



Second Year

First Semester

Subject		Hrs./week			Units
		Theo.	Tut.	Lab.	
ME 2309	Mathematics (3)	3	1	-	3
ME 2311	Dynamics (1)	2	1	-	2
ME 2313	Mechanical Drawing (1)	1	-	2	2
ME 2315	Strength of Materials (1)	2	1	2	3
ME 2317	Thermodynamics (1)	2	1	-	2
ME 2319	Fluid Mechanics (1)	2	1	2	2
ME 2321	Engineering Metallurgy (1)	2	-	-	3
ME 2206	Computer Programming (2)	-	-	2	1
ME 2106	English Language (2)	1	1	-	1
Total		15	6	8	19

Second Year

First Semester

Course Number: ME 2309

Course Name: Mathematics (3)

Course content:

Function Of Several Variable (Graph Or Drawing Of Several Variables Functions, First Order Equations, Second Order Equations, Limit And Continuity), **Partial Derivatives** (First Order Partial Derivative With Constrained Variables, Second Order Partial Derivatives, Euler's Theorem, Linearization, Error In The Standard Linear Approximation, Total Differential), **Chain Rule, Extreme Values** (Extreme Values And Saddle Points, Absolute Maximum And Minimum On Closed Bonded Region, The Local Maximum And Minimum With Constraints) , **Double Integrals, Tribal Integral.**



Course Number: ME 2311

Course Name: Dynamics (1)

Course content:

Introduction To Dynamics, Kinematics Of Particles (History And Modern Applications, Basic Concepts , Newton's Laws, Units, Gravitation, Dimensions, Solving Problems In Dynamics) , **Kinetics Of Particles** (Introduction, Rectilinear Motion, Plane Curvilinear Motion, Rectangular Coordinates (X-Y), Normal And Tangential Coordinates (N-T), Polar Coordinates (R- θ), Relative Motion (Translating Axes), Constrained Motion Of Connected Particles) , **Kinetics Of Particles** (Introduction, Newton's Second Law, Equation Of Motion And Solution Of Problems, Rectilinear Motion, Curvilinear Motion, Work And Kinetic Energy, Potential Energy, Introduction, Linear Impulse And Linear Momentum, Angular Impulse And Angular Momentum, Relative Motion).

Course Number: ME 2313

Course Name: Mechanical Drawing (1)

Course content:

Fastening Means (Screw Threads, Screw Fastenings, Rivets, Keys, Cotter-Joints, Pin- Joints, springs), **Welding** (Welding and Its Use in Assembly). **Tolerances And Fittings** (Define ISO System, Tolerances, And Fittings). **Machining and Surface Texture Symbols** (Machining Symbols, Surface Roughness Symbols and Applications), **Gears** (Gears and Their Types, Cylindrical Gears, Bevel Gears, Worm and Worm Wheel, Cams, Belt and Chains), **Assembly** (Mechanical Assembly, Mechanical Dis-Assembly, Auxiliary Views, Sections).

Course Number: ME 2315

Course Name: Strength of Materials (1)

Course content:

Simple Stress And Strain, Thin-Walled Cylinders, Torsion, springs, Shear and Bending Moment in Beams.

Course Number: ME 2317

Course Name: Thermodynamics (1)

Course content:

Introduction To Thermodynamics , Basic Concept Definitions, Properties Of System, Thermal Equilibrium, Temperature, Energy, Kinetic Theory Of Gases, Heat, Work, The First Law Of Thermodynamics, Adiabatic Process, Polytrophic Process, Open Systems, The Working Fluid, Ideal (Perfect) Gas.



Course Number: ME 2319

Course Name: Fluid Mechanics (1)

Course content:

General Introduction To Fluid Mechanics And Its Properties, Fluid Static And Pressure Application, Forces On Immersed Bodies And Surfaces, Accelerated Fluid And Relative Motion, Equilibrium Of Floating Bodies, Introduction To Fluid Motion & Continuity Equation.

Course Number: ME 2321

Course Name: Engineering Metallurgy (1)

Course content:

Structure of Metals, Slip surfaces, defects in crystal, Mechanical and Physical Properties, annealing, Plastic Deformation of Metal, Cold and hot working, forming process, stress-strain curve for different materials, True stress and strain with engineering stress and strain, Griffith's Theory for Fracture, Welding, Formation of Alloys and Thermal Equilibrium Diagrams, Isomorphouse system, Applications of lever rule, Cooling curve, Plain Carbon Steel, Heat Treatment of Plain Carbon Steels.

Second Year

Second Semester

Subject		Hrs./week			Units
		Theo.	Tut.	Lab.	
ME 2310	Mathematics (4)	3	1	-	3
ME 2312	Dynamics (2)	2	1	-	2
ME 2314	Mechanical Drawing (2)	1	-	2	2
ME 2316	Strength of Materials (2)	2	1	-	2
ME 2318	Thermodynamics (2)	2	1	2	3
ME 2320	Fluid Mechanics (2)	2	1	-	3
ME 2322	Engineering Metallurgy (2)	2	-	2	2
ME 2207	Computer Programming (3)	-	-	2	1
Total		14	5	8	18
		27			



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Course Number: ME 2206

Course Name: Computer Programming (2)

Course content:

Introduction To Visual Basic And History, Structure Of A Visual Basic Application, Elements Of Integrated Development Environmental (Ide), Toolbox Controls, Properties Window, Sub Procedures And Events, Steps In Developing Application, Data Types (Constant And Variable), Declaration Of A Variable And Scoping Variables, Constants And Assignment Statement, Outputting Variable, Visual Basic Operators.

Course Number: ME 2105

Course Name: English Language (2)

Course content: Grammars, Principles of academic writing, Preparing for English tests.

Course Number: ME 2310

Course Name: Mathematics (4)

Course content:

Ordinary Differential Equation (First Order Differential Equations, Separable, Homogenous, Exact, Linear, Special M Bernoulli Equation , Riccati Equation, Clairant Equation., Second Order Differential Equation), **Vectors** (Vector In Plan, Vector In Space, Vector Product, Cross Product, Triple Product, Distance In Space, Line In The Plan, The Distance From Point To A Line, Tangent Plane And Normal Line, Equation For Plane), **Vector Function And Motion** (The Derivative Of A Vector Function, Derivative Of Dot Products And Cross Products, Derivatives Of Vectors Constant Length, Integral Of Vector Function, Direct Distance And The Unit Tangent Vector, Curvature, Unit Normal Vector), **Infinite Sequences And Infinite Series** (Converge And Diverge, Limit, Hospital's Rule, Geometric Series, A nongeometric But Telescoping Series, The Nth Term Test For Divergence, Harmonic Series, Integrate Test, Compression Test, Raito Test, Root Test, Alternating Series, Absolute Convergence) , **Power Series** (Term – By – Term Differentiation, Term – By – Term Integration, Taylor And Maclaurin Series, Taylor Polynomial Of Order N)



Course Number: ME 2312

Course Name: Dynamics (2)

Course content:

Kinetics Of Systems Of Particles (Introduction, Generalized Newton's Second Law, Work -Energy, Impulse - Momentum, Conservation Of Energy And Momentum), **Plane Kinematics Of Rigid Bodies** (Introduction, Rotation, Absolute Motion, Relative Velocity, Instantaneous Center Of Zero Velocity, Relative Acceleration) , **Plane Kinetics Of Rigid Bodies** (Introduction, General Equations Of Motion, Translation, Fixed-Axis Rotation, General Plane Motion, Work - Energy Relations, Impulse - Momentum Equations), **Introduction To Three-Dimensional** (Dynamics Of Rigid Bodies, Introduction , Translation, Fixed –Axis Rotation, Parallel-Plane Motion, Rotation About A Fixed Point, General Motion).

Course Number: ME 2314

Course Name: Mechanical Drawing (2)

Course content:

Sketch (Program Interface, Sketch Entities, Sketch Tools, 3D Sketch, Dimensions, Relations, Applications, **Isometric Parts** (Reference Geometries, Extrude, Revolve, Applications), **Isometric Parts** (Sweep, Loft, Applications), **Curves** (Composite Curves, Projected Curves, Helix, Edit Features: Fillet, Chamfer, Shell, Dome, Rib, Applications), **Assembly** (Standard Mates, Applications, Mechanical Mates, Applications), **Drawing Project** (Projects, Sections, Applications).

Course Number: ME 2316

Course Name: Strength of Materials (2)

Course content:

Stresses in Beams, Deflection of Beams, Combined Stresses, Strain Energy, Columns, Mohr's circle.

Course Number: ME 2318

Course Name: Thermodynamics (2)

Course content:

Flow Rate, Application Of Steady Flow Energy Equations, Nozzle And Throttling, Heat Exchanger, The Second Law Of Thermodynamics, Ideal Carnot Cycle, Entropy, Entropy In Process, Air Standard Cycle, Steam Plant, Gas Mixture.



Course Number: ME 2320

Course Name: Fluid Mechanics (2)

Course content:

Equations Of Motions And Their Applications, Dimensional Analysis And Similarity, Motion Of Viscous Fluids In Conduits And Definition Of Boundary Layer, Friction Losses In Pipes, Measurements Of Fluid Flow, Analysis Of Piping System, Introduction To Lubrication.

Course Number: ME 2322

Course Name: Engineering Metallurgy (2)

Course content:

Alloy Steel, AL and Cu alloys, Cast Iron, Non – Ferrous Metals and Alloys, Polymers, Corrosion, Eutectic Systems, Fe-C equilibrium phase diagram, Heat Treatments, Hardenability of Steel, Austenitic Transformation, T-T-T Diagram, Composite Materials.

Course Number: ME 2207

Course Name: Computer Programming (3)

Course content:

Visual Basic Functions, Converting Data Types, Input Box Function. Message Boxes (Msgbox Function), Control Structures (If – Then –Else), Control Structure (Select Case), Option Button Controls, Check Box Control, Loops (Repetition) Structures (For....Next Loop), Do While....Loop And Do...Loop While, Using Listbox And Combobox Controls In Visual Basic, Static One Dimension Array, Static Two Dimensional Arrays, Dynamic Array, Graphics In Visual Basic, Sub Procedure And Function.