



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

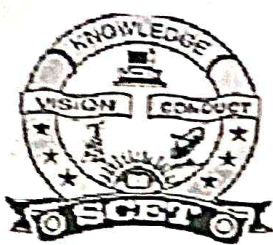
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Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT MECHANICAL ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
20 ME 3T03	PRODUCTION TECHNOLOGY	III	Mechanical Engineering	6	2021-22	25-10-2021
COURSE OUTCOMES						
CO1	Explain various metal casting processes. [K2]					
CO2.	Illustrate melting furnace working principle and solidification processes. [K2]					
CO3.	Explain various welding techniques, soldering and brazing. [K2]					
CO4.	Summarize various hot working and cold working methods of metals. [K2]					
CO5.	Explain plastics processes and Rapid Prototyping. [K2]					
UNIT	Outcomes / Bloom's Level	Topics No.	Topics/Activity	Text Book /Reference	Contact Hour	Delivery Method
CASTING PROCESSES						
I	CO1. Explain various metal casting processes. [K2]	1.1	Basic casting process and its characteristics	T1, T2, R1	1	PBL,FC, PPT, Videos
		1.2	Patterns and Pattern making	T1, T2, R1	2	
		1.3	Pattern allowances and their application	T1, T2, R1	2	
		1.4.	Principles and design of Gating systems	T1, T2, R1	1	
		1.5.1	Special moulding methods and processes	T1, T2, R1	1	
		1.5.2	CO ₂ & Shell moulding processes	T1, T2, R1	1	
		1.5.3	Machine moulding	T1, T2, R1	1	
		1.6.1	Centrifugal Casting	T1, T2, R1	1	
		1.6.2	Cold & Hot chamber Die Casting	T1, T2, R1	1	
		1.6.3	Investment Casting processes	T1, T2, R1	1	
CBS		1.7	(i) Lost Foam casting, (ii) Ice casting formation	Internet	1	PPT, Videos
Total					13	



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MELTING AND SOLIDIFICATION						
II	CO2. Illustrate melting furnace working principle and solidification processes. [K2]	2.1.	Crucible melting and cupola operation	T1, T2, R3	2	FC, PPT, PBL, Videos
		2.2	steel making processes	T1, T2, R3	2	
		2.3	Solidification of casting.	T1, T2, R1	2	
		2.4	Solidification of pure metal and alloys	T1, T2, R1	2	
		2.5	short & long freezing range alloys	T1, T2, R1	2	
		2.6	Principles and design of Rising system .	T1, T2, R1	1	
CBS		2.7	(i) Vacuum Arc Double Electrode Remelting (VADER)	Internet		PPT, Videos
TOTAL					11	
WELDING PROCESSES						
III	CO3. Explain various welding techniques, soldering and brazing. [K2]	3.1	Classification of welding process	T1, T2, R2	2	Chalk & Talk, PPT, PBL, Videos
		3.2	Types of Welded joints and their characteristics	T1, T2, R2	2	
		3.3	Welding processes: Gas welding and cutting	T2, R1, R2	1	
		3.4	Friction welding, Induction welding	T1, T2, R1	2	
		3.5	Explosive welding, Laser welding	T1, T2, R1	2	
		3.6	Soldering & Brazing	T1, T2, R1	1	
		3.7	Heat affected zones in Welding	T1, T2, R1	1	
		3.8	Welding defects.	T1, T2, R1	2	
CBS		3.9	(i) Advanced Arc welding, (i) Friction Stir Welding.	Internet	2	PPT, Videos
TOTAL					15	
MECHANICAL WORKING OF METALS - EXTRUSION OF METALS						
IV	CO4. Summarize various hot working and cold working	4.1	Hot and cold working processes,	T1, T2, R3	2	
		4.2	recovery, recrystallization and grain growth analysis	T1, T2, R3	1	
		4.3	Theory of rolling, Fundamentals	T1, T2, R3	1	



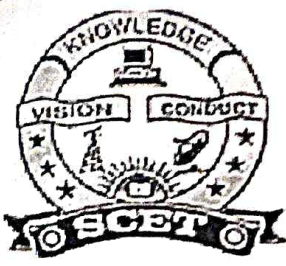
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	methods of metals. [K2]	4.4	Types of Rolling mills and products	T1, T2, R3	2	Chalk & Talk, PPT, Videos
		4.5	Analysis of rolling process	T1, T2, R3	1	
		4.6	estimation of power requirement	T1, T2, R3	1	
		4.7	Introduction of extrusion process and its characteristics	T1, T2, R3	1	
		4.8	Press working operations and their characteristics	T1, T2, R3	1	
		4.9	Extrusion of metals	T1, T2, R1	1	
		4.10	Drawing processes and its force analysis	T1, T2, R1	1	
		4.11	Hot and Cold spinning	T1, T2, R1	1	
CBS		4.12	Technology Innovation in Aluminum Products.	Internet	1	PPT Videos
TOTAL					14	
PLASTIC PROCESS & RAPID PROTOTYPING						
.V	CO5. Explain plastics processes and Rapid Prototyping. [K2]	5.1	Plastics processing methods & Equipment (blow & injection molding),	T1, T2, R1	2	Chalk & Talk, PPT Videos
		5.2	Introduction to powder metallurgy	T1, T2, R1	2	
		5.3	Fundamentals of Rapid Prototyping Technologies	T1, T2, R1	2	
		5.4	Stereo lithography	T1, T2, R1	1	
		5.5	Selective Laser Sintering	T1, T2, R1	1	
		5.6	Laminated Object Manufacturing	T1, T2, R1	1	
		5.7	Fused Deposition Modeling	T1, T2, R1	1	
		5.8	3D Printing.	T1	1	
CBS		5.9	Plastics in Biomedical Applications, 4D Printing.	Internet	1	PPT, Videos
TOTAL					12	
CUMULATIVE PROPOSED PERIODS					65	
Text Books:						



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S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
T1	S Kalpakjian, S R. Schmid, Manufacturing- Engineering and Technology, 7 th Edition, Pearson publications, 2014.
T2	P.C Sharma, Production Technology, S.Chand and Co. Ltd., 2014.
T3	Gerardus Blokdyk, Rapid Prototyping, Emereo Pty Limited, 3 rd Edition, 2012.

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
R1	R K Jain , Production Technology ,17 th Edition, Khanna Publishers ,2014
R2	P.N. Rao, Manufacturing Technology - Foundry, Forming and Welding, 4th Edition, TMH- 2013.
R3	G.Thirupati Reddy, Production Technology, Scitech Publications, 2013.

Web Details

	nptel.ac.in/courses/107103012/module2/lec1.pdf
	nptel.ac.in/courses/112107144/13
	nptel.ac.in/courses/107103012/module4/lec1.pdf
	nptel.ac.in/courses/112107144/27
	nptel.ac.in/courses/113104058/mme pdf/Lecture16.pdf

	Name	Signature with Date
i.	Faculty	Mr. N Bulli Raju
ii.	Faculty II (for common Course)	Mr. Abdul Azeez
iii.	Faculty III (for common Course)	
iv.	Course Coordinator	Dr. Francis Luther King M
v.	Module Coordinator	Dr. Sanjeev Kumar G
vi.	Programme Coordinator	Dr. Gopichand A


Principal