

SRINIVAS



UNIVERSITY

Mukka, Mangaluru – 574146

Web : www.srinivasuniversity.ac.in

**[In compliance of University Grants Commission
(Minimum Standards and Procedures for Award of
Ph.D. Degree) Regulations, 2022]**

**COURSEWORK SYLLABUS OF
Ph.D. PROGRAMME IN
CIVIL ENGINEERING**

**INSTITUTE OF ENGINEERING AND TECHNOLOGY
SRINIVAS UNIVERSITY
Mukka Mangaluru – 574146.**

A. COURSE WORK PATTERN**400 M**

Sl. No.	Subjects	Credits	Internal Marks	External Marks	Marks
1	Research Methodology (22SPHDRM001)	4	50	50	100
2	Structural Engineering (22SPHDCV001)	4	50	50	100
3	Analysis And Presentation Of Proposed Research Topic (22SPHD PUB003)	4	50	50	100
4	Review Of Literature (22SPHD PUB004)	4	50	50	100
Total		16	200	200	400

COURSE WORK SYLLABUS

1. RESEARCH METHODOLOGY (22SPHDRM001)

Module-1

Meaning, Objectives and Characteristics of research - Research methods Vs Methodology - Types of research - Descriptive Vs. Analytical, Applied Vs. Fundamental, Quantitative Vs. Qualitative, Conceptual Vs. Empirical - Research process - Criteria of good research - Developing a research plan. Defining the research problem - Selecting the problem - Necessity of defining the problem - Techniques involved in defining the problem - Importance of literature review in defining a problem - Survey of literature - Primary and secondary sources – Development of working hypothesis.

Module -2

Research design and methods – Research design – Basic Principles- Need of research design — Features of good design – Important concepts relating to research design – Observation and Facts, Laws and Theories, Prediction and explanation, Induction, Deduction, Development of Models - Developing a research plan - Exploration, Description, Diagnosis, and Experimentation- Determining experimental and sample designs.

Module -3

Sampling design - Steps in sampling design - Characteristics of a good sample design - Types of sample designs - Measurement and scaling techniques - Methods of data collection – Collection of primary data - Data collection instruments Testing of hypotheses - Basic concepts - Procedure for hypotheses testing flow diagram for hypotheses testing - Data analysis with Statistical Packages – Correlation and Regression - Important parametric test - Chi-square test - Analysis of variance and Covariance

Module -4

Data Analysis using MS Excel Introduction to Spreadsheets Spreadsheet Functions to Organize Data, Introduction to Filtering, Pivot Tables, and Charts, Advanced Graphing and Charting. Interpretation and report writing - Techniques of interpretation - Structure and components of scientific reports - Different steps in the preparation - Layout, structure and language of the report - Illustrations and tables - Types of report - Technical reports and thesis

Module-5

Ethics in Research: Importance, Principles, Developing a code of ethics, Ethics and Respondents, Ethics and Clients, Ethics and research firm. Plagiarism. Patent and Copyrights

REFERENCES:

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2021. An introduction to Research Methodology, RBSA Publishers.
2. Kothari, C.R., 2015. Research Methodology: Methods and Techniques. New Age International. 418p.
3. Anderson, T. W., An Introduction to Multivariate Statistical Analysis, Wiley Eastern Pvt., Ltd., New Delhi

4. Sinha, S.C. and Dhiman, A.K., 2012. Research Methodology, EssEss Publications. 2 volumes. se knowledge base, Atomic Dog Publishing.
5. Trochim, W.M.K., 2015. Research Methods: the conci 270p.
6. Fink, A., 2019. Conducting Research Literature Reviews: From the Internet to Paper. Sage Publications
7. Intellectual Property Rights in the Global Economy: Keith Eugene Maskus, Institute for International Economics, Washington, DC, 2019
8. Subbarau NR Handbook on Intellectual Property Law and Practice Publishing Private Limited.2008 S Viswanathan Printers
9. Research Methodology, Shashi k Gupta and Praneet Rangi. Kalyani Publishers, 6th edition

STRUCTURAL ENGINEERING (22SPHDCV001)

Module -1:

Concrete as construction material, mix design of light weight concrete construction, Ferro cement, cracking moment and design of Ferro cement elements under tension, Fibre reinforced concrete, polymers in concrete, RPC, SCC, FRSCC and whisper concrete. High density and high strength concrete.

Module -2:

Review of design philosophy, properties of structural concrete, behavior of members in flexure, axial load, shear and torsion, bond and anchorage, cracking, codal provisions, ductility, detailing procedure, Prestressed concrete, ultimate strength in flexure, shear, torsion and combined loading, deflection and crack widths. Continuous beams and portal frames.

Module -3:

Analysis of stresses, analysis of strain, stress-strain relations, extension, torsion and flexure of beams, Principal stresses and strains, two and three dimensional elasticity problems, theory of plasticity, yield criteria, Prandtl-Reuss Equation

Module -4:

Matrix formulation in structural dynamics, lumped and consistent mass matrices, condensation of stiffness matrices, Analysis of normal modes, Modal superposition and direct integration for dynamic response, Transfer matrices

Module-5:

Discrete and continuous structures, Force and displacement method of structural analysis, Different types of finite elements in elasticity, beams plates and shells. Application to dynamic and nonlinear problems. Discussion of matrix manipulations and accuracy

REFERENCES:

1. M.S.Shetty, "Concrete Technology" – Theory and Practice, S.Chand and Company, New Delhi
2. Neville A. M., "Properties of Concrete", ELBS, London
3. Pallai and Menon., "Reinforced concrete Design", TMH Education Private Limited
4. Dr. B. C. Punmia, Ashok Kr. Jain, Arun Kr. Jain, "Reinforced Concrete Structures", Volume 1.
5. N. Krishna Raju , "Pre-stressed Concrete" : Thermodynamics, Tata Mc. Graw Publishers
6. P. Dayarathnam, "Pre-stressed Concrete", Oxford and IBH Publishing Co.
7. Chemical Kinetics and Dynamics; Jeffrey I Steinfeld, Joseph S. Francisco and William L. Hase. Prentice Hall, 2nd edition, 1998.
8. T.Y. Lin and Ned H. Burns; "Design of pre-stressed concrete structures", John Wiley and Sons, New York.
9. Mario Paz, William E. Leigh., "Structural Dynamics: Theory and Computation", Kluwer Academic Publishers.
10. Clough & Penzen, "Structural Dynamics", TMH.
11. Timoshenko. S.P. and Goodier. J.N. "Theory of Elasticity" – International students-Edition McGraw Hill Book Co. Inc., New Delhi.
12. Srinath.L.S. "Advanced Mechanics of Solids", Tata McGraw Hill Publications Co.Ltd., New Delhi
13. Chadrupatla "Finite Element Analysis for Engineering and Technology" Tirupathi R., University Press, India
14. Zienkeiwicz. O.C. "The Finite Element Method", Tata McGraw Hill Co. Ltd., New Delhi.

3.ANALYSIS AND PRESENTATION OF PROPOSED RESEARCH TOPIC (22SPHDPUB003)

The candidates should publish the proposed work in the conference abstract book/ proceedings/ Journal.

Article quality and its presentation carries 50% weightage as internal marks and final end exam carries 50% weightage.

Exam descriptive. Questions will be general. Answers can be in relation to his/her published

4. REVIEW OF LITERATURE (22SPHDPUB004)

The candidate should publish the review article of his/her proposed work and they should submit the proof of published paper. Review article quality and its presentation carries 50% weightage as internal marks and final end exam carries 50% weightage.

Exam Descriptive. Questions will be General. Answers can be in relation to the published review paper.

NOTE:

IA Components

DDLr completion certificate

One MOOCs/Online certificate on Research methodology

One review paper with ISSN No (Connected to fourth paper of coursework)

One paper presented in conference – Proof (Connected to third paper)

Assignment for Second paper (given by the Guide or Coordinator)

Assignment for first paper (given by the Guide or Coordinator)