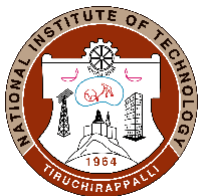




DEPARTMENT OF Metallurgical and Materials Engineering

COURSE PLAN – PART I			
Name of the programme and specialization	B Tech in Metallurgical and Materials Engineering		
Course Title	MTPE17 Biomaterials		
Course Code	MTPE17	No. of Credits	3
Course Code of Pre-requisite subject(s)	nil		
Session	January _2020_	Section (if, applicable)	Nil
Name of Faculty	Dr. N. Ramesh Babu	Department	MME
Official Email	nrb@nitt.edu	Telephone No.	9944932221
Name of Course Coordinator(s) (if, applicable)	NA		
Official E-mail		Telephone No.	
Course Type	Elective course		
<b>Syllabus (approved in BoS)</b>			
<p>Need for biomaterials; Salient properties of important material classes for different bio-implant applications. Introduction biodegradable implant materials.</p> <p>Processing and properties of different biomaterials; Nanomaterials and nanocomposites for medical applications; Nanostructured coatings for bio-implants.</p> <p>Mechanical property evaluation and physico-chemical characterization of biomaterials; In-vitro and In-vivo evaluation of biomaterials.</p> <p>The structure and composition of hard tissues, Bone biology: Introduction to tissue engineering; Applications of tissue engineering; Biomaterials for drug delivery applications.</p> <p>Biomaterials worldwide market, technology transfer and ethical issues; Standards for biomaterials and devices</p>			
<b>COURSE OBJECTIVES</b>			
The objective of this course is to provide students a fundamental understanding of different materials for biomedical-applications and their in-vitro and in-vivo characteristics.			
<b>MAPPING OF COs with POs</b>			
Course Outcomes	Programme		



	<b>Outcomes (PO)</b> (Enter Numbers only)
1. At the end of the course student will be able Understand the properties of different biomaterials, know the advantages and disadvantages of different biomaterials and select materials for different applications.	1,2,11
2. Understand the processing and testing of biomaterials	2,5
3. Characterize the biomaterials for their physico-chemical properties and analyze the cell-material interactions	1,2
4. Understand the basics of tissue engineering.	1
5. Design and develop new biomaterials for different biomedical applications	2,3,4,5,11

<b>COURSE PLAN – PART II</b>				
<b>COURSE OVERVIEW</b>				
The course provide students a fundamental understanding of different materials for biomedical-applications and their in-vitro and in-vivo characteristics.				
<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>				( Add more rows)
<b>S.No.</b>	<b>Week/Contact Hours</b>	<b>Topic</b>	<b>Mode of Delivery</b>	
1.	I-III	Introduction to different biomaterials	Classroom teaching + Guest Lectures + Exposure to the facilities available at NITT/Research Labs/Industry	
2.	IV-VI	Biomaterials processing and characterization		
3.	VII-IX	Biocompatibility and bioactivity evaluation; Mechanical properties evaluation		
4.	X-XII	Bone biology and Tissue engineering		
5.	XIII-XIV	Biomaterials worldwide market, technology transfer and ethical issues		
<b>COURSE ASSESSMENT METHODS (shall range from 4 to 6)</b>				
<b>S.No.</b>	<b>Mode of Assessment</b>	<b>Week/Date</b>	<b>Duration</b>	<b>% Weightage</b>
1	One Assignment	X- XIV week	-----	10
2	Seminar and write-up	XIII- XIV week	30 min presentation	15
3	One cycle test	Around IX week	1.5 h	25
	<b>Compensation Assessment* Re-test</b>	XII week	1.5 h	25 (If any student misses 1 <sup>st</sup> cycle test for



	Guest Lectures (2 lectures subjected to Institute approvals)	After VIII week	1 h each	medical reasons) Nil
	Attendance	-----	-----	Nil
4	<b>Final Assessment *</b> End semester exam based on classroom teaching	Around XV	3 h	Minimum 75% attendance required for writing the semester examination as per institute norms  50

**\*mandatory; refer to guidelines on page 4**

**COURSE EXIT SURVEY** (mention the ways in which the feedback about the course shall be assessed)

The feedback from students will be assessed based on the questionnaire prepared by the institute and expected attainment to be 75%.

**COURSE POLICY** (including compensation assessment to be specified)

The students are expected to attend all the classes except for medical reasons. Minimum attendance of 75% is required for writing the semester examination.

Apart from technical content and presentation, plagiarism will be checked for the write-up on seminar topic

**MODE OF CORRESPONDENCE (email/ phone etc)**

The Course Coordinator is available for consultation at any time.

Students can also contact me at any time through phone or by e-mail.

The phone number and email id will be given to the students at the beginning of the course

**COMPENSATION ASSESSMENT POLICY**

Retest will be conducted for the portion of the course completed.



**ATTENDANCE POLICY** (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**

- 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.

**ADDITIONAL INFORMATION, IF ANY**

**The Course faculty is available for consultation at any time**

**Students can also contact faculty through e-mail/sms (or) meet in person in the department. Grading as per the Institute Policy**

**FOR APPROVAL**

FOR APPROVAL

*N. Ramesh Babu*  
Course Faculty \_\_\_\_\_

CC- Chairperson \_\_\_\_\_

HOD *S.M. Ravi* \_\_\_\_\_



**Guidelines**

- a) The number of assessments for any theory course shall range from 4 to 6.
- b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.