

SHRI VENKATESHWARA UNIVERSITY



Syllabus

M.TECH - PART TIME Production Engineering IVth SEMESTER

(Three Years Post Graduation Programme)

(w.e.f. 2019-20)

**SCHOOL OF ENGINEERING &
TECHNOLOGY**

Production Engineering
PART TIME
SEMESTER-IV

Sl. No	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	WPR-401	Modern Machining Processes	3	0	0	20	10	30		70		100	3
2	WPR-041	Quality Management	3	0	0	20	10	30		70		100	3
3	WPR-411	Design Practice Lab	0	0	4				25		25	50	2
4	WPR-441	Mini-Project	0	0	4				50		50	100	2
		Total										350	10

Course:- M.Tech

Subject:- Modern Machining Processes

Max. Marks: a) Internal/Practical- 30
b) External- 70

Year/Semester:- II/IV

Subject Code:- WPR-401

Credit Hours		
L	T	P
3	0	0

Syllabus Contents:

UNIT-I

Modern Machining Processes; Non-traditional machining: Introduction, Specific Applications and Advantages over Traditional Machining Processes; Need of High production rate machining.

Mechanical Non-Traditional Machining Processes; Ultrasonic Machining, Abrasive Jet Machining, Water Jet Machining, and Abrasive Water Jet Machining; Process details, parametric effects, recent advancements and modelling.

UNIT-II

Thermal Non-Traditional Machining Processes; Electro discharge Machining, Plasma Arc Machining, Electron Beam Machining, and Laser Beam Machining; process, parameters, recent advances and modelling.

UNIT-III

Chemical and Electrochemical processes; Chemical Machining, Electro Chemical Machining and Electrochemical grinding.

Hybrid-type systems; Electro Chemical Discharge Machining, Ultrasonic-assisted Electro Discharge Machining, ELID during grinding and other types,

UNIT-IV

High Production Rate Machining and Grinding; Designing suitable tooling, cutting fluid application; alternative processes- hot machining, stretch machining, etc.; obstacles faced and possible remedies.

UNIT-V

Micro and Nano machining, Environment friendly machining.

Intelligent Manufacturing Systems: Fuzzy, Neural Networks, Genetic Algorithms to be applied in smart / digital manufacturing. Industry 4.0: Cyber Physical Manufacturing System.

Reference Books:

1. "Modern Machining Processes" - P.C. Pandey and H.S. Shan, Tata McGraw-Hill Publication.
2. "Non-Conventional Machining" - P.K.Mishra, Narosa Publishers.
3. "Advanced Machining Processes – Nontraditional and Hybrid Machining Processes"- H.A.G. El-Hofy, McGraw-Hill.
4. "Manufacturing Science"- A. Ghosh and A.K. Mallik, East-West Publications.
5. "Manufacturing Engineering and Technology" - S. Kalpakjian, Addison Wesley.
6. "Materials and Processes in Manufacturing" - E.P. DeGarmo, J.T. Black and R.A. Kohser, Prentice Hall of India.
7. "A Text Book of Production Technology" - O.P. Khanna and M. Lal, Dhanpat Rai and Sons.
8. "Rapid Prototyping: A Brief Introduction"- A. Ghosh, East West Publication.
9. "Manufacturing Processes"- Amstead, Ostwald and Begeman, John Wiley and Sons.
10. "Micromachines", I. Fujimasa, Oxford University Press.
11. "Precision Engineering in Manufacturing", R.L. Murty, New Age International Publishers.
12. "Laser Machining and Welding" - N. Rykalin, A. Uglov and A. Kokora, Mir Publishers, Moscow.

Course:- M.Tech
Subject:- Quality Management
Max. Marks: a) Internal/Practical- 30
b) External- 70

Year/Semester:- II/IV
Subject Code:- WPR-041

Credit Hours		
L	T	P
3	0	0

Syllabus Contents:

UNIT-I

Basic concepts, definitions and history of quality control, Quality function and concept of quality cycle, Quality policy and objectives, Quality considerations in design, Economics of quality and measurement of the cost of quality, definitions, classifications, Quality Cost Matrix, Evaluation of Quality Costs. Taguchi's Quality Loss Function.

UNIT-II

Process control: Upper and Lower Specification Limits, Accuracy and Precision. Process Capability, Potential Capability and Actual Capability. Use of control charts and process engineering techniques for implementing the quality plan.

UNIT-III

Total Quality Control and Management, definition, vision and philosophy, Concepts of TQM, Concepts of customer centered environment, Golden Rules of TQM, the PDCA Cycle, Tools and Techniques, Implementation of TQM, Waste Elimination, the 5S campaign

UNIT-IV

Flow Chart, Pareto analysis, Cause and Effect Diagram, Force Field Analysis, Brain Storming, Quality Circle, Quality Function Deployment, Just-In- Time Approach, Quality Standards, ISO 9000 Standard, Implementation and Registration.

References:

1. "Quality Control Handbook" - J. Juran, McGraw-Hill Book Company.
2. "Quality Planning and Analysis" - M. Juran, F. M. Gryana, Tata McGraw Hill (3rd Ed.).
3. "Statistical Quality Control" - M. Mahajan, Dhanpat Rai Publication.
4. "Handbook of Total Quality Management" - R.P. Mohanty and R.R. Lakhe, Jaico Publishing House.
5. "Total Quality Management" - D. H. Besterfield, et al., Pearson Education, Asia.
6. "Quality Control and Industrial Statistics" - A.J. Duncan, Richard D. Irwin Inc., USA.

Course:- M.Tech

Subject:- Design Practice Lab

Max. Marks: a) **Internal/Practical-** 25
b) **External-** 25

Year/Semester:- II/IV

Subject Code:- WPR-411

Credit Hours		
L	T	P
0	0	4

Syllabus Contents:

1. Design of components of machine tools, cutting tool, other toolings, metal working processes, etc.
2. Stress analysis of components of machine tools, cutting tool, other toolings, metal working processes, etc. under different types of loading conditions using standard software such as ANSYS, etc.
3. Designing for New Product Development.

Course:- M.Tech

Subject:- Mini Project

Max. Marks: a) Internal/Practical- 50

b) External- 50

Year/Semester:- II/IV

Subject Code:- WPR-441

Credit Hours		
L	T	P
0	0	4

Course Outcomes: At the end of the course, the student will be able to:

1. Identify structural engineering problems reviewing available literature.
2. Study different techniques used to analyze complex structural systems.
3. work on the solutions given and present solution by using his/her technique applying engineering principles.

Syllabus Contents:

Mini Project will have mid semester presentation and end semester presentation. Mid semester presentation will include identification of the problem based on the literature review on the topic referring to latest literature available.

End semester presentation should be done along with the report on identification of topic for the work and the methodology adopted involving scientific research, collection and analysis of data, determining solutions highlighting individuals' contribution.

Continuous assessment of Mini Project at Mid Sem and End Sem will be monitored by the departmental committee.