



**DELHI COLLEGE OF
TECHNOLOGY &
MANAGEMENT(DCTM),
PALWAL**

**INSTRUCTIONAL
*PLAN***

**RECORD NO.: QF/ACD/009
Revision No.: 00**

L (3) T () P ()

Name of Faculty:

Department: Mechanical M.Tech

Course Title: Theory of elasticity

Course Number: M802A

Semester/Section: 2nd Sem

Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
1.	State of stress at a point, stress notations	SP Timoshenko	
2.	state of strain at a point and notations, states of plane stress and plane strain	SP Timoshenko	
3.	Hooke's law and generalized statement of Hooke's law, stress-strain relationships	SP Timoshenko	
4.	Concept of principal stress and strain, Mohr's circle.	Zhilun Xu	
5.	Compatibility equations, stress function, use of stress function in solution of two dimensional problems in Cartesian coordinates	SP Timoshenko	
6.	boundary conditions. Problems of cantilever	SP Timoshenko	
7.	supported beam under distributed load of uniform and uniformly variable intensity	SP Timoshenko	
8.	Use of Fourier series	Zhilun Xu	
9.	Two dimensional elasticity problems in polar coordinates	Zhilun Xu	
11.	equation of equilibrium. Axi-symmetric problems	SP Timoshenko	
12.	thick cylinder, curved bars	SP Timoshenko	
13.	Hole in a plate problem. Idea of an edge dislocation	Zhilun Xu	
14.	Torsion of straight bars	SP Timoshenko	
Syllabus till Sessional-I			
15.	elliptic and circular section. Membrane analogy	Zhilun Xu	
16.	torsion of thin rectangular section	SP Timoshenko	
17.	Application of energy method to torsion problem	SP Timoshenko	
18.	Torsion of thin tubes	SP Timoshenko	
19.	Complex variables for curvilinear coordinates	SP Timoshenko	
20.	Laplace's equation	SP Timoshenko	
21.	Complex stress function and corresponding displacements	SP Timoshenko	

22.	Curvilinear coordinates and stress components	SP Timoshenko	
23.	elliptic hole in a uniformly stressed plate	SP Timoshenko	
24.	REVISION	SP Timoshenko	
25.	REVISION	SP Timoshenko	
Syllabus till Sessional-II			



L (3) T () P ()

Name of Faculty:

Department: Mechanical M.Tech

Course Title: Design of mechanism

Course Number: M804A

Semester/Section: 2nd Sem

Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
1.	MOBILITY ANALYSIS – degree of freedom (DOF) mixed mobility	Amitabha Ghosh	
2.	total, partial and fractional DOF	Amitabha Ghosh	
3.	Closed and open chain systems	Amitabha Ghosh	
4.	structural analysis and synthesis of mechanisms	Amitabha Ghosh	
5.	Alternative design solutions, coding	Amitabha Ghosh	
6.	evaluation and selection of optimum mechanism, type synthesis	Amitabha Ghosh	
7.	number synthesis and design of mechanisms	Amitabha Ghosh	
8.	Indexes of merit, graphical, algebraic	Amitabha Ghosh	
9.	optimization techniques	Amitabha Ghosh	
Syllabus till Sessional-I			
11	matrix methods of design and analysis	Amitabha Ghosh	
12	design of function, path and motion generators	Amitabha Ghosh	
13.	structural and mechanical error	Amitabha Ghosh	
14.	design and analysis using software like ADAMS	Amitabha Ghosh	
15	Manipulators – Classification	Amitabha Ghosh	
16.	actuation and transmission systems	Amitabha Ghosh	
17.	coordinate transformation – DH notations	Amitabha Ghosh	
18.	inverse and forward kinematics	Amitabha Ghosh	
19.	manipulator dynamics from Lagrange	Amitabha Ghosh	
20.	Newtonian point of view.	Amitabha Ghosh	



Name of Faculty:

L(3) T () P ()
Department: Mechanical M.Tech

Course Title: Principle of M/c Design

Course Number: M806A

Semester/Section: 2nd Sem

Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
1.	Engineering Design; steps in designing	GE Dieter	
2.	tasks and activities, varieties of engineering	GE Dieter	
3.	design process and role of designer, iteration, decision making	GE Dieter	
4.	resource conversion, systems and devices and variety of needs, need analysis,	GE Dieter	
5.	feasibility study, preliminary design, detail design	GE Dieter	
6.	Information for need and problems associated with information, variety of information.	GE Dieter	
7.	Fundamentals of Technical Systems; system approach fundamentals	GE Dieter	
8.	assemblies and components, interrelationships	GE Dieter	
9.	creativity as means to synthesis of alternatives, estimating the order of magnitude, design records.	GE Dieter	
11	Product Planning and Development; life cycle from production to consumption and disposal	GE Dieter	
12	Description of tasks,	GE Dieter	
13.	description of design specification and activities,	GE Dieter	
Syllabus till Sessional-I			
14.	Conceptual Design; abstraction, modeling of an engineering problem;	T T Woodson	
15	iconic, analog and symbolic models;	T T Woodson	
16.	determination of dimensions, graphics	T T Woodson	
17.	visualization and synthesis	T T Woodson	
18.	characteristics of a good model, value system and criterion function.	T T Woodson	
19.	Embodiment Design; steps, rules and principles	GE Dieter	
20.	mechanical connections, modular products	GE Dieter	
21.	design for quality and cost	GE Dieter	

22.	Optimization, optimum vs. optimal. optimum and robust design	GE Dieter	
23.	Communication and reporting, preparing and presenting the report, oral vs written comm.	GE Dieter	
Syllabus till Sessional-II			



L(3) T () P ()

Name of Faculty:

Department: Mechanical M.Tech

Course Title: Computer Aided Design

Course Number: M838

Semester/Section: 2nd Sem

Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
1.	Introduction, Transformation Matrix, 2D transformation, Arbitrary Rotation about the origin	Ibrahim	
2.	Rotation by different angles, Concatenation, 2D transformation	Ibrahim	
3.	Projection on to a 2D plane, Overall scaling, Rotation about an Arbitrary Point	Ibrahim	
4.	2D Reflection, 3D Transformation, 3D scaling, 3D Rotation of Objects	Ibrahim	
5.	3D Rotation about an arbitrary Axis, 3D Visualisation-reconstruction of Three Dimensional Images.	Ibrahim	
6.	Description of Curves and Surfaces: Line Fitting, Non Linear Curve Fitting with a Power Function	Ibrahim	
7.	Curve Fitting with a High Order Polynomial, Chebyshev polynomial Fit. Fourier Series of Discrete Systems	Ibrahim	
8	Cubic Spines, Parabolic Cubic Splines, Non Parametric Cubic Spline, Boundary Conditions	Rogers and Adams	
9	Bezier Curves, Differentiation of Bezier Curve Equations, B-Spline Curve	Rogers and Adams	
11	Non Uniform Rational B-Spline(NURBS), Surface creation, Coons patch, tensor product surfaces, Bezier surface	Rogers and Adams	
12	Relational parametric surface, parametric spline surface, Lofted surfaces, spline blended surfaces	Rogers and Adams	
13.	Tangent and Twisted vectors, Blended surfaces, Application Software.	Rogers and Adams	
14.	Solid Modeling: Introduction, solid models and entities, solid representation	Rogers and Adams	
Syllabus till Sessional-I			
15	regularized Boolean operation, Half-spaces, B-Rep and CSG modeling techniques	Rogers and Adams	



Name of Faculty:

L(3) T () P ()

Department: Mechanical M.Tech

Course Title: Material Management

Course Number: M849

Semester/Section: 2nd Sem

Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
1.	Introduction: introduction to material management and productivity	AK Dutta	
2.	functions of material management, organization structures in material management	AK Dutta	
3.	role of material management techniques in improved material productivity	AK Dutta	
4.	Material planning: objectives, material requirement planning	AK Dutta	
5.	Manufacturing resource planning, JIT production planning	AK Dutta	
6.	Strategic material planning, material control: acceptance, sampling, inspection	AK Dutta	
7.	Make or buy decision, simple cost analysis, economic analysis	AK Dutta	
8	Break even analysis, break even point theory	AK Dutta	
9	Whether to add or drop a product line store management and warehousing, product explosion	DS Ammer	
11	Purchasing: importance of good purchasing system, organization of purchasing functions	DS Ammer	
12	Purchase policy and procedures, responsibility and limitations	DS Ammer	
13.	Purchasing decisions, purchasing role in new product development	DS Ammer	
Syllabus till Sessional-I			
14.	Role of purchasing role cost reduction, negotiations and purchase	DS Ammer	
15	Purchasing research: identification of right sources of supply, vendor rating,	DS Ammer	
16.	vendor certification plans, vendor and supply reliability, developing new source of supply	AK Dutta	
17.	Cost reduction: cost control vs cost reduction, price analysis	AK Dutta	
18.	Material cost reduction techniques, variety reduction	AK Dutta	

