

KRISHNASAMY

College of
ENGINEERING & TECHNOLOGY

Approved by AICTE & Affiliated to Anna University
Anand Nagar, Nellikuppam Main Road, S. Kumarapuram, Cuddalore - 607 109, Tamil Nadu.
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DEPARTMENT OF MECHANICAL ENGINEERING

30.11.2023

CIRCULAR

Ref.: KCET/MECH/VAC/CIRCULAR/2022-23/01.

The following Value Added Course will be conducted during the academic year 2022-2023. The course will be conducted from 23.01.2022 to 28.01.2023. Students are instructed to register their names in the course allotted to them.

Note: Students are instructed to attend the program without fail.

S.No.	Course Code	Name of the Course	Year	No. of Period	Course Coordinator
1	ME-VAC2201	3D Printing	IV	30	Er.L.Purushothaman, Asst.Prof
2	ME-VAC2202	Fundamentals of Electric Vehicles	III	30	Er.G.Senthilvel, Asst.Prof

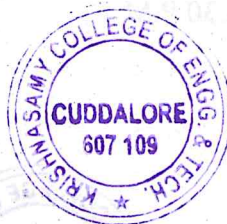
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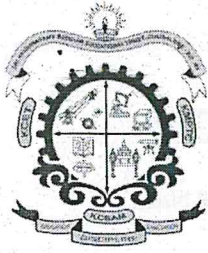
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SYLLABUS

Subject Code/ Subject Name: ME-VAC2201 - 3D PRINTING

Duration: 30 Hours

COURSE OBJECTIVES

- Demonstrate knowledge of key historical factors that have shaped manufacturing over the centuries
- Explain current and emerging 3D printing applications in a variety of industries
- Describe the advantages and limitations of each 3D printing technology
- Evaluate real-life scenarios and recommend the appropriate use of 3D printing technology
- Identify opportunities to apply 3D printing technology for time and cost savings

Module I: INTRODUCTION

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Introduction to Design, Prototyping fundamentals. Introduction to 3D printing, its historical development, advantages. Commonly used terms, process chain, 3D modelling, Data Conversion, and transmission, Checking and preparing, Building, Post processing, RP data formats, Classification of 3D printing process, Applications to various fields.

Module II: LIQUID BASED 3D PRINTING

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Stereo lithography apparatus (SLA): Models and specifications, process, working principle, photopolymers, photo polymerization, layering technology, laser and laser scanning, applications, advantages and disadvantages, case studies.

Solid ground curing (SGC): Models and specifications, process, working principle, applications, advantages and disadvantages, case studies

Module III : SOLID BASED 3D PRINTING

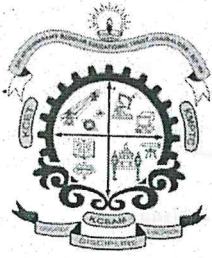
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Laminated object manufacturing (LOM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies. Fused Deposition Modeling (FDM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies, practical demonstration

Module IV : RAPID MANUFACTURING PROCESS OPTIMIZATION

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Factors influencing accuracy, data preparation errors, part building errors, errors in finishing, influence of part build orientation.



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Module V : MEDICAL AND BIO ADDITIVE MANUFACTURING

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Customized implants and prosthesis: Design and production. Bio-Additive Manufacturing, Computer Aided Tissue Engineering (CATE) and their Case Studies.

Total No. of Periods 30

COURSE OUTCOMES

- Demonstrate knowledge of key historical factors that have shaped manufacturing over the centuries Explain current and emerging 3D printing applications in a variety of industries
- Describe the advantages and limitations of each 3D printing technology
- Evaluate real-life scenarios and recommend the appropriate use of 3D printing technology
- Identify opportunities to apply 3D printing technology for time and cost savings
- Discuss the economic implications of 3D printing including its impact on startup businesses and supply chains
- Design and print objects containing moving parts without assembly

REFERENCES

1. Chua C.K., Leong K.F. and LIM C.S Rapid prototyping: Principles an Applications, World Scientific publications, 3rdEd., 2010
2. D.T. Pham and S.S. Dimov, "Rapid Manufacturing", Springer, 2001
3. Terry Wohlers, " Wholers Report 2000", Wohlers Associates, 2000
4. Paul F. Jacobs, " Rapid Prototyping and Manufacturing"–, ASME Press, 1996
Ian Gibson, Davin Rosen, Brent Stucker "Additive Manufacturing Technologies, Springer, 2nd Ed, 2014.

f. Prabhu
25/11/22

HOD ETC