SWARM aims to provide a deeper understanding of the philosophical and methodological issues that arise in scientific research, and inspire to reflection on such issues within your own area of research. It offers reinforcement and general purpose guidelines for strengthening your skills in doing good scientific research and presenting your results in the form of industrial standard manuscripts. This workshop is divided into two modules:

**Module I Research Methodology**

This module will give a systematic treatment on bridging the knowledge gap between theoretical science and the practical research.

Following keywords outline the contents of the module:

- Knowing what is science
- Episteme and techne
- Inter-subjectivity and objectivity
- Empiricism and rationalism
- Rational Reasoning
- Cause-Effect
- Observations, Measurements
- Making experiments
- Testing hypotheses
- Verification or falsification?
- Randomness
- Models, Simulations
- Explaining scientifically
- Scientific Decision Making
- Research Ethics
- Your research Roadmap
  - Problem Selection Roadmap
  - Research Goals
  - “SMART” objectives
  - Success Indicators

**Module II Scientific Writing**

This module will highlight some simple principles in improving your skills of scientific writing and the ability to present your research results. It will also discuss tips of writing papers, proposals and giving talks.

Following keywords outline the contents of the module:

- General Principles
  - What is considered a scientific text?
  - Information/Noise ratio
  - Ambiguity and vagueness
- Writing a paper
  - Basic rules
  - Paper Structure
  - How to write:
    - Abstract
    - Introduction
    - Methods
    - Results
    - Discussion
    - Summary
  - Language and style
  - Referencing
- Peer Review Process
- Writing a review
- How to write a good research proposal?
- How to give a scientific talk?
- What is Plagiarism?
**Scientific Writing and Research Methodology (SWARM)**

**Schedule:**

**Module I:**  
Wednesday April 9, 2014  
Thursday April 10, 2014

**Module II:**  
Wednesday April 16, 2014  
Thursday April 17, 2014

**Time:** 10:00 AM to 12: PM

**Venue:** KICS Seminar Hall

Additional lecture may be scheduled if required.

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**Dr. Imran Mahmood, Assistant Professor KICS** has been serving at the Dept. of Electrical Engineering, UET Lahore since April 2013. Alongwith his teaching responsibilities at EE he has been leading the research team at Centre for Visual Analytics Research (C-VAR). He earned a doctoral degree in Computer Science at the School of Information and Communication Technology, KTH-Royal Institute of Technology Sweden; has more than 8 years of experience as an academic researcher; particularly in the area of Modeling & Simulation. Worked in collaboration with Swedish Defense research agency (FOI) during the Masters and Doctoral research; Published quality research papers and delivered different workshops, lectures and invited talks.