COMPUTER SCIENCE MAJOR

Linfield University is proud of its tradition of integrating computer skills into its educational programs. Computer experience is increasingly required to succeed in an ever more technological world. For the Computer Science major, deep and continuing exposure to a wide variety of computer-related concepts, skills, and platforms is a career preparation path that offers the industrious student an active role in today's computerized society.

The Computer Science major is designed to meet the growing demand for broadly-educated individuals with fundamental computer related problem-solving skills. The experience gained in this department prepares the student either for graduate study or for immediate employment in a wide range of businesses and industries that utilize computers. Computer Science at Linfield is future-oriented and innovative. The Computer Science major receives a liberal arts education while building a significant record of experience with modern computing techniques, concepts, and machinery. The student learns standard as well as emerging programming languages and operating systems. Students are encouraged to take an applied internship as part of their learning experience, and research opportunities are available through the department. The Computer Science program relies on firm support from the Department of Mathematics. It seeks to produce adaptable, computer-fluent, up-to-date problem-solvers who can write clearly, communicate effectively, and speak easily in public.

A Computer Science major builds a solid base in the study of computing with emphasis in the following areas: programming, software engineering, data science, networks and communications, systems administration, and computer security.

REQUIREMENTS

Degree Requirements

This major is available as a bachelor of arts or bachelor of science degree, as defined in the section on degree requirements (http://catalog.linfield.edu/degrees-and-programs/undergraduate/ba-bs-bsn/) for all majors in this catalog.

Major Requirements

40 COMP credits, plus an additional 12-13 MATH credits, for a combined total of 52-53 credits:

Code	Title	Credits
COMP 160	BEG. PROGRAMMING AND PROBLEM-SOLVING	4
COMP 161	BEGINNING PROGRAMMING: OBJECTS	4
COMP 260	DATABASE MANAGEMENT SYSTEMS	4
COMP 262	DATA STRUCTURES AND ALGORITHMS	4
COMP 490	CAPSTONE PROJECT	4
MATH 170	CALCULUS I	5
MATH 230	DISCRETE MATHEMATICS	4
Select an additional 20 credits from the following		20
COMP 280	CLOUD COMPUTING	
COMP 305	SOFTWARE ENGINEERING	
COMP 370	ADVANCED TOPICS IN ALG, COMPLEX, INTELL	
COMP 375	MOBILE DEVELOPMENT	
COMP 377	COMPUTER ARCHITECTURE	
COMP 405	PLATFORM-BASED SOFTWARE DEVELOPMENT	
COMP 430	COMPUTER SECURITY	
COMP 431	ADVANCED NETWORK COMMUNICATION & SECURITY	
COMP 480	INDEPENDENT STUDY	
COMP 485	ADVANCED TOPICS IN COMPUTER SCIENCE	
COMP 487	SOFTWARE ENGINEERING INTERNSHIP	
Select one of the following:		3-4
MATH 175	CALCULUS II	
MATH 220	INTRODUCTION TO PROOFS	
MATH 250	LINEAR ALGEBRA	
Total Credits		**52-53**

Students are encouraged to take these mathematics courses as early as possible because they provide a theoretical background for many COMP courses. Students are strongly encouraged to take INDEPENDENT STUDY (COMP 480) and SOFTWARE ENGINEERING INTERNSHIP (COMP 487).

Student Learning Outcomes

- understanding of the fundamental principles and concepts of computer science;
- in-depth knowledge of software development, networks and systems development and administration, and information management;
- ability to plan, design, implement, and maintain a hardware, software, or networked project both individually and as part of a group;
- ability to work in multiple programming environments, software development languages, and design paradigms;
- ability to orally present information and write clearly;
- ability to develop in-depth understanding of at least one specialty area of computer science through independent research and, wherever possible, internships;
- ability to understand and function well in an industrial or commercial environment through attachments or internship;
- teamwork, planning, time management skills, problems solving and decision-making skills.