



# Indian Institute of Science

## Department of Bioengineering



### BE 219 (Aug) 2:0

#### Essentials of Research and Innovation

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Course Timings: Monday and Wednesday 10 – 11 AM  
Course Location: BE Annexe, Ground Floor Classroom

#### Description and Syllabus

The course will introduce students to the methodologies of research, ethical practices, technical communication of research findings, and intellectual property associated with research. The following topics will be covered: logic and reasoning, framing of research question and hypothesis development, fundamentals of research ethics, concepts of technical writing, effective communication of research findings in various formats including posters and presentations, the four types of intellectual property, patents and how to get from research finding to a patent, and an introduction to commercialization of research findings. Case examples in Bioengineering will be used to present theoretical concepts in each of these topics. The goal is for the concepts covered in this course to aid in the skill development required to study diverse problems in bioengineering. The course lectures will be delivered by experts in each of the topics with occasional guest lectures from colleagues in the industry.

## **References**

There is no prescribed textbook for this course. Course material will include lecture notes (not provided, but taken by students during the lecture), a few slide-handouts (provided), and specific portions of texts recommended by the lecturers.

## **Course Outcomes**

Upon completion of the course, students will be able to:

Combine scientific facts into logical statements and use it to develop hypotheses

Summarize data in a written form

Write scientific reports including grant proposals

Prepare scientific presentations and posters to present data

Differentiate the types of intellectual property and

Identify research findings that may be protected with a patent