment 4      |
| APR | 33 | Power steering –   | steering overhauling | assignment5       |
| APR | 34 | <b>Brakes, Tyres &amp; Wheels</b> :  | steering overhauling | assignment5       |
| APR | 35 | Mechanical, Hydraulic, Pneumatic Brakes; Factors affecting Brake performance, Power & Power Assisted | breaks overhauling   | assignment5       |
| APR | 36 | Brake actuating systems Tyres of Wheels; Types of Tyre & their constructional details                | breaks overhauling   | assignment 6      |
| APR | 37 | Wheel Balancing, Tyre Rotation;Types of Tyre wear & their causes                                     | breaks overhauling   | assignment 6      |
| APR | 38 | Sources of Atmospheric Pollution from the automobile, Emission Control Systems                       | breaks overhauling   | ppt               |
| APR | 39 | Evaporative Emission Control, Heated Air Intake System, Exhaust Gas Recirculation ( ECR ) Systems    | orsat apparatus used | ppt               |
| APR |    | Air Injection System and Catalytic Converters; Purpose construction & operation of lead acid Battery | orsat apparatus used | ppt               |
| APR | 40 | Capacity Rating & Maintenance of Batteries; Purpose and Operation of Charging Systems                | orsat apparatus used | ppt               |
| APR | 41 | Purpose and Operations of the Starting System; Vehicle Lighting System.                              | orsat apparatus used | ppt               |

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Jän.18

Name of Institute :Aravali College of Engg. and Management  
Name of teacher with designation :Mr.Praveen Chauhan  
Subject :Heat Transfer  
Semester :6th  
Department :ME (6th)

| Month    | Class | Topic/Chapter covered   | Academic activity                       | Test/assignment |
|----------|-------|---|---|-----------------|
| January  | 1     | Basics and Laws : Definition of Heat Transfer, Reversible and irreversible processes  | ppt                                     | Assignment 1    |
| January  | 2     | Modes of heat flow  | ppt                                     |                 |
| January  | 3     | Combined heat transfer system and law of energy conservation                          |   |                 |
| January  | 4     | Steady State Heat Conduction : Introduction, I-D heat conduction through a plane wall |   |                 |
| January  | 5     | long hollow cylinder,hollow sphere  |   |                 |
| January  | 6     | Conduction equation in Cartesian, polar,spherical co-ordinate systems                 |   |                 |
| February | 7     | Numericals  | heat generation in 1d and 2d plates     | Test 1          |
| February | 8     | Steady State Conduction with Heat Generation : Introduction                           |   |                 |
| February | 9     | Comparison Elements   |   |                 |
| February | 10    | 1 – D heat conduction with heat sources, Extended surfaces ( fins)                    |   |                 |
| February | 11    | Fin effectiveness 2-D heat conduction   |   |                 |
| February | 12    | Representation of a Temperature, Control System                                       |   |                 |
| February | 13    | Numericals  |   | Assignment 2    |
| February | 14    | Problems  |   |                 |
| February | 15    | Transient Heat Conduction : Systems with negligible internal resistance               |   |                 |
| February | 16    | Transient heat conduction in plane walls, cylinders                                   |   |                 |
| February | 17    | spheres with convective boundary conditions   |   |                 |
| February | 18    | Equation of continuity, Momentum and energy equations                                 |   |                 |
| March    | 19    | Some results for flow over a flat plate and flow through tube                         | study of thermal radiation in bodies    | Assignment 3    |
| March    | 20    | Fluid friction and heat transfer ( Colburn analogy )                                  |   |                 |
| March    | 21    | Free convection from a vertical flat plate  |   |                 |
| March    | 22    | Empirical relations for free convection from vertical cylinders                       |   |                 |
| March    | 23    | Numericals  |   |                 |
| March    | 24    | Thermal Radiation: The Stephen-Boltzmann law  |   |                 |
| March    | 25    | Shape factors and their relationships   | Heat convection and radiation in plates | Test 2          |
| March    | 26    | Heat exchange between nonblack bodies   |   |                 |
| March    | 27    | Electrical network for radiative exchange in an enclosure of two gray bodies          |   |                 |
| March    | 28    | Radiation shields   |   |                 |
| March    | 29    | Heat Exchangers: Classification, Performance variables                                |   |                 |
| March    | 30    | Heat exchanger effectiveness  |   |                 |
| April    | 31    | Heat Transfer with Change of Phase: Laminar film condensation on a vertical plate     |   |                 |
| April    | 32    | Drop-wise condensation  |   |                 |
| April    | 33    | Root Locus Method   |   |                 |
| April    | 34    | Boiling regimes, Free convective  |   |                 |
| April    | 35    | Nucleate and film boiling, Numericals   |   |                 |

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Name of Institute :Aravali College of Engg. and Management  
Name of teacher with designation :Ms. Anju  
Semester :6th  
Subject :Industrial Engineering  
Department :ME (6th)

| Month    | Class | Topic/Chapter covered  | Academic activity           | Test/assignment |
|----------|-------|--|-----------------------------|-----------------|
| January  | 1     | Definition of Industrial Engineering: Objectives, Method study, Principle of motion economy                            | ppt                         | Assignment 1    |
| January  | 2     | Techniques of method study - Various charts, THERBLIGS   | ppt                         |                 |
| January  | 3     | Work measurement - various methods, time study PMTS  | ppt                         |                 |
| January  | 4     | Work sampling  | ppt                         |                 |
| January  | 5     | Productivity & Workforce Management :Productivity - Definition, Various methods of measurement                         | Work Sampling               |                 |
| January  | 6     | Factors effecting productivity, Strategies for improving productivity  |                             |                 |
| February | 7     | Various methods of Job evaluation & merit rating   |                             |                 |
| February | 8     | Various incentive payment schemes  |                             |                 |
| February | 9     | Manufacturing Cost Analysis: Fixed & variable costs  |                             |                 |
| February | 10    | costing, Recovery of overheads   |                             |                 |
| February | 11    | Standard costing, Cost control, Cost variance Analysis - Labour, material  | Assignment 2                |                 |
| February | 12    | Marginal costing & contribution  |                             | ppt             |
| February | 13    | Materials Management : Strategic importance of materials in manufacturing industries                                   |                             | ppt             |
| February | 14    | Relevant costs, Inventory control models - Economic order quantity (EOQ)   |                             | ppt             |
| February | 15    | Purchase discounts, Sensitivity analysis, Inventory control systems - P,Q,Ss Systems                                   |                             | ppt             |
| February | 16    | ABC, FSN, SDE, VED and three dimensional   |                             | ppt             |
| February | 17    | Quality Management: Definition of quality, Various approaches, Concept of quality assurance systems                    | ppt                         | Assignment 3    |
| February | 18    | Costs of quality, Statistical quality Control (SQC), Variables & Attributes, X, R, P & C - charts, Acceptance sampling | ppt                         |                 |
| March    | 19    | OC - curve, Concept of AOQL, Sampling plan - Single, Double & sequential   | ppt                         |                 |
| March    | 20    | Introduction to TQM & ISO - 9000   | ppt                         |                 |
| March    | 21    | Production Planning & Control (PPC) : Introduction to Forecasting - Simple & Weighted moving average me                | Production Planning Control |                 |
| March    | 22    | Objectives & variables of PPC, Aggregate planning - Basic Concept, its relations with other decision areas             |                             |                 |
| March    | 23    | Master production schedule (MPS)   |                             |                 |
| March    | 24    | means of measuring effectiveness of PPC, Introduction to JIT, Numericals   |                             |                 |
| March    | 25    | Management Information Systems (MIS): What is MIS . Importance of MIS  |                             |                 |
| March    | 26    | Organizational & information system structure, Role of MIS in decision making  |                             | ppt             |
| March    | 27    | Organizing information systems   | ppt                         | Test 2          |
| March    | 28    | Product Design and Development: Various Approaches, Product life cycle   | ppt                         |                 |
| March    | 29    | Role 3S's - Standardization  | Value Analysis              |                 |
| March    | 30    | Simplification, Specialization, Introduction to value engineering and analysis   |                             |                 |
| April    | 31    | Role of Ergonomics in Product Design   |                             |                 |
| April    | 32    | Simplification, Specialization, Introduction to value engineering and analysis   |                             |                 |
| April    | 33    | n- Jobs-3 machines, 2 Jobs n-machines  |                             |                 |
| April    | 34    | n-Jobs m-machines Various  |                             | ppt             |
| April    | 35    | means of measuring effectiveness of PPC  | ppt                         |                 |
| April    | 36    | Introduction to JIT  | ppt                         |                 |

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Name of Institute :Aravali College of Engg. and Management  
Name of teacher with designation :Mr.Parmod Kumar  
Semester :6th  
Subject :Measurement and Instrumentation  
Department :ME (6th)

| Month    | Class | Topic/Chapter covered  | Academic activity           | Test/assignment |
|----------|-------|--|-----------------------------|-----------------|
| January  | 1     | Instruments and Their Representation : Introduction  | ppt                         | Assignment 1    |
| January  | 2     | Typical Applications of Instrument Systems   | ppt                         |                 |
| January  | 3     | Functional Elements of a Measurement System  | ppt                         |                 |
| January  | 4     | Classification of Instruments, Standards and Calibration   | ppt                         |                 |
| January  | 5     | Static and Dynamic characteristics of Instruments : Introduction, Accuracy   | instruments charactersitics |                 |
| January  | 6     | Precision, Resolution, Threshold,Sensitivity   |                             |                 |
| February | 7     | Linearity, Hysteresis, Dead Band, Backlash   |                             |                 |
| February | 8     | Drift, Formulation of Differential Equations for Dynamic Performance- Zero Order, First Order and Second order systems |                             |                 |
| February | 9     | Step, Ramp, Impulse and Harmonic Functions   |                             |                 |
| February | 10    | Inductive Self Generating and Non-Self Generating Types  |                             |                 |
| February | 11    | Electromagnetic, Electrodynamic, Eddy Current  | Assignment 2                |                 |
| February | 12    | Magnetostrictive, Variable Inductance  |                             | ppt             |
| February | 13    | Linearly Variable Differential Transformer, Variable Capacitance   |                             | ppt             |
| February | 14    | Piezo-Electric Transducer and Associated Circuits, Unbonded and Bonded Resistance Strain Gages                         |                             | ppt             |
| February | 15    | Strain Gage Bridge circuits Single Double and Four Active Arm Bridge Arrangements                                      |                             | ppt             |
| February | 16    | Temperature Compensation, Balancing and Calibration  |                             | ppt             |
| February | 17    | Ionisation Transducers, Mechano Electronic Transducers   | ppt                         |                 |
| February | 18    | Opto-Electrical Transducers, Photo Conductive Transducers  | ppt                         |                 |
| March    | 19    | Photo Volatic Transducers, Digital Transducers   | ppt                         |                 |
| March    | 20    | Frequency Domain Transducer, Vibrating String Transducer   | ppt                         |                 |
| March    | 21    | Binary codes, Digital Encoders   |                             |                 |

|       |    |   |  |              |
|-------|----|---|--|--------------|
| March | 22 | Motion, Force and Torque Measurement : Introduction, Relative motion Measuring Devices  | various instruments practice             | Assignment 3 |
| March | 23 | Electromechanical, Optical, Photo Electric, Moire-Fringe, Pneumatic   |  |              |
| March | 24 | Absolute Motion Devices, Seismic Devices, Spring Mass & Force Balance Type  |  |              |
| March | 25 | Calibration, Hydraulic Load Cell, Pneumatic Load Cell, Elastic Force Devices  |  |              |
| March | 26 | Strain Gage, Torque Transducer, Toque Meter   | ppt                                      |              |
| March | 27 | Intermediate, Indicating and Recording Elements : Introduction Amplifiers   | ppt                                      |              |
| March | 28 | Optical, Electrical Amplifying elements, Compensators   | ppt                                      |              |
| March | 29 | Pressure & Flow Measurement, Introduction : Moderate Pressure, Measurement, Monometers  | temperature sensing instruments practice | Test 2       |
| March | 30 | Elastic Transducer, Dynamic Effects of Connecting Tubing, High Pressure Transducer, Low Pressure Measurement, Calibration and Testing |  |              |
| April | 31 | Force Flow Meter, Turbine Flow Meter, Electronic Flow Meter   |  |              |
| April | 32 | Temperature Measurement : Introduction, Measurement of Temperature  |  |              |
| April | 33 | Solid Rod Thermometer, Bimetallic Thermometer, Liquid-in-Glass thermometer  |  |              |
| April | 34 | Pressure Thermometer, Electrical Methods – Electrical Resistance Thermometers   | ppt                                      |              |
| April | 35 | Thermo–Electric Sensors, Thermocouple Materials   | ppt                                      |              |
| April | 36 | Total Radiation Pyrometer, Selective Radiation Pyrometer  | ppt                                      |              |

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### Lesson Planning for the semester started w.e.f

Jän.18

Name of Institute :Aravali College of Engg. and Management  
Name of teacher with designation :Mr.Gopal Kumar Kumhar  
Subject :MMD-2  
Semester :6th  
Department :ME (6th)

| Month    | Class | Topic/Chapter covered  | Academic activity                          | Test/assignment |
|----------|-------|--|--|-----------------|
| January  | 1     | Design for Production  | ppt  | Assignment 1    |
| January  | 2     | Ergonomic and value engineering  | ppt  |                 |
| January  | 3     | Role of processing in design   | ppt  |                 |
| January  | 4     | Design considerations for casting, forging and machining   | ppt  |                 |
| January  | 5     | Variable Loading: Different types of fluctuating/ variable stresses  | Ergonomics and value engineering practices | Test 1          |
| January  | 6     | Fatigue strength considering stress concentration factor   |  |                 |
| February | 7     | surface factor, size factor, reliability factor  |  |                 |
| February | 8     | Fatigue design for finite and infinite life against combined variable stresses using Goodman and Soderberg       |  |                 |
| February | 9     | Fatigue design using Miner's equation  |  |                 |
| February | 10    | Problems   |  |                 |
| February | 11    | Shafts: Detailed design of shafts for static and dynamic loading, Rigidity and deflection consideration          |  |                 |
| February | 12    | Springs: Types of springs  | ppt  | Assignment 2    |
| February | 13    | Design for helical springs against tension and their uses  | ppt  |                 |
| February | 14    | Design of leaf springs, surging phenomenon in springs  | ppt  |                 |
| February | 15    | Design Problem   | ppt  |                 |
| February | 16    | Bearings: design of pivot and collar bearing   | ppt  |                 |
| February | 17    | Selection of ball and roller bearing based on static and dynamic load carrying capacity using load-life relation | ppt  |                 |
| February | 18    | Selection of Bearings from manufacturer's catalogue  | ppt  |                 |
| March    | 19    | Types of lubrication – Boundary, mixed and hydrodynamic lubrication  | ppt  | Assignment 3    |
| March    | 20    | Design of journal bearings using Raimondi and Boyd's Charts  | ppt  |                 |
| March    | 21    | Lubricants and their properties  |  |                 |
| March    | 22    | Gears: Classification, Selection of gears  | different gears terminology                |                 |
| March    | 23    | Force analysis   |  |                 |
| March    | 24    | Beam & wear strength of gear tooth   |  |                 |
| March    | 25    | Form or Lewis factor for gear tooth  |  |                 |
| March    | 26    | Dynamic load on gear teeth   | ppt  |                 |
| March    | 27    | Barth equation and Buckingham equation   | ppt  |                 |
| March    | 28    | Design of spur gear  | ppt  | Test 2          |
| March    | 29    | Problems   |  |                 |
| March    | 30    | Design of helical gear   | Gear Failure case study                    |                 |
| April    | 31    | Problems   |  |                 |
| April    | 32    | Design of bevel gear   |  |                 |
| April    | 33    | Problems   |  |                 |
| April    | 34    | Design of worm gear  | ppt  |                 |
| April    | 35    | Problems   | ppt  |                 |
| April    | 36    | Gear Lubrication   | ppt  |                 |

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