

SHRI VENKATESHWARA UNIVERSITY



Syllabus

M.TECH

Production Engineering

(PART TIME)

Ist SEMESTER

(Three Years Post Graduation Programme)

(w.e.f. 2019-20)

SCHOOL OF ENGINEERING & TECHNOLOGY

Course:- M.Tech

Subject:- Advances In Forming And Joining Processes

Max. Marks: a) Internal/Practical- 30

b) External- 70

Year/Semester:- I/I

Subject Code:- WPR-101

Credit Hours		
L	T	P
3	0	0

Syllabus Contents:

UNIT-I

Review of Theory of Elasticity: Stress and Strain tensor, stress and strain transformation, differential equation of equilibrium, Mohr's circles (three dimensional stress situation), Plane stress and Plane strain.

UNIT-II

Review of theory of Plasticity: Stress space, Yield criterion, Von-Mises, Tresca's yield criterion, Yield Surface, Slip Line Field theory, Stress-Strain relationships - treatment involving differential equation, Upper and Lower bound theorem.

UNIT-III

Metal forming processes and analysis: Drawing and extrusion, rolling, forging, bending, High Energy density metal forming Processes, Powder metallurgical processes.

Advanced Casting Processes: Evaporation casting process, vacuum sealed process, shell mould casting, Rapid Prototyping and Tooling.

UNIT-IV

Review of Basic welding process and classification, power sources, arc and electrode characteristics, electrode selection, Critical and Precision welding processes like: PAW, LBW, EBW, USW etc.

UNIT-V

Welding of Ceramics, Plastics, Composites, Welding Metallurgy, HAZ, Weldability of Plain Carbon Steels, Stainless Steel, Cast Iron, Aluminium and its alloys, Residual stresses and distortion, testing of welding joints.

References:

1. "Introduction to the Theory of Theoretical and Experimental Analysis of Stress and Strain" - Durelli, Phillip's and Tsao, McGraw Hill Book Co.
2. "Theory of Elasticity" - Timoshenko and Goodier, McGraw Hill Book Co.
3. "Engineering Plasticity" - Johnson and Mellur, Van Nostrand-Reinhold Co.
4. "Introduction to the Theory of Plasticity - Metal Forming Applications" - O. Hoffman and G. Sachs, McGraw Hill Book Co.
5. "Introduction to Theory of Plasticity" - Mendelson.
6. "Principles of Metal Casting" - Heine, Loper and Rosenthal, TMH Publication
7. "Principles of Foundry Technology" - P.L. Jail, TMH Publications
8. "Welding for Engineers" - Udin, Funk and Wulf, John Wiley and Sons.
9. "Welding Process and Procedures" - J.L. Morris.
10. "A Text Book of Welding Technology" - O.P. Khanna, Dhanpat Rai & Sons
11. "Modern Arc Welding Technology" - S.V. Nadkarni, Oxford & IBH Publishing Co. Pvt. Ltd./ Advani-Oerlikon Ltd.
12. "Processes and Design for Manufacturing" - S.D.EI Wakil, PWS Publishing.

Date of Revision: July 2018

Course:- M.Tech

Subject:- Advanced Engineering Mathematics

Max. Marks: a) Internal/Practical- 30

b) External- 70

Year/Semester:- I/I

Subject Code:- WPR-012

Credit Hours		
L	T	P
3	0	0

Syllabus Contents:

UNIT-I

Statistics: Elements of statistics; frequency distribution, concept of mean, median, mode and different types of distribution; Standard deviation and Variance; Curve fitting by least square method; Correlation and Regression; Testing of hypothesis; Basic types of factorial design and analysis of variance (ANOVA).

UNIT-II

Matrix Operation: Matrix operations; Eigen value and Eigen vector by iterative methods; Diagonalisation of a square matrix.

UNIT-III

Laplace Transform, Fourier Transform; Fourier Integral and their applications.

UNIT-IV

Numerical methods: Interpolation by polynomials; Error analysis; Solution of system of linear equation by Gauss-Seidel iterative method; Newton-Raphson method; Numerical integration by

UNIT-V

Gauss-quadrature; solution of ordinary differential equation by Rayleigh-Ritz method.

References:

1. "Introductory Methods of Numerical Analysis" - S.S. Sastry, PHI
2. "Numerical Methods for Scientific and Engineering Computation" - M.K. Jain, S.R.K. Iyengar, R.K. Jain, New Age International Pub.
3. "An Outline of Statistical Theory" Volume I, II -A.M. Goon, M.K. Gupta, B. Dasgupta, The World Press Private Ltd.
4. "The Design of Experiments to find Optimal Conditions" - Yu.P. Adler, E.V. Markova, Ylu.V. Granovsky, MIR publication, Moscow
5. "Advanced Engineering Mathematics"- E. Kreyszig, John Wiley & Sons.
6. "Advanced Engineering Mathematics"- S. Grossman and W.R. Derrick, Harper & Row Publishers.
7. "Experimental Designs" - W.C. Cochran and G.M. Cox, John Wiley & Sons, New York.
8. "Design and Analysis of Experiments"- D.C. Montgomery, Wiley-India Edition.

Course:- M.Tech
Subject:- Manufacturing Process Lab
Max. Marks: a) Internal/Practical- 25
b) External- 25

Year/Semester:- I/I
Subject Code:- WPR-111

Credit Hours		
L	T	P
0	0	4

Syllabus Content:

- 1) Testing of moulding sand, and Casting of non-ferrous metals / alloys,
- 2) Heat Treatment, and Metallographic studies,
- 3) Characterisation and Testing of Fabrication processes: GMAW, GTAW, etc.,
- 4) Surface Grinding operation and its parametric dependence,
- 5) Grinding of Cutting Tools with a given tool signature,
- 6) Chip formation in machining processes under different process parameters,
- 7) Metal forming, etc.

Course:- M.Tech

Subject:- ENGLISH FOR RESEARCH PAPER WRITING

Max. Marks: a) Internal/Practical- 30

b) External- 70

Year/Semester:- I/I

Subject Code:- AUD-101

Credit Hours		
L	T	P
2	0	0

Course objectives:

Students will be able to:

1. Understand that how to improve your writing skills and level of readability
2. Learn about what to write in each section
Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission

Syllabus Contents:

Unit 1: Planning and Preparation, Word Order, Breaking up long sentences, Structuring Paragraphs and Sentences, Being Concise and Removing Redundancy, Avoiding Ambiguity and Vagueness

Unit 2: Clarifying Who Did What, Highlighting Your Findings, Hedging and Criticising, Paraphrasing and Plagiarism, Sections of a Paper, Abstracts. Introduction

Unit 3: Review of the Literature, Methods, Results, Discussion, Conclusions, The Final Check.

Unit 4: key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature,

Unit 5: skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions

Unit 6: useful phrases, how to ensure paper is as good as it could possibly be the first- time submission

Suggested Studies:

1. Goldbort R (2006) Writing for Science, Yale University Press (available on Google Books)
2. Day R (2006) How to Write and Publish a Scientific Paper, Cambridge University Press
3. Highman N (1998), Handbook of Writing for the Mathematical Sciences, SIAM. Highman'sbook .
4. Adrian Wallwork , English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011