

# Research Methodology for Construction Management

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## Overview

The choice of research methodology is one of the most important and difficult steps in any research project. There have been many research methodological choices adopted to resolve various types of research problems. Further, there have been significant discussions in the literature as to which research methodology is the most appropriate for Construction Management research problems. This course aims to provide the students with basic skills to plan, conduct and analyze construction management research. The students will be introduced to topics that include the research process from the selection of the research topic, formulation of research questions to the publication of research findings, Investigate, and applying suitable tools and skills to conduct research projects in the construction industry. In addition, the course will assist the students to select the appropriate choice of research approach in construction management, which basically depends on the nature of the problem. Moreover, the adopted approach should assist the students to demonstrate the associated key research problem is defined clearly and the methodological choices are justified along with the underlying assumptions, limitations and findings are defensible.

In this context, the purpose of this course is to prepare the postgraduate and doctoral students for their research project proposal in construction management to be specific and to a wider extent for various other programs which have research as its major component towards the degree. With this purpose, the primary objectives of this course are as follows: i) Conceptualize and design research projects to address complex and challenging problems in construction management (CM); ii) Understand research methodologies, methods, and techniques relevant to CM; iii) Select the appropriate research methodology, methods, and techniques to address complex and challenging problems in CM; iv) Understand the implications and consequences of utilizing a specific research design to address a research problem in CM; v) Understand the ethical implications of a specific research design or approach for knowledge production in CM; vi) To design and substantiate a logical argument based on theory and evidence; vii) Communicate effectively in the CM academic environment; viii) Accurately self-evaluate and assume responsibility for learning needs, and interact effectively in a learning group

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|  | <b>Research Methodology for Construction Management: Jan 30 to Feb 10, 2023.</b> (Number of participants for the course will be limited based on the VC software's capacity.)   |
|  | <ul style="list-style-type: none"><li>• Executives, engineers, and researchers from the construction engineering and management industry, service, and government organizations including R&amp;D laboratories.</li><li>• Students at all levels (BTech/MS/MTech/Ph.D.) or Faculty from reputed academic institutions and technical institutions</li></ul>  |
|  | The participation fees for taking the course are as follows: <ul style="list-style-type: none"><li>• <b>Industry: Rs. 10,000</b></li><li>• <b>Academic Institutions, Govt. Organizations, Public Sector undertakings, etc.: Rs. 5,000</b></li><li>• <b>Students, Research Scholars: Rs. 1,000</b></li><li>• <b>Participants from abroad: US \$200</b></li><li>• <b>Students from abroad: US \$100</b></li></ul> |

## The Faculty



**Prof. David Root** is a Professor from the School of Construction Economics and Management, at the University of the Witwatersrand, Johannesburg, South Africa. Until 2011 he was an Associate Professor in the Department of Construction Economics and Management at the University of Cape Town. He originally trained as a Building Surveyor working in both private practice and a variety of public and private sector client organizations in the UK before entering academia. He undertook post-doctoral research at the University of Loughborough's Department of Civil and Building Engineering in the area of design management and supply chain management working with companies such as AMEC and their supply chain partners. He is a Chartered Builder and a Chartered Surveyor and is registered with the SACPCMP as a Construction Project Manager in South Africa. **Prof. David** has introduced a research methodology course in the school and improved the research student throughput at Wits through a structured Research Methodology framework successfully. He has supervised many Ph.D., master by Research, and taught master's degree scholars/ students.



**DR. Senthikumar** is working as an Associate Professor in the Department of Civil Engineering at IIT Palakkad. Prior to this, he worked in various academic positions in the Middle East and South Africa. He completed doctoral research in the area of Construction Engineering and Management at the Indian Institute of Technology (Madras), India. At present, he teaches and conducts research in the area of Construction Engineering and Management. His specific research focus includes Design Management in Infrastructure Projects, Automation in Construction, Lean Construction, and Policy Making in Infrastructure Developmental Projects. He has a number of international journal and conference publications in the area of construction engineering and management. He is a member of various professional bodies around the world.



**Prof. Koshy Varghese** is a professor in the Department of Civil Engineering and Dean of administration at IIT Madras. He obtained his doctorate in project management from the University of Texas at Austin and has been a visiting eminent scholar at Arizona State University. He had obtained his MS in Structural Engineering from the same university. From the College of Engineering Guindy, Anna University, he obtained BE with Distinction. He has received numerous academic honors, a few in the list like Distinguished Scholar Awards, numerous best paper awards, editor of reputed journals, core membership in various curricula, presidentship in international organizations, and Certificates of appreciation. He has been involved in developing a unique post-graduate program in partnership with Larsen & Toubro. His research interests are in the area of modeling and automating engineering processes using appropriate computational methods and tools. He has been the principal investigator of several sponsored research projects. Many of these projects have been awarded based on submitting competitive proposals evaluated by the sponsoring organizations. Based on the capabilities of their research group Autodesk funded the establishment of the first Building Information Modelling laboratory in India at IIT Madras.

## **Course Delivery Details**

Tentative Duration: **Jan 30 – Feb 10, 2023 (10 days): 20 hrs lectures and 20 hrs Tutorials**

***DR- Prof. David Root  
SV – DR. V. Senthilkumar  
KV- Prof. Koshy Varghese***

## **Tentative Lecture Schedule**

### **Day1**

Lecture 1: 1 hr: **DR**

Topic: The Purpose of Research, Forms of Research, The Learning Cycle, Formulating and clarifying the research

Tutorial 1: 1 hr: **DR**

Assignment 1 and explanation of its formative evaluation

Lecture 2: 1 hr: **DR**

Topic: Critical review of the literature: Planning literature search strategy, conducting a literature search, Obtaining, and evaluating the literature, reporting the literature; Plagiarism

Tutorial 2: 1 hr: **DR**

Assignment 2 and explanation of its formative evaluation

### **Day2**

Lecture 3: 2 hrs: **DR**

Topic: Research philosophies and approaches: Understanding the research philosophy-Positivism, Interpretivism, Realism, Pragmatism, Research approaches: Deductive and Inductive,

Tutorial 3: 2 hr: **DR**

Assignment 3 and explanation of its formative evaluation

### **Day3**

Lecture 4: 2 hrs: **DR**

Topic: Formulating the research design: Research strategy, Multiple methods choices – combining data collection techniques and analysis procedures, Time horizons, The credibility of research findings, The ethics of research design

Tutorial 4: 2 hr: **DR**

Assignment 3 and explanation on its formative evaluation Cont.

### **Day 4**

Lecture 5: 2 hrs: **KV/DR/SV**

Topic: Tradeoff on access and research ethics: Issues associated with gaining access, Strategies to gain access, research ethics and Need for the ethical act, Ethical issues at specific stages of the research process

Tutorial 5: 2 hr: **KV/DR/SV**

Assignment on ethical clearance procedures and explanation of its formative evaluation

### **Day 5**

Lecture 6: 1 hrs: **SV**

Topic: Selecting samples: Types of sampling, using secondary data: Types of secondary data and uses in research, Identification of secondary data, evaluating secondary data sources and collecting primary data through observation: Participant observation and Structured observation: Researcher roles, data collection, and analysis

Lecture 7: 2 hrs: **SV**

Collecting primary data using semi-structured, in-depth and group interviews: Types of interviews and their link to the purposes of research and research strategy, Climate for non-standardized (qualitative) interviews, Data quality issues and preparing for the interview, interviewing competence, Group interviews and focus groups, other forms of interviews.

Tutorial 6: 1 hr: **SV**

Assignment 4 and explanation of its formative evaluation

### **Day 6**

Lecture 8: 2 hrs: **DR**

Collecting primary data using questionnaires: An overview of questionnaire techniques, deciding what data need to be collected, Designing the questionnaire, Administering the questionnaire

Tutorial 8: 2 hr: **DR**

Assignment 5 and explanation of its formative evaluation

### **Day 7**

Lecture 9: 2 hrs: **DR**

Topic: Analyzing quantitative data: Preparing, inputting, and checking data, Exploring and presenting data, Describing data using statistics, Examining relationships, differences and trends, Using statistics, Analyzing qualitative data: Differences between qualitative and quantitative data, Preparing data for analysis, Approaches to qualitative analysis, Types of qualitative analysis processes, Analytical aids, deductively based analytical procedures, inductively based analytical procedures, Other Qualitative analysis practices

Tutorial 9: 2 hrs: **DR**

Assignment 5 and explanation of its formative evaluation cont.

### **Day 8**

Lecture 10: 2 hrs: **DR**

Topic: Writing and presenting project report: Getting started with writing, the structure of the project report, project report's contents, writing style, Oral presentation of the report

Tutorial 10: 2 hrs: **DR**

Assignment 6 and explanation of its formative evaluation

### **Day 9**

Lecture 11: 1 hrs: **DR**

Topic: Critical review of the research proposal and Component of the proposal evaluation

Tutorial 11: 1 hr: **DR**

Assignment 6 and explanation of its formative evaluation

Lecture 12: 1 hrs: **DR/SV/KV**

Topic: Research proposal writing for funding

Tutorial 12: 1 hr: **DR/SV/KV**

### **Day 10**

Examination and Course Feedback

Date of Examination: Feb 10, 2023