Computing (CSI)

Division of Computing

Mission: The mission of the Division of Computing is to provide students with an opportunity to obtain the knowledge of computing necessary to succeed in today's increasingly technical world. The division's curriculum focuses on both theoretical knowledge and practical applications that enrich analytic, creative, and research capabilities essential to success in various computing fields. Our curriculum provides students the opportunities to pursue individual interests through special topic courses, internships, and projects that further enhance their learning experience outside the traditional classroom setting. Introductory courses in various computer-related topics are offered for non-major students.

Student Learning Outcomes
Students will:

- Understand and be able to demonstrate analytic and critical reasoning ability through algorithmic development and software implementation.
- Communicate effectively utilizing current technology in information systems. This includes the acquisition, summarization, and presentation of existing and synthesized knowledge.
- Demonstrate an understanding of computer and communication systems and hardware and software systems, including the design, development, implementation, and integration into an organization.

Students may obtain a Bachelor of Science degree with a major in computer science, computer information systems, computational science, cybersecurity, or management information systems. These majors focus on the scientific and business views of computing. Students in these majors develop the skills essential to becoming quality programmers. In addition, the upper-division requirements available to each of the majors provide the necessary specialized knowledge and skills.

Students within all majors experience a variety of programming environments including many microcomputer systems as well as multi-user environments. Students are exposed to a number of modern programming languages appropriate to their selected majors and gain valuable experience with a wide selection of computer hardware and resources. This variety of resources coupled with elective courses allows students to personalize the specialized knowledge they wish to obtain.

Students with majors in computer science, computer information systems, computational science, cybersecurity, or management information systems must complete all courses required for the major with a minimum of a 2.25 cumulative grade-point average. All courses must have a grade of C- or better to fulfill the prerequisite requirement. In addition, all courses for the major and minor must be completed with a grade of C- or better.

The division also offers minors in both computer science and computer information systems. Students who complete the required courses for the minor can expect to obtain programming skills and general computing knowledge.

COMPUTATIONAL SCIENCE

- **Major: 62-67 credit hours**

TRACKS:

- **Economics and Finance**
- **Biology**
- **Chemistry**
- **Mathematics**
- **Physics**

PROGRAM REQUIREMENTS:

- **Major/Minor GPA required for graduation: 2.25**
- **All courses for the major and minor must be completed with a grade of C- or better.**

Description of Major: The computational science major emphasizes the use of computers and mathematics in the development of solutions to complex problems. Students majoring in computational science take a variety of mathematics and computer science

courses that provide the needed theoretical foundation. Additionally, students take courses in a field of specialization, which provides an application area. Students may specialize in economics and finance, biology, chemistry, mathematics, or physics. Students in consultation with a faculty member may also develop a field of specialization that meets individual interests. Computational science majors are prepared for a variety of careers in industry, research labs, and engineering facilities.

COMPUTATIONAL SCIENCE MAJOR REQUIREMENTS		**62-67 crs.**
REQUIRED COURSES		**42 crs.**
CSI 130	INTRODUCTION TO COMPUTING I	(5)
CSI 230	INTRODUCTION TO COMPUTING II	(5)
CSI 235	MATHEMATICS OF COMPUTING	(3)
CSI 300	COMPUTER ORGANIZATION AND ARCHITECTURE	(3)
CSI 330	DATA STRUCTURES AND ALGORITHMS	(3)
CSI 335	ANALYSIS OF ALGORITHMS	(3)
CSI 366	NUMERICAL ANALYSIS	(3)
CSI 450	COMPUTER NETWORKING AND COMMUNICATIONS	(3)
CSI 497	SENIOR SEMINAR I	(1)
CSI 498	SENIOR SEMINAR II	(2)
ENG 360	INTERDISCIPLINARY PROFESSIONAL AND TECHNICAL WRITING (W)	(3)
MTH 210	CALCULUS I	(4)
MTH 211	CALCULUS II	(4)
ONE COURSE FROM THE FOLLOWING		**3 crs.**
CSI 345	THE STRUCTURE OF OPERATING SYSTEMS	(3)
CSI 369	SOCIAL, LEGAL, AND ETHICAL ISSUES OF COMPUTING (W)	(3)
CSI 380-389	SPECIAL TOPICS IN COMPUTING AND INFORMATION SYSTEMS	(3)
CSI 410	SOFTWARE ENGINEERING (W)	(3)
CSI 415	ADVANCED DATABASE CONCEPTS	(3)
CSI 440	ARTIFICIAL INTELLIGENCE	(3)
CSI 445	DATA MINING	(3)
CSI 465	COMPILER DESIGN	(3)
CSI 470	INTERNSHIP IN COMPUTING AND INFORMATION SCIENCE	(3)
CSI 480	INDEPENDENT STUDY IN COMPUTING AND INFORMATION SCIENCE	(3)
ECONOMICS AND FINANCE TRACK REQUIRED COURSES		**18-19 crs.**
MTH 170	STATISTICS	(4)
or		
MTH 340	INTRODUCTION TO PROBABILITY AND STATISTICS	(3)
ECO 211	PRINCIPLES OF MICROECONOMICS	(3)
ECO 212	PRINCIPLES OF MACROECONOMICS	(3)
FIN 308	PRINCIPLES OF BUSINESS FINANCE	(3)
FIN 309	MONEY AND BANKING	(3)
ECO 353	MANAGERIAL ECONOMICS	(3)
BIOLOGY TRACK REQUIRED COURSES		**22 crs.**
BIO 110	PRINCIPLES OF CELLULAR AND MOLECULAR BIOLOGY	(5)
BIO 111	PRINCIPLES OF ORGANISMAL AND POPULATION	(5)
BIO 211	GENETICS	(4)
CHE 105	GENERAL CHEMISTRY I	(4)
CHE 106	GENERAL CHEMISTRY II	(4)

CHEMISTRY TRACK REQUIRED COURSES		17 crs.
CHE 105	GENERAL CHEMISTRY I	(4)
CHE 106	GENERAL CHEMISTRY II	(4)
CHE 205	ORGANIC CHEMISTRY I	(4)
CHE 300	ANALYTICAL CHEMISTRY	(5)

MATHEMATICS TRACK REQUIRED COURSES		17 crs.
MTH 212	CALCULUS III	(4)
MTH 340	PROBABILITY	(3)
MTH 341	APPLIED STATISTICS	(4)
MTH 370	DIFFERENTIAL EQUATIONS AND MODELING	(3)
MTH 376	GRAPH THEORY	(3)

PHYSICS TRACK REQUIRED COURSES		19 crs.
PHY 221	UNIVERSITY PHYSICS I: MECHANICAL AND THERMAL PHYSICS	(5)
PHY 222	UNIVERSITY PHYSICS II: ELECTRICITY, MAGNETISM, AND QUANTUM PHYSICS	(5)
PHY 301	ENGINEERING MECHANICS I: STATICS	(3)
PHY 302	ENGINEERING MECHANICS II: DYNAMICS	(3)
PHY 303	ELECTRONIC CIRCUITS	(3)