

**SRINIVAS**  **UNIVERSITY**

Mukka, Mangaluru – 574146

Web : [www.srinivasuniversity.ac.in](http://www.srinivasuniversity.ac.in)

**[In compliance of University Grants Commission (Minimum  
Standards and Procedures for Award of M.Phil./Ph.D. Degree)  
Regulations, 2016]  
Effective from 2017**

**SYLLABUS & COURSE WORK  
OF M . P H I L / P H . D .  
PROGRAMME IN  
ELECTRONICS &  
ENGINEERING FROM JUNE  
2019**

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**COLLEGE OF  
COMPUTER SCIENCE & INFORMATION SCIENCE**

City Campus, Pandeshwar,  
Mangaluru – 575 001.

# SRINIVAS UNIVERSITY

## COLLEGE OF COMPUTER SCIENCE & INFORMATION SCIENCE

PH.D. PROGRAMME – June-2019

### SYLLABUS OF COURSE WORK

#### A. COURSE WORK PATTERN

400 M

Sl. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1	Qualitative & Quantitative Research in Electronics	2	4	50	50	100
2	Advanced Topics in Electronics	2	4	50	50	100
3	Publication and Presentation on Research topic, Review of Literature (1 paper)	2	4	50	50	100
4	Publication and Presentation of Industry Analysis (1 paper) Publication and Presentation of Company Analysis (1 paper)	2	4	50	50	100
<b>Total</b>			<b>16</b>	<b>200</b>	<b>200</b>	<b>400</b>

#### B. COURSE WORK SYLLABUS

##### 1. Qualitative & Quantitative Research Methods

100 M

**Internal Marks: 50**

**University Examination Marks: 50**

Unit 1: Research Methodology

Unit 2: Probability and Statistics.

Unit 3: Scripting Languages:

Unit 4: Technical writing using LaTeX:

Unit 5: Research Methods & Techniques Certification:

**Note :** Submit hand written Assignment for Unit 1 to Unit 4 (4 Assignments). Submit Online Certificate obtained from NPTEL or Swayam.

**Examination Pattern:** Answer any 5 questions from 6, each carries 10 Marks. These questions should cover all four units.

##### 2. Subject Paper: Advanced Topics in Computer Science and Information Science 100 M

**Internal Marks : 50**

**University Examination Marks : 50**

Unit 1. Basics of Electronics

Unit 2. Amplifiers

Unit 3. Boolean Algebra and Logic Gates

Unit 4. Sequential Circuits and microprocessors

Unit 5. Introduction to Communication

**Note :** Prepare and submit Assignment in electronic format and also submit 250 MCQs Questions and answers (From each unit 50 Questions).

**Examination Pattern:** Answer all 50 questions, each carries 1 mark.

**3. IT Case Studies**  
**Internal Marks: 50**

**100 Marks**  
**University Examination Marks: 50**

Publication and Presentation of Industry Analysis (1 paper) Publication and Presentation of Company Analysis (1 paper)

- (1) Industry Analysis, Publication and Presentation - 1
- (2) Company Analysis, Publication and Presentation – 2

**Examination pattern:** Answer any 5 Questions from 6, each carries 10 marks (Guide will prepare 3 Questions From Industry Analysis paper, and 3 Questions from Company Analysis paper)

**4. Literature Review on Research Topic**

**100 M**

**Internal Marks: 50**

**University Examination Marks: 50**

Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 10 website reference. PPT Presentation & Publication of Review Article with research gap, and research agenda.

**Examination pattern:** Answer any 5 Questions from 6, each carries 10 marks (Guide will prepare 6 questions from Literature Review Article)

Minimum for Pass required: 50% Marks in each individual subject.

**Detailed Syllabus of Qualitative & Quantitative Research in CS & IS**

**UNIT I**

Research Methodology: Introduction to Scientific Research, Meaning, Objectives and Significance of Research Motivation in Research, Types of research approaches, Quantitative research methods, Research methods versus methodology, Research process, Criteria of good research, Research problems, Necessity of defining the problem, Technique involved in defining the problem, Design and Development Research Methods, Meaning of research design, Need for research design, Features of a good design, Different research designs, Basic principles of experimental designs, Ethics in research, Building expertise in the areas of interest, generating the base content in the selected area, literature survey for research work, arriving at directions of research, Formulation of research title, development of criteria based research proposal.

**UNIT II**

Probability and Statistics: Probability as a measure of uncertainty, probabilities for events, axioms, probability rules, Failure time data analysis, Hazard models, conditional probability, Bayes' rule, random variables, probability distributions, discrete and continuous distributions, univariate and multivariate distributions, joint, marginal, conditional distributions, expected values (mean, variance, covariance), sampling/simulation, study of a population or distribution, System reliability, Stochastic process, Software tools for Mathematical and statistical analysis, Scilab/SPSS.

**UNIT III**

Scripting Languages: Overview: The nature of scripting languages, scripting v/s programming, Python Programming. Regular expressions, Network programming, Internet client programming, Multithreaded programming, GUI programming, Database programming, Web clients and servers, Web programming: CGI and WSGI, Web frameworks : Django, web services.

## **UNIT IV**

Technical writing using LaTeX: Scientific Writing : Significance of report writing, Structure and Components of Research Report, Types of Report: research papers, thesis, Research Project Reports, Precautions for writing research reports, Pictures and Graphs, Citation Styles, Oral presentation, Exposure to LaTeX, Installation, MikTeX, TeXnicCenter, Creating reports and articles, Text environment, Math environment, Figures, Tables, BibTeX - reference manager, Camera Ready Preparation. Statistics. Interpretation – Meaning, Technique, Precaution. Report Writing – Significance, Different Steps. Layout of the Research Report, Types of Reports, Oral Presentation, Research Report Writing – Mechanics, Precautions.

## **UNIT V**

Online Certification Course based on research methodology from NPTEL, Swayam or any other online course providers.

## **REFECENCES:**

1. C. R. Kothari, *Research Methodology Methods & Techniques*, 2nd Edition, Wishwa Pakashan Publishers.
2. Misra R.P, *Research Methodology – A Hand Book*, Concept publishing Company, New Delhi 1988
3. Kai Lai Chung, *A Course in Probability Theory*, Third Edition, Academic Press.
4. Gilbert Strang, *Introduction to Linear Algebra*, 3rd edition, Wellesley-Cambridge Press and SIAM
5. David Barron, *The World of Scripting Languages*, Wiley Publications.
6. *Core Python application programming*, Third edition Wesley J Chun, PEARSON.
7. Leslie Lamport, *LaTeX: A Document Preparation System*, Second Edition.

## **Detailed Syllabus of Subject Paper in Advanced Topics in Electronics**

**Unit 1-Basics of Electronics** Resistors, Inductors, Capacitors, PN Junction diode, biasing, characteristics, types of diodes, Transistors, characteristics, types of transistors, FETs, UJT

**Unit II- Amplifiers:** Theory of amplification, Basic CE amplifiers, Different types of Amplifiers, Operational Amplifiers, Inverting and Non Inverting Amplifiers, Differential Amplifiers, Adder, Differentiator, Voltage to current and current to voltage converter

**Unit III-Boolean Algebra and Logic Gates:** Number system, Conversion to different bases, binary algebra, Number representation (single precision, double precision), Basic Logic gates, Universal gates, Boolean Postulates, Simplification of SOP using Boolean Algebra, Design of Expressions using basic logic gates, K-Map 3 and 4 variables

**Unit IV: Sequential Circuits and Microprocessors:** Flip Flops, Various Types of Flip Flops, Asynchronous Counters, Synchronous counters, Design of Mod 10 counter, Ripple Counter, Registers, Different types of Registers, Comparators, Introduction to Microprocessor 8086, Architecture of 8086 Processors, Programming of 8086 Processors, Different types of Interrupts

## **Unit V: Introduction to Communication:**

Basics of Communication, Basics of Modulation, Different types of Modulation, Frequency Modulation, Pulse Amplitude Modulation, Pulse Width Modulation, Pulse Position Modulation, Demodulation, Introduction to TV Communication, Composite TV signal Analysis, Antenna- Different types and Uses

**Reference Books**

- (1) Basic Electronics: AP Godse, U A Bhakshi
- (2) Basic Electronics Solid State  
: B L Thereja
- (3) Analog and Digital Electronics : U A Bhakshi and A P Ghodse
- (4) Digital Logic and Computer Design: Moris M Mano
- (5) Architecture, Programming and Interfacing: Lyla B Das
- (6) Fundamentals of Electronic Communication System :Wayne Tomasi
- (7) Television Engineerindg and Video Systems:R G Gupta

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