BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI-HYDERABAD CAMPUS
INSTRUCTION DIVISION, FIRST SEMESTER 2016-2017
<u>**COURSE HANDOUT (Part II)**</u>

01-08-2016

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 :   RAJITHA K

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. Kreyszic, 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, 3rdedition, 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		Matrix addition, multiplication and transpose	T1 (7.1-7.2)
4-5	Linear Equations and Matrices	Solving systems and Row equivalent forms – Matrices, Augmented matrices, Row reduced equivalent forms	T1 (7.3)
6-8		Homogenous systems, Solving of non-homogenous systems	R2 (3.3-3.6)
9-11		Inverse matrix, Determinant, Adjoint matrix, Cramer's rule	T1 7.6 – 7.8)
12-14		Linear dependence, Basis and Dimensions	T1 (7.4-7.5)
15-16		Linear transformation	T1 (7.9)
	II		

17-21		Introduction to LP – Formulation to LPP, Graphical solutions	T2 (2.1, 2.2, 2.4)
22-26	Linear Programming	Algebraic solutions - Simplex method, Artificial variable method, Special cases	T2 (3.3 - 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)
	III		
37-42	Non-linear programming	Single variable, Unconditional optimization, Fibonacci search method, Golden Section Search Method, Gradient based method	R2 (5.7) R1 (21.1.2)

4. **Evaluation Scheme:**

Sl. No.	Evaluation Component	Duration	Weightage (%)	Date and Time	Nature of Component
1	Test 1	60 min	20	9/9, 8.30-9.30 AM	Closed
2	Test II	60 min	15	24/10, 8.30-9.30 AM	Open
3	*Tutorial test	---	10		closed
3	Assignment	---	15		Open
4	Compre Exam	3 hours	40	03/12 FN	Closed

- **Test of 15 minutes duration will be conducted on all tutorial hours**

5. **Announcements:** All announcements in relation to the above course will be put up on the Civil Dept. Notice board.

6. **Make up policy:** Make up for the mid-semester/comprehensive examination will be given to genuine cases.

7. **Chamber consultation hours:** To be announced in the class.

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Instructor In-Charge
BITS F218

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