

SEMESTER I

PCCSC20 – RESEARCH METHODOLOGY

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|---------------------------------|--------------------------------|-----------------------------------------------------|-------------------------------|---------------------------------|-----------------|---------------------|---------------------|
| Year: I Sem: I | Course Code: PCCSC20 | Title of the Course: Research Methodology | Course Type: Theory | Course Category: Core | H/W 5 | Credits 5 | Marks 100 |
|---------------------------------|--------------------------------|-----------------------------------------------------|-------------------------------|---------------------------------|-----------------|---------------------|---------------------|

Course Objectives

1. To gain familiarity with a phenomenon or to achieve new insights into it.
2. To portray accurately the characteristics of a particular individual situation or a group.
3. To determine the frequency with which something occurs or with which it is associated with something else.
4. To test a hypothesis of a causal relationship between variables.
5. To find solutions for scientific, non-scientific and social problems.

Course Outcomes (COs)

1. Understand the concepts of research design, research process and various types of research.
2. Understand the different steps in writing report.
3. Implement the methods and techniques for experimental study.
4. Analyze the ethical issues in research.
5. Assess the Various research areas in Computer science.

| CO | PSO | | | | | |
|-----|------|------|------|------|------|------|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
| CO1 | H | M | L | M | M | L |
| CO2 | M | L | M | H | M | M |
| CO3 | L | M | M | M | L | H |
| CO4 | M | M | L | M | L | M |
| CO5 | H | M | L | L | M | L |

| CO | PO | | | | | |
|-----|----|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| CO1 | M | L | L | M | H | M |
| CO2 | L | L | M | M | M | L |
| CO3 | L | H | L | H | L | H |
| CO4 | M | M | M | M | M | M |
| CO5 | H | M | M | L | L | M |

(Low - L, Medium – M, High - H)

Course Syllabus

Unit I

(18 Hours)

- 1.1 Research - Definition- importance and meaning of research-characteristics of research (K2)
- 1.2 Type of research - steps in research (K2).
- 1.3 **Research process – an overview (K2)**
- 1.4 Identification of research area (K2)
- 1.5 Selection and formulation of research problem (K2).
- 1.6 Formulation of objectives (K6)

Unit II

(16 Hours)

- 2.1 Review of Literature – Course work - Literature Survey (K2)
- 2.2 Collecting research papers from journals (K2)
- 2.3 Web Browsing - Efficient Searching (K2)
- 2.4 Online Resources - Reading a research paper - Scopus tool (K2)
- 2.5 Develop a theoretical framework (K6)
- 2.6 Improve your methodology (K5, K6)

Unit III

(14 Hours)

- 3.1 Preparing the research design (K2)
- 3.2 Data collection and preparation (K2)
- 3.3 Experimental study – Result analysis and Discussions (K3)
- 3.4 Writing a research paper (K4)
- 3.5 Publishing the results (K6)
- 3.6 IEEE format – Latex tool (K1)

Unit IV

(15 Hours)

- 4.1 Significance of Report writing – Different steps in writing report (K2, K4)
- 4.2 Layout of the research report - Types of Reports – Oral Presentation (K2)
- 4.3 Mechanics of writing a research report – Precautions for writing Research Reports (K5)
- 4.4 **Ethical issues in research (K4)**
- 4.5 **Patent registration procedure – Funding agencies (K6)**
- 4.6 Writing research proposals – Effective presenting methods (K6)

Unit V

(12 Hours)

- 5.1 Various research areas in Computer science (K2)
- 5.2 Image processing (K4)
- 5.3 Networks and security (K4)
- 5.4 Data mining and machine learning (K4)
- 5.5 wireless and sensor systems (K4)
- 5.6 Audio, speech, language and signal processing (K2)

Text Books:

1. Kothari, C.R (2013), Research Methodology – Methods and Techniques, Second Edition. Wiley Eastern Limited.
2. 1. R. Panneerselvam (2014). Research Methodology, Fourth Edition, Prentice Hall India Learning Private Limited.

Reference Books:

1. Ranjit Kumar (2011). Research Methodology – A step- by-step guide for beginners, Third Edition, Pearson Education.
2. Deepak Chawla and Neena Sondh (2011). Research Methodology, Concepts and Cases, Vikas Publishing House Pvt. Ltd.

Open Educational Resources (OER):

1. <https://www.youtube.com/watch?v=PDjS20kic54>
2. https://www.youtube.com/watch?v=w_Ujkt83i18