

**DEPARTMENT OF PRODUCTION ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI - 620 015**

COURSE OUTLINE TEMPLATE			
Course Title	Casting and Welding Technology		
Programme	B.Tech. Production Engineering – III Semester		
Course Code	PRPC 11	No. of Credits	03
Department	Production Engineering	Faculty	Dr. P. Sathiya / Dr. D. Lenin Singaravelu
Pre-requisites Courses	Basic concepts of Chemistry, Physics, Introduction to Production Processes.		
Course Coordinator(s) (if, applicable)	-		
Teacher(s) /Tutor(s) Email	psathiya@nitt.edu dlenin@nitt.edu	Mobile No. :	9443494090 9486001193
Course Type	Core Course		
Course overview			
<p>Casting and welding technology explains the basic concepts of two important manufacturing processes namely casting and welding. The first two units covers the basics about casting processes, the next three about the welding processes.</p> <p>This course explains in detail about the types, advantages, disadvantages, applications associated with each type of casting and welding processes. The information given in this course will help the students in selecting suitable types of welding and casting process for a particular material by understanding the problems encountered with different welding and casting processes.</p>			
Course Objectives			
<ul style="list-style-type: none"> • To give an introduction about the fundamental concepts of manufacturing processes. • To make the students to understand how the different components in day to day life, the products are manufactured with the help of casting and welding processes. • To help the students in determining the input parameters in casting and welding processes for controlling the product quality. 			

COURSE OUTCOME (CO)	
Course outcomes	Aligned Program Outcomes (PO)
<ul style="list-style-type: none"> Summarize the fundamentals in patterns, cores, sand properties and molding, including special techniques and CAD/CAM applications. Understand various casting techniques, heat treatments, defects and inspections. Design a casting with metallurgical, design and economic consideration. Understand the different types of welding. Analyze the parameters that influences welding. Understand the application of various welding processes. 	PO 1, PO2, PO3, PO11

COURSE TEACHING AND LEARNING ACTIVITIES			
S.No	Week	Topic	Mode of Delivery
1.	1	Introduction to manufacturing processes, casting introduction, core making processes, gating system	PPT / chalk and talk
2.	2	Types of casting - centrifugal casting, investment casting, continuous casting, low pressure casting	PPT / chalk and talk
3.	3	Melting and quality control of various steels and non-ferrous alloys, casting defects	PPT / chalk and talk
4.	4	Inspection and testing of castings, manufacturing of cast iron	PPT / chalk and talk
DESCRIPTIVE ASSESSMENT-1			
5.	5	Arc welding power sources, different arc welding processes	PPT / chalk and talk
6.	6	Solid welding process, brazing and adhesive bonding	PPT / chalk and talk
7.	7	Metal surfacing and spraying thermal cutting processes	PPT / chalk and talk

8.	8	Welding of advanced materials, welding of plastics, A-TIG/Hot wire TIG welding	PPT / chalk and talk	
9.	9	Types of joint configuration and welding position	PPT / chalk and talk	
10.	10	Design of weldments and joints	PPT / chalk and talk	
DESCRIPTIVE ASSESSMENT-2				
	11	Inspection and testing of welding	PPT / chalk and talk	
IN CLASS ASSIGNMENT				
	12	Special welding processes	PPT / chalk and talk	
COMPENSATION ASSESSMENT				
DESCRIPTIVE SEMESTER				
COURSE ASSESSMENT METHODS				
S.No	Mode of assessment	WEEK/DATE	DURATION	% WEIGHTAGE
1	DESCRIPTIVE ASSESSMENT -1	End of 4 weeks	1 Hour	20%
2	DESCRIPTIVE ASSESSMENT -2	End of 10 weeks	1 Hour	20%
3	In class Assignment	End of 11 weeks	1.5 Hours	10%
4	Compensation Assessment	End of 12 weeks	1 Hour	20%
5	Descriptive Semester exam	End of 12 semester	3 Hours	50%
ESSENTIAL READINGS : Textbooks, Reference books website addresses, journals, etc				
TEXTBOOKS:				
<ol style="list-style-type: none"> 1. P.L.Jain “Principles of foundry Technology” Tata Mc Graw Hill Publications. 2. Peter Beelay, “Foundry Technology”, Butterworth Heinemann Publications. 3. Dr.R.S.Parmer “Welding processes and Technology” Khanna Publications. 				
REFERENCES				
<ol style="list-style-type: none"> 1.H.S.Bawa “Manufacturing Technology-I” Tata Mc Graw Hill Publications New Delhi, 2007 2. S.V.Nadkarni, Modern Arc Welding Technology, Oxford & IBH Publishing Co. Pvt. Ltd 				
COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)				
At the end of the semester students will give feedback online (MIS) about the various aspects of course handling like communication, clarity in delivery the technical concepts etc., suggestions are also got from the students.				


COURSE POLICY (Including plagiarism, academic honesty, attendance, etc.)

- Students should attend the classes regularly and strict disciplines have to be maintained in the class room.
- Students absent for any of the continuous assessments due to genuine reasons are permitted to attend the compensation assessment. If students didn't attend both of the assessments (due to genuine reasons and proper proof) then compensation assessment will be held for 40 marks.
- 75% attendances is mandatory.
- The minimum pass for the course is 35% out of 100.

ADDITIONAL COURSE INFORMATION

The course faculty is available for discussion in the department after class hours. Students can interact with the faculty at psathiya@nitt.edu / dlenin@nitt.edu

FOR SENATE'S CONSIDERATION


(Dr. P. Sathiya)


(Dr. D. Lenin Singaravelu)

Course faculty


CC - chairperson


HOD