# GANPAT UNIVERSITY

## FACULTY OF ENGINEERING & TECHNOLOGY

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|---|---|---|---|
| Programme | Bachelor of Technology | Branch/Spec. | Mechatronics Engineering |
| Semester | VII | Version | 2.0.0.0 |
| Effective from Academic Year | 2017-18 | Effective for the batch Admitted in | July 2014 |
| Subject code | 2ME703 | Subject Name | PRODUCTION TECHNOLOGY |

| Teaching scheme | | | | | | Examination scheme (Marks) | | | |
|---|---|---|---|---|---|---|---|---|---|
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 3 | 0 | 1 | 0 | 4 | Theory | 40 | 60 | 100 |
| Hours | 3 | 0 | 2 | 0 | 5 | Practical | 25 | 25 | 50 |

Pre-requisites:

- Students should have the basic knowledge of Manufacturing Processes.

Learning Outcome:

After learning this course, student should be able to:

- The students will be able to Model the material removal in various modern manufacturing processes
- Analyze the processes and evaluate the role of each process parameter during machining of various advanced materials.
- Solve the various problems for the given profiles to be imparted on the work specimens.
- Select the best process out of the available various advanced manufacturing processes for the given job assignment.
- Understand requirements to achieve maximum material removal rate and best quality of machined surface while machining various industrial engineering materials.

Theory syllabus

| Unit | Content | Hrs |
|---|---|---|
| 1 | Cutting Tool:<br>Types of single point and multi-point tools, Tool bit, Tipped tools, Form tools, Tool geometry and tool signature, Its systems, Tool materials, Positive and negative rake cutting, Recent developments in cutting tool materials, Selection of cutting tool from manufactures catalogue. | 05 |
| 2 | Theory of Metal Cutting and Economics of Machining Process:<br>Orthogonal and oblique cutting, theory of chip formation, Types of chips, Thickness ratio and shear plane angle, Forces and power in machining, Concept of machinability, Tool wear and tool life, Economics of machining, Cutting fluids, Types, Properties and scope of use. Thermal Analysis. | 10 |
| 3 | Analysis of Machine Tool:<br>Study of general features relating to frames, Slides, Transmission of motion & power. | 05 |
| 4 | Gear and Thread Manufacturing:<br>Different types thread manufacturing methods and tooling involved study of different gear generating and forming methods with their special features, Gear finishing processes. | 05 |
| 5 | Newer Machining Techniques:<br>Study of unconventional newer machining techniques EDM, USM, AJM, ECM EBM, LBM, Wire Cut EDM, Plasma, and WJM Machining Processes. | 10 |
| 6 | Jigs and Fixtures:<br>Definition, Its importance in mass production, Design principles, Types of locating & clamping devices, Jig bushes, Types of drilling jigs, Types of fixtures | 04 |
| 7 | Press Tool Design:<br>Design of blanking piercing, Drawing and bending dies. | 06 |

Practical content

The term work shall be based on experimental and analytical work on topics mentioned above.

| Text Books | |
|---|---|
| 1 | P.C. Sharma, “Production Engineering.” Published by S .Chand, New Delhi. |
| 2 | R.K. Jain, “Production Engineering”. , Khanna Publishers, New Delhi. Reference |
| Reference Books | |
| 1 | Serope Kalpakjian & Steven R , “Manufacturing Engineering & Technology,” Pearson Education Asia, New Delhi. Published 1994. |
| 2 | H.M.T , “Production Technology”, Tata McGraw-Hill, New Delhi. |
| 3 | Pandey & Singh, “Production Engineering Science”, Standard Publishers, Delhi |
| 4 | Geoffrey Boothroyd, “Fundamentals of Metal Machining and machining tool” ,Tata McGraw-Hill, New Delhi |