

## **Learning Objectives**

The Computer Science department currently has five undergraduate degree options in which a student can obtain a Bachelor of Science or Arts degree. The Science, Information Systems, Digital, and Bioinformatics options are designed in accordance with the ABET accreditation criteria for computer science degrees. The fifth option, Information Technology, is designed in accordance with the ABET accreditation criteria for Information Technology or Systems degrees. While the Science, Digital, and Information Systems options have been ABET accredited since 1999, the other two options, Bioinformatics and Information Technology are new degrees, and thus are not currently ABET accredited. Accreditation for all five options will be sought during the next accreditation visit in 2005.

### **Learning Objectives for BS Degree – Science Option**

1. Proficient in programming in at least two programming languages
2. Mastery level knowledge in each of the following core computer science subjects
  - a. Principles and practices for problem/solution analysis and design
  - b. Data structures and algorithms
  - c. Computer architecture and organization
  - d. Programming languages
  - e. Operating systems
  - f. Theory of computing
  - g. Software engineering
3. Possess an understanding of the practices and dynamics required to develop software whether it be a single program or a major software product developed in a team environment
4. Proficient in the use of mathematical tools including discrete mathematics, calculus, elementary statistics, and probability
5. Understand the basics of science, and specifically the scientific method
6. Have an understanding and appreciation for the arts, humanities, and social sciences, and their importance in today's society
7. Possess sufficient fundamental knowledge of computer science to be a life-long learner
8. Understand the social and ethical issues which face computer scientists, and thus be able to contribute to society in a positive and productive manner
9. Able to communicate information effectively both in writing and orally.

## **Learning Objectives for BS Degree – Information Systems Option**

1. Proficient in programming in at least two programming languages
2. Mastery level knowledge in each of the following core computer science subjects
  - a. Principles and practices for problem/solution analysis and design
  - b. Data structures and algorithms
  - c. Computer architecture and organization
  - d. Programming languages
  - e. Operating systems
  - f. Theory of computing
  - g. Software engineering
3. Possess an understanding of the practices and dynamics required to develop software whether it be a single program or a major software product developed in a team environment
4. Proficient in the use of mathematical tools including discrete mathematics, calculus, elementary statistics, and probability
5. Understand the basics of information and database systems and their implementation
6. Understand basic business, accounting, and economic practices
7. Understand the basics of team and organizational leadership principles
8. Understand the basics of science, and specifically the scientific method
9. Have an understanding and appreciation for the arts, humanities, and social sciences, and their importance in today's society
10. Possess sufficient fundamental knowledge of computer science to be a life-long learner
11. Understand the social and ethical issues which face computer scientists, and thus be able to contribute to society in a positive and productive manner
12. Able to communicate information effectively both in writing and orally.

## **Learning Objectives for BS Degree – Digital Systems Option**

1. Proficient in programming in at least two programming languages
2. Mastery level knowledge in each of the following core computer science subjects

- a. Principles and practices for problem/solution analysis and design
  - b. Data structures and algorithms
  - c. Computer architecture and organization
  - d. Programming languages
  - e. Operating systems
  - f. Theory of computing
  - g. Software engineering
3. Possess an understanding of the practices and dynamics required to develop software whether it be a single program or a major software product developed in a team environment
  4. Possess a fundamental knowledge of digital systems, their implementation, and interface requirements
  5. Proficient in the use of mathematical tools including discrete mathematics, calculus, elementary statistics, and probability
  6. Understand the basics of science, and specifically the scientific method
  7. Have an understanding and appreciation for the arts, humanities, and social sciences, and their importance in today's society
  8. Possess sufficient fundamental knowledge of computer science to be a life-long learner
  9. Understand the social and ethical issues which face computer scientists, and thus be able to contribute to society in a positive and productive manner
  10. Able to communicate information effectively both in writing and orally.

### **Learning Objectives for BS Degree – Bioinformatics Option**

1. Proficient in programming in at least two programming languages
2. Mastery level knowledge in each of the following core computer science subjects
  - a. Principles and practices for problem/solution analysis and design
  - b. Data structures and algorithms
  - c. Computer architecture and organization
  - d. Programming languages
  - e. Operating systems
  - f. Theory of computing
  - g. Software engineering

- h. Bioinformatics
- 3. Possess an understanding of the practices and dynamics required to develop software whether it be a single program or a major software product developed in a team environment
- 4. Proficient in the use of mathematical tools including discrete mathematics, calculus, elementary statistics, and probability
- 5. Understand the basics of the life sciences, the scientific method, basic chemistry, and molecular biology
- 6. Have an understanding and appreciation for the arts, humanities, and social sciences, and their importance in today's society
- 7. Possess sufficient fundamental knowledge of computer science to be a life-long learner
- 8. Understand the social and ethical issues which face computer scientists, and thus be able to contribute to society in a positive and productive manner
- 9. Able to communicate information effectively both in writing and orally.

### **Learning Objectives for BS Degree – Information Technology Option**

- 1. Proficient in programming in at least two programming languages
- 2. Mastery level knowledge in each of the following core computer science subjects
  - a. Principles and practices for problem/solution analysis and design
  - b. Data structures and algorithms
  - c. Computer architecture and organization
  - d. Programming languages
  - e. Operating systems
  - f. Theory of computing
  - g. Software engineering
- 3. Possess an understanding of the practices and dynamics required to develop software whether it be a single program or a major software product developed in a team environment
- 4. Proficient in the use of mathematical tools including discrete mathematics, business calculus, elementary statistics, and probability
- 5. Understand the basics of science, and specifically the scientific method
- 6. Understand the basics of information and database systems and their implementation
- 7. Understand basic business, accounting, and economic practices

8. Understand the basics of team and organizational leadership principles
9. Understand the basics of networking
10. Have an understanding and appreciation for the arts, humanities, and social sciences, and their importance in today's society
11. Possess a sufficient fundamental knowledge of computer science to be a life-long learner
12. Understand the social and ethical issues which face computer scientists, and thus be able to contribute to society in a positive and productive manner
13. Able to communicate information effectively both in writing and orally.