

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI-PILANI CAMPUS
INSTRUCTION DIVISION, FIRST SEMESTER 2016-2017
COURSE HANDOUT (Part III)

In addition to Part I and Part II (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course Number : BITS F218
Course Title : General Mathematics III
Instructor-In charge : BHUPENDRA KUMAR SHARMA

Scope and Objective of the Course: The course is made for Pharmacy students keeping in mind the importance of Linear Algebra and Linear programming problems and their possible applications in various fields of science and engineering. Linear algebra begins with vectors and matrices – two of the most important practical concepts in mathematics. Whereas Linear programming is a method to achieve the best outcome in a mathematical model whose requirements are represented by linear relationships. Linear programming can be applied to various fields of study. It is used in business and economics, but can also be utilized for some engineering problems. Industries that use linear programming models include transportation, energy, telecommunications, and manufacturing.

1. Text Books:

T1: E. Kreyszc, Advanced Engineering Mathematics, 8th Edition, Wiley, 2010

T2: HA Taha, Operation Research: An Introduction, Pearson Education, 9/E, 2011.

2. Reference Books:

R1: S. Andrilli and D. Hecker, Elementary Linear Algebra by, 3rd edition, 2006, Elsevier.

R2: SS Rao, Engineering Optimization: Theory and Practice, New Ge International (P) Limited, Third Edition, 1996

R3: BS, Grewal, Higher Engineering Mathematics, 40th Edition, Khanna Publication, 2009.

3. Course Plan for General Mathematics II:

Lect. No.	Broad Topic	Sub-topics to be covered	Article
	I		
1-3	Matrices and Linear Equations	Matrix addition, multiplication and transpose	T1 (6.1-6.2)
4-6		Linear system of equations and Row equivalent forms – Matrices, Augmented matrices, Echelon form, Gauss Elimination	T1 (6.3)
7-8		Linear dependence, Rank of Matrix	T1 (6.4)
9-11		Solution of linear system: Homogeneous & Non-homogeneous system, Determinant, Adjoint matrix, Cramer's rule, Inverse matrix: Gauss Jordan Method	T1 (6.5-6.7)
12-14		Basis and Dimensions, Linear transformation of R^n	T1 (6.8)
15-16		Eigen values & eigenvectors	T1 (7.1)
	II		

17-21	Linear Programming	Introduction to LP – Formulation to LPP, Graphical solutions	T2 (2.1, 2.2, 2.4)
22-26		Algebraic solutions - Simplex method, Artificial variable method, Special cases	T2 (3.1 - 3.5)
27-30		Duality and Dual Simplex Method	T2(4.1,7.4,4.4.1)
31		Introduction to post optimal analysis	T2 (4.5)
32-36		Transportation and Assignment problem, Finding BFS, Using North-West Corner Rule, LCM & VAM, Modi's method , Hungarian Method for solving assignment problem	T2 (5.1, 5.3, 5.4)
	II		
37-40	Non-linear programming	Single variable, Unconditional optimization, Fibonacci search method, Golden Section Search Method, Gradient based method	R2 (5.7) T1 (21.1.2)

4. Evaluation Scheme:

EC No.	Evaluation Component	Duration	Weightage (in %)	Date & Time	Nature of Component
1.	Mid-Sem Exam.	90 min.	30	<TEST_1>	Close Book
2.	Comprehensive Exam.	3 hrs.	40	<TEST_C>	Close Book/ Open Book
3.	Assignments/Class performance test (Surprised)	-	30	-	Close Book/Open Book

5. Only text book and hand written notes are allowed in open book exam.

6. Chamber Consultation Hours: To be announced in the class.

7. MAKE-UP: Make-up for any component of evaluation will be given only in genuine cases of absence. **No makeup will be given for lab examination and Class performance tests/quizzes.**

8. Notices: All notices related to this course will be put on Mathematics notice board/Nalanda Website.

Instructor In-Charge

BITS F218