

Learning Goals and Objectives for BS Degree Students in Mathematics at CSI

1) To acquire a basic body of mathematical knowledge that will provide the student with a strong foundation for further study and/or for a career in mathematics or in other technical or scientific fields.

This includes the following objectives:

- a) Mastering the ideas and techniques of Calculus and Linear Algebra
- b) Learning the foundations of Abstract Algebra, Differential Equations and Probability.
- c) Becoming aware of the many branches of pure and applied mathematics and of the interconnections among them.
- d) Gaining a good understanding of a few major realms of pure and applied mathematics.

2) To develop fundamental mathematical skills and the ability for independent mathematical learning and reasoning.

This includes the following capabilities:

- a) To understand mathematical concepts and definitions, and to extend and generalize them to new situations.
- b) To read and learn from mathematical textbooks, and to make good use of library and electronic resources.
- c) To write and communicate mathematics clearly and effectively.
- d) To apply precise, logical reasoning to problem solving.
- e) To understand and create rigorous mathematical proofs.

The following goal applies primarily to students interested in Applied Mathematics

3) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to solve real-life problems.

The objectives are:

- a) Understanding the connections between mathematics and other disciplines, and being able to recognize mathematical ideas embedded in other contexts.
- b) Learning the fundamental concepts of mathematical modeling and how to apply mathematics to real-world situations.
- c) Developing basic computer and programming skills and applying them to simulation and visualization of mathematical models.

The last goal applies primarily to students interested in being secondary math teachers

4) To possess a breadth of knowledge of the mathematical sciences that will make it possible for the student to be an effective mathematics teacher.

This will include:

- a) Understanding the connections between upper-level mathematics and topics in secondary mathematics education including geometry as well as algebra and calculus.
- b) Being knowledgeable of the history of mathematics.

Document History

Date	Action
9/2007	Initial draft