



# Indian Institute of Science

## Department of Bioengineering



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**Course Title:** Data Science for Bioengineers

**Course Code:** BE 230

**Course Schedule:** January Semester

**Credits:** 2:0

**Course Instructor:** Narendra Dixit and Siddharth Jhunjhunwala

### Pre-Requisites:

1. BE-207 (Mathematical Methods for Bioengineers) OR equivalent graduate level; AND
2. BE-229 (Statistics for Bioengineers) OR equivalent

### Description

Bioengineering research often generates large amounts of data, analysis of which requires sound technical knowledge of data sciences. The goal of this course is to introduce students to the basic concepts and tools of statistical and machine learning, which may be useful to analyse the data generated by the medical, biological, and bioengineering community. The following topics will be covered: linear regression, analysis of categorical data, logistic regression, linear-discriminant analysis, resampling methods, decision trees, support vector machines, deep learning, unsupervised learning. Problems will be presented and solved using R.

### References

There is no prescribed textbook for this course. But the following reference is suggested:

1. An Introduction to Statistical Learning, Gareth James et al.

### Course Outcomes

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

1. Appreciate statistical learning techniques applied to medical and biological data.
2. Analyse medical and biological data using the techniques.