

New Hampshire's Information Technology Pathway



Programming and Software Development

Sequence of Recommended Courses and Descriptions

Postsecondary Partner: **NHCTC-Stratham**

Secondary Partners: **Seacoast School of Technology and Londonderry High School**

Job Function(s) for a Career in Programming and Software Development:

The design, development, implementation and maintenance of computer systems and software, requiring knowledge of computer operating systems, programming languages and software development.

Occupations

- Systems Analyst
- Test Specialist
- Programmer Analyst
- Operating Systems Specialist
- Senior Level Programmer
- Software/Application Support
- Software Designer
- Database Software Technician

Core Academic Foundation

4 credits of English
2-3 credits of Math
2-3 credits of Science
2-3 credits of Social Studies
2-3 credits of Foreign Language
½ - 1 credit of Art/Music
½ - 1 credit of Computer Literacy
1+ credit of Physical Education

Core IT Required Courses

IT & ME
IT & ME Works

Core IT Elective Courses

Introduction to Business
Human Relations & the Organization
Oral Communication
Consumer Behavior

Core IT Career Technical Courses

Programming Logic
Database Design & Management
Programming I
Web Programming I
Introduction to Java Script
Introduction to C++

NHCTC – Stratham Programming and Web Development Certificates

Programming Certificate

This certificate is for students who want to develop the technical expertise for a career in programming, relational database development and/or programmatic application support in the Microsoft Office environment.

Web Development Certificate

This certificate is for students who want to develop current, key skills for careers in the Internet marketplace. As the World Wide Web continues to grow and impact business, industry, and education, the Web Development Certificate prepares developers, designers and technical administrators for challenges in the ever-evolving world of Internet Technology.



IT & ME

As a foundation course to learning how to operate a personal computer, students will explore the three major theory topics of - hardware, software, and communication. Using a fully integrated, hands-on approach, students will learn the fundamental elements of the most current version of Microsoft Office- Word, Excel, Access, and PowerPoint. Students are required to have basic keyboarding skills before taking this course. Recommended for non-computer majors and students needing basic computer skills.

IT & ME Works

In this course, students will gain knowledge, skills and experience in four career strands; Business Information Studies, Network Systems, Programming, and Multimedia. They will learn the principles of marketing, eCommerce and the challenge of securing on-line transactions; they will use advanced skills to customize documents, using graphics, tables, charts, multimedia clips. Students will learn programming logic and build databases and web pages. They will explore the inner workings of a computer network and acquire the proficiency to build and repair a computer. Through this in-depth exploration of the technical and employability skills required for each of the four career stands, students will be prepared to enroll in the upper level courses. Prerequisite: IT & ME

BUS 110 - Intro to Business

This is an introductory course designed to provide students with a basic understanding of the structures and operations of business and an awareness of social and ethical responsibility as it relates to the environment, consumers, employees, and investors. An appreciation of the global economy will also be explored.

BUS 116 - Human Relations & the Org

This course develops basic understanding of organizational behavior. The human relations approach is stressed. It includes management philosophy; the organizational climate; motivation, leadership and management; supervision; communication, group participation and other forces in the work environment. Students learn techniques for becoming more effective managers, subordinates, peers or people.

ENGL113 Oral Communication

This course is designed to give a student confidence and poise in a public speaking situation through practice in speech preparation and presentation or equivalent and/or permission of the instructor.

MKTG 135 Consumer Behavior

An in-depth analysis of the internal and external forces in the consumer decision-making process as it relates to Marketing. Areas of study include consumer reaction, personal selling, product positioning, brand loyalty and image management. Applications in non-profit and government areas also discussed.

CIS112 Programming Logic

This course will emphasize systems thinking as an approach to solving computer problems and understanding formal logic. Programming theory and logic will be presented with hands-on practice in model environments, while students are provided with essential problem-solving methods, techniques and disciplines. Control flow, data manipulation and planning methods will be emphasized. Students will develop confidence in applying programming solutions, will be exposed to pertinent terminology, and will learn the effective use of reference materials.

CIS113 Database and Design Management

This course is an introduction to database analysis, planning, designing, and implementation with emphasis on the relational model. Students will study the theory behind relational databases, relational database nomenclature, and relational concepts. The course will include sections studying Structured Query Language (SQL) and optimizing databases through normalization. Students will apply their knowledge with hands-on exercises designed to teach the intricacies of database design methodology. Prerequisite and co-requisite: CIS111. Technical core course requirement.

CIS118 Programming I

This course will provide the students with an understanding of structured, procedural, and event-driven programming. The students will develop techniques for problem solving through the application of programming methods and will gain experience in the nuts-and-bolts of program design as they complete lab-work and assignments. Students will learn to use the Visual Basic language and programming environment. Prerequisite: CIS112, CIS111. CIS098 recommended as a prerequisite for students with minimal or no programming experience.

CIS124 Web Programming I

This course covers all introductory web page development syntax. Students will study in detail the required tags, semantics, and idioms of HTML (hypertext markup language) as defined by the current version of the W3 Consortium standard. The course will cover all HTML tags and attributes, rules, images, links, and document layout, with an emphasis on cascading style sheets. CIS111 and CIS114 are prerequisite courses.

CIS148 Introduction to Java Programming

The purpose of this course is to provide a solid foundation in the Java programming language. Program planning, object oriented design, and Java language syntax will be emphasized. This course will prepare students for advanced study of the Java language as well as introduce students in other fields of computer study to general object programming. Prerequisites: CIS112.

CIS158 Introduction to C++

This course introduces students to the fundamentals of structured programming and to the procedural aspects of the C++ programming language. Students will create programs to demonstrate the topics of program control, functions, arrays, and pointers. Microsoft's Visual C++ will be used as the primary development tool; however, other environments may also be utilized. Emphasis will be placed on the creation of platform-independent applications in order to allow students to become familiar with the core features of the C++ language. If students do not have any previous programming experience, CIS111 and CIS112 are prerequisites.