

Dept. of Metallurgical and Materials Engineering (MME)

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

BTech (MME) / First semester / Course on Intro to MME / MT IR 15 / SRS

Version October 2019

(Important details already conveyed to the class)

COURSE OUTLINE TEMPLATE Part I			
Programme	B Tech Metallurgical and Materials Engineering		
Course Title	INTRODUCTION TO METALLURGICAL AND MATERIALS ENGINEERING (Branch specific Course)		
Course Code	MTIR 15	No. of Credits	TWO
Department	MME	Faculty	Prof SankaraRaman Sankaranarayanan
Pre-requisites Course Code	NIL; (Standing as student of BTech MME first year is sufficient)		
Course Coordinator(s) (if, applicable)	Cited faculty is the course coordinator. (In case of any contingency, the HoD MME shall assign a course coordinator.)		
Session	Odd Semester 2019 – 2020; also called JULY 2019 session		
Course Teacher E-mail	raman@nitt.edu	Telephone No.	98947 02353; X 3450 (MME office)
Course Type	<input type="checkbox"/> Core course		
COURSE OVERVIEW			
<p>To provide an introduction to the contents of the BTech MME programme; to provide an insight into the activities of this department; to provide an introduction to metals and materials; To present a historical perspective on how materials have evolved; to present an overview of the metals and materials industry; to offer examples / case studies on recent developments in materials;</p> <p>(Detailed syllabus provided in the NITT website)</p>			

(Syllabus is merely indicative; emphasis placed on the students getting exposed to the field of metals and materials)

(Actual coverage of topics steered by interaction in the class)

(earlier listed as BS 102 for BTech MME)

SYLLABUS:

Historical perspective, scope of materials science and of materials engineering; Role of metals in civilization and in wars; rise and fall of emperors who conquered world; Metallurgy and materials of India; Damascus sword; Delhi iron Pillar etc.

Metals and Materials; Classification; Properties; Mechanical, electrical, thermal, magnetic, optical, decorative and its applications. Illustrative examples of practical uses of materials;

Modern materials; Bio and Nano materials; Role of metals and materials in aerospace and telecommunication, Role of metals and materials in Indian medicines; Siddha, Ayurveda, etc.

COURSE OBJECTIVES

To become familiar with the contents of the BTech (MME) programme;
to become familiar with the metals and materials industry;
to become familiar with the developments in metals and materials;

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. Become familiar with the science behind the development of metals and materials;	PO 1
2. Become familiar with current trends / developments and the prevailing industrial scenario in metals and materials;	PO 8 and PO 10

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week (two lectures per week)	Indicative Topic/s	Mode of Delivery
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1	Weeks 1 - 4	<p>Introduction to the BTech MME programme; Opportunities in employment and higher education; Introduction to the Dept. MME NITT; input on dept MME facilities and faculty; Introduction to the ongoing research and consulting activities of this dept;</p>	<p>Chalk and Talk (CT); as and when needed – with soft copy links for further reading</p>
2	Weeks 5 - 6	<p>Present industrial scenario in metals and materials; Indian and international context; prominent companies in related areas – inputs on some specific companies</p>	
3	Weeks 7 - 11	<p>Concept of engineering materials; classification of engineering materials; engineering properties; input on metals, ceramics, polymers and composites; design and selection of materials; concept of structure; terminologies; links between structure – processing – properties – performance;</p>	
4	Weeks 12 - 13	<p>Historical evolution in the domain of metals and materials; Skills and achievements of ancient India – with examples such as ancient metal production routes, Damascus sword, Delhi iron pillar, metal mirrors, metals in traditional Indian medicines;</p>	
5	Weeks 14 - 16	<p>Discussion on trends in materials development; examples such as foundry, steel industry, aero materials, semiconductor materials, nano materials, bio materials; issues related to production of metals and materials;</p> <p>(Progress of lectures and sequencing of topics – shall be modified considering responses and queries from the class)</p> <p><u>Note:</u></p>	

		(a) Efforts will be made to organize two lectures by experts – possibly one from industry and one from the academia, subject to due official approvals;	
		(b) Efforts will be made to organize one industrial visit, subject to due official approvals	

COURSE ASSESSMENT METHODS (total hundred marks; grading on relative basis)
(total of four components listed here)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Mid – term test	Likely: Week of Oct 28	One hour	Twenty marks
2, 3	Two assignments	Due respectively during the week of Oct 21 and the week of Nov 4	Preparation time may be Five hours per assignment	Twenty marks plus twenty marks, (total forty marks)
4	End semester / final exam	Vide common schedule	Two hours	Forty marks
	Compensatory Assessment	Vide prevailing guidelines	(As applicable)	(As applicable)

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

- As cited in the detailed syllabus in web site –
- Further guidance will be provided during discussion in the class -

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

Using feedback form/s, seeking input on the design, delivery and utility of this course

COURSE POLICY

Students expected to use fair means during tests and exams;

Students expected to attend all classes and contribute to discussion in the class room;

The teacher can be reached through **mobile phone / email**. IN CASE of need for extended discussion (say more than few minutes), students advised to **schedule an appointment** with the teacher.

ATTENDANCE POLICY (as stipulated by the Institute)

“(A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**”

ACADEMIC DISHONESTY & PLAGIARISM (as stipulated by the Institute)

- “Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programmes.”

For APPROVAL

Course Faculty

CC-Chairperson

HOD