SHIV NADAR UNIVERSITY

POSTGRADUATE COURSE

I.	**COURSE TITLE:**	**Research Methodology-I**
II.	**COURSE CODE (PLEASE CROSS-LIST IF APPLICABLE):**	**CED891**
III.	**COURSE CREDITS (L:T:P):**	**2 (2-0-0)**
IV.	**TOTAL CONTACT HOURS/ BATCH/WEEK (L:T:P):**	2-0-0
V.	**NO. OF BATCHES:**	1
VI.	**COURSE TYPE (MAJOR/UWE/CCC/REAL/VELS/IC), PLEASE MENTION ALL THAT APPLIES & WRITE CREDITS FOR EACH ONE:**	Core: PG
VII.	**PREREQUISITE/S (IF ANY):**	Not required
VIII.	**COURSE COORDINATOR/INSTRUCTOR(S):**	Dr. Sailesh N. Behera
IX.	**SCHOOL/ DEPARTMENT:**	SoE/Civil Engineering

X. DISCIPLINES TO WHICH THE COURSE MAY BE OF INTEREST: All Engineering

XI. COURSE GOAL/OBJECTIVE:

This course will provide an opportunity for participants to establish or advance their understanding of research through critical exploration of research language, ethics and approaches. The primary goal is to develop and improve the research skills of graduate students, particularly those of doctoral and masters' students in civil engineering. Some important components include learning to identify research problems, doing literature review and communicating results using various options available to research scholars. They will also learn reading research articles, writing research reports, oral presentation of research results and writing research dissertation. In addition, the course aims to inculcate relevant professional habits such as performing research in an academic laboratory environment, data management, ethics and plagiarism awareness among others. Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests, and determine how research findings are useful in forming their understanding of their work, social, local and global environment.

Specifically the course contents will cover the chapters as follows:

XII. COURSE CONTENTS:

Chapter 1: *Introduction to Research Methodology:*
Goal of this course; Objectives of this course; Course activities and grading policy; Purpose and outline of this course; Motivation for research; Building a background; Role of a supervisor; Time and energy management.

Chapter 2: *Scientific Ethics (or norms and conventions)*:
Characteristics of professionalism: Knowledge and skills, Autonomy at work; Ethical and Moral standards; Academic dishonesty; Plagiarism: Introduction to plagiarism, Similarity index, Software tracking for finding similarity index and plagiarism, Consequences for practice of plagiarism.

Chapter 3: *Sources of Information for Research Articles:*
Introduction to database for research material; Impact factors; Types of Journals; Indices of Journals; Web of Science; Google Scholar; Science Direct; Springer; Wiley; Nature; and many others.
Chapter 4: *Literature Review and Formulation of a Research Problem:*
Type of publications of research findings (paper/manuscript); Process of reviewing literature from various sources of information (key words, abstract, introduction, methodology); Finding research area of your related research; Figuring out the state of art of any research topic; Formulation of research topic (reviewing the synthesized paper in research topic/pocket/domain/thrust area).
Chapter 5: *Conducting Research in the Laboratory:*
Being a good laboratory citizen; Laboratory safety (e.g., electrical, chemical and biological); Good/Laboratory housekeeping; Laboratory courtesy; Laboratory cooperation; Laboratory discipline.
Writing of lab note books and its immense importance.
Plan/design of experiments; Importance of controls and interpretation of data; Raw data; Data processing; Data cleaning.
Chapter 6: *Writing a Manuscript:*
Types of manuscripts; Steps for writing in manuscript; Reference citations; Reference listing; Reference styles; Foot notes; Supplementary information; Data sharing.

XIII. RECOMMENDED BOOK(S):

- Baxter, L., Hughes, C. and Tight, M., 1998. Academic career handbook. McGraw-Hill Education (UK).
- Becerik-Gerber, B. and Kensek, K., 2009. Building information modeling in architecture, engineering, and construction: emerging research directions and trends. Journal of professional issues in engineering education and practice, 136(3), pp.139-147.
- Blaxter, L., Hughes, C. and Tight, M., 1998. Writing on academic careers. Studies in Higher Education, 23(3), pp.281-295.
- Griffiths, R., 2004. Knowledge production and the research–teaching nexus: The case of the built environment disciplines. Studies in Higher education, 29(6), pp.709-726.
- Knight, A. and Ruddock, L. eds., 2009. Advanced research methods in the built environment. John Wiley & Sons.
- Kumar, S. and Phrommathed, P., 2005. Research methodology (pp. 43-50). Springer US.
- Merriam, S.B. and Simpson, E.L., 1995. A guide to research for educators and trainers of adults. Krieger Publishing Co., PO Box 9542, Melbourne, FL 32902-9542.

Other web information along with class room teaching.

XIV. ASSESSMENT SCHEME:

Mid-sem presentation:	20
End-sem presentation:	30
Quiz:	20
Assignment:	20
Class participation:	10
Total	**100**