



RESEARCH METHODOLOGY

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PRE-REQUISITES : Students who have completed undergraduate studies (in Engineering or Science) will be in a better position to benefit from this course

INTENDED AUDIENCE : Students of ME/MTech/MS/MSc/PhD can benefit.

COURSE OUTLINE :

Large numbers of students are actively considering and taking up research and associated higher studies. This course aims to introduce students to the important aspects of research. The intent of the course is to make students aware of the details associated with formal research and to help students overcome common misconceptions that may be present in their minds. By going through this course, students are likely to be able to take up research activities in a more systematic and formal manner right from the beginning.

ABOUT INSTRUCTOR :

Prof. E. PRASAD, Professor, Department of Chemistry, Indian Institute of Technology Madras, Chennai 600 036, INDIA Phone: ++91-44-2257 4232 ; Email: pre@iitm.ac.in. Educational Qualification: BSc., & MSc. From Calicut University, Kerala, India during 1990-1995; Ph.D. from NIIST, Thiruvananthapuram, Kerala, India in Photophysical Chemistry in 2000. Post Doctoral Research Experience: (2001 to 2006) Texas Tech University & Lehigh University, USA and University of Bonn, Germany (Alexander von Humboldt Fellow) .Professional Experience (11 years): Faculty at Department of Chemistry, IIT Madras since 2006; (8 years): Head, Teaching Learning Centre, IIT Madras; (6 years): Core team member, Teaching Learning Centre, IIT Madras (7+ years). Specialization and Expertise: Chemistry: Photophysical Chemistry, Design and Synthesis of organic and hydro gels for various applications; Education/Teaching: Designing Learning Outcomes for Courses, Conducting Classes using Active and Collaborative Learning Techniques. Awards and Distinctions: AvH Fellowship (2002), Young Faculty Recognition Award (IIT Madras, 2011). Research Publications in Peer Reviewed Journals: 65. Conference Paper: Development of a Teaching Learning Centre and Ongoing Faculty Development Programs - A Case Study, Prasad Edamana, Ajith Kumar Kolar, Pramod S Mehta, Sujatha Srinivasan and Jeffrey Froyd, American Society for Engineering Education, USA, June, 2012.

Prof. Prathap Haridoss is a Professor in the Department of Metallurgical and Materials Engineering at IIT Madras. He works in the areas of Fuel Cell and Carbon nanomaterials. He has a B.Tech in Metallurgical Engineering from IIT Madras, and a PhD in Materials Science and Engineering from the University of Wisconsin-Madison, USA. Before he joined as a faculty at IIT Madras, he served as a Senior Scientist at Plug Power, a Fuel Cell company in New York. He has 3 US patents, several International Journal publications, and has published a book titled "Physics of Materials, Essential Concepts of Solid State Physics"

COURSE PLAN :

Week 1 : A group discussion on what is research; Overview of research;

Week 2 : Literature survey , Experimental skills;

Week 3 : Data analysis, Modelling skills;

Week 4 : Technical writing; Technical Presentations; Creativity in Research

Week 5 : Creativity in Research; Group discussion on Ethics in Research

Week 6 : Design of Experiments

Week 7 : Intellectual Property

Week 8 : Department specific research discussions