

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY,
LONGOWAL, DISTT. SANGRUR – 148 106 (PUNJAB)
(Estb. by Government of India)
(Deemed to be University)

Ref. No. AS/SLIET/PHD 815

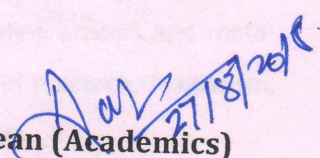
Dated : 27-8-18

All HOD's
SLIET,
LONGOWAL.

Subject: Revised Syllabus of RM-10000 (Research Methodology) for 2018 batch (Odd Semester) Ph.D. students -reg.

Please find enclosed herewith the revised syllabus of RM-10000 (Research Methodology) for the batch 2018 (Odd Semester) onwards for Ph.D. Students.

Kindly circulate the above syllabus amongst the Ph.D. students of 2018 batch.


Dean (Academics)

Encl: As above.

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RESEARCH METHODOLOGY

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Unit-I

Research Preparation and planning

10 hours

Objective of Research, Understanding research and its goals. Types of research and Approaches: Pure or Theoretical Research, Applied Research, Exploring or Formulative research, Descriptive Research, Experimental Research, Survey Research. Critical thinking. Selecting the research problem, defining the problem, Techniques for generating research problem, Problem selection and justification, Preparing research proposal, Theoretical and Experimental Processes.

Research Resources

10 hours

Sources of information. Literature search. World Wide Web, Online data bases-search tools. Citation Indices, Principle underlying impact factor. Literature review, Case studies, Review articles and meta-analysis, record of research review, Role of librarian. Ethical and Moral Issues in research, Plagiarism, tools to avoid Plagiarism, Intellectual Property Rights, Copyright Laws, Patent rights.

Unit-II

Academic Writing & Preparation

12 hours

Basic knowledge of funding agencies, Proposal Submission for funding agencies, Organization of proposals, Elements of Style.

Types of Report Writing, Research report writing, Preparation of manuscript for publication of research paper, pictures and graphs, Citation styles. Writing thesis and synopsis.

Tailoring the presentation, Oral presentation, Poster presentation, Elements of excellent presentation: Preparation, Visual and delivery. Oral Communication Skills and Oral defence.

Presentation tools: Introduction to presentation tools, features and functions, creating presentations, customising presentations. (Tools used: Microsoft PowerPoint, OpenOffice, Latex or any other tool.)

P.T.O.

Quantitative Methods and Mathematical Modelling

16 hours

Basic Statistics, Probability and Sampling distributions, Estimation, Hypothesis testing and applications, Correlation and Regression Analysis, Principles of Experimentation, Basic Experimental Designs, Completely Randomized Design, Randomized Block Design and Latin Square Design. Factorial Designs: 2^2 , 2^3 and 2^4 -Accuracy.

Basic concepts of modelling of Engineering system, static and dynamic model, model for prediction and its limitations. System Simulation, Validation.

Use of optimization techniques, Genetic Algorithm, Simulated Annealing, Particle swarm optimization.

Computer Applications: Introduction to spread-sheet applications, features and functions, using formulae and functions, data storing, features for statistical data analysis, generating charts/graphs and other features. (Tools: Microsoft Excel, OpenOffice and similar other tools)

References:

1. Ganesan, R., Research Methodology for Engineers, MJP Publishers, Chennai, 2011, **ISBN-13:** 978-8180941108.
2. Anderson, J., Durston, B. H. and Poole, M., Thesis and Assignment Writing, Wiley Eastern 1997, **ISBN-13:** 978-0471607106.
3. Bordens, K.S. and Abbott, B.B., Research Design and Methods, McGraw-Hill, 2008, **ISBN-13:** 978-0078035456.
4. Kothari, C. R, Research Methodology - Methods and Techniques, New Age International, New Delhi, 2004, **ISBN-13:** 978-9386649225.
5. Fisher, R. A., Statistical Methods for Research Workers, Genesis Publishing Pvt. Ltd., 2006, **ISBN-13:** 978-9351286585.
6. Montgomery, D.C., Designs and Analysis of Experiment, McGraw-Hill, **ISBN-13:** 978-1118146927.
7. Leedy, P. D., Practical Research - Planning and Design, Eighth Edition, Pearson., 2005, ISBN - 13: 9780132693240.
8. Graves, N., Varma, V.P., Working for a Doctorate - A Guide for Humanities and Social Sciences, Routledge, 1997, **ISBN-13:** 978-0415147316.
9. Graziano, A. M., and Raulin, M. L, Research Methods - A Process of Inquiry, Sixth Edition, Pearson, 2007, **ISBN-13:** 978-0205907694.

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