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**Instruction Division  
First Semester 2015-2016  
Course Handout (Part II)**

Date: 03/08/2015.

In addition to Part I (General Handout for all courses appended to the Time Table), this portion gives further specific details regarding the course.

**Course No : DE G631**  
**Course Title : Materials Technology & Testing**  
**Instructor In charge : Dr. ARUN KUMAR JALAN.**

**1. Course Description:**

Study of characteristics and technology of Metals, Plastics, rubbers, ceramics, polymer, composites, optical fibers and other modern engineering materials and their applications. Destructive and non destructive testing of materials.

**2. Scope & Objective:**

The Course is for higher degree students and is intended to focus their attention to the nature of different classes of the engineering materials. Study includes characteristics of metals, polymers, composites, ceramics and other modern engineering materials and their applications. Methods of testing the materials (destructive and non-destructive) and selection of the materials, for a given application are included.

**3. Text Book:**

**William F. Smith, Javed Hashemi and Ravi Prakash, Materials Science and Engineering** In SI Units, McGraw-Hill Companies, New Delhi Fourth Edition, Special Indian Edition, 2008

**4. Reference Books:**

- R1 William D Calister Jr. **Materials Science and Engineering: An Introduction**, John Wiley & Sons, Singapore, Sixth Edition, (2003)
- R2 E Paul Degarmo, J T Black, Ronald A Kohser, **"Materials and Processes in Manufacturing"**, John Wiley & Sons, Singapore, Ninth Edition, (2004)





## 5. Course Plan

Lecture Hrs	Learning objectives	Description	Reference
1-8	Understanding the nature of metals	Introduction to properties of materials, True Stress, True Strain, Fatigue, Fracture and Creep	Ch 6 & 7
9-16	Understanding the polymeric materials	Non Metallic materials- Plastics, Elastomers, Fibers reinforced polymeric Composites, Properties and Characteristics	Ch 10 & 12
17-22	Understanding polymer processes	Processing of Polymers and Composites	Ch 10 & 12
23-26	Understanding the ceramics	Ceramic Materials- Their properties, characterization, and Testing	Ch 11
27-30	Understanding the ceramics processing	Processing of Ceramics & Glasses	Ch 11
31-34	Overview of all properties and evaluation for design	Materials selection and Design Criteria	Ch 17 of Ref. Book 1
35-40	Destructive and Nondestructive Testing Techniques.	Destructive and Nondestructive Testing Techniques, their advantages and disadvantages, Different applications.	Ch 6 & 7

## 6. Evaluation Scheme:

EC No.	Evaluation Component	Duration	Weightage	Date & Time	Nature of Component
1	Mid semester test.	90 minutes.	25	5/10 4:00 - 5:30 PM	OB*
2	Assignments/ Seminar.		10	To be Announced in the class	OB*
3	Lab Practical/Research Activities.		20		OB*
4	Comprehensive examination.	3hrs	45	2/12 AN	CB*

\*OB = Open Book, CB = Closed book

7. Chamber Consultation Hours: Wednesday 3.30 pm to 4.30 pm

8. Notices: All Notices will be displayed in the **Department notice board** only.

**Instructor in Charge**  
**DEG 631**

