Dr. Yoo Jung An
&
Dr. Ned Wilson

ASSOCIATE IN APPLIED SCIENCE DEGREE IN SOFTWARE DEVELOPMENT TECHNOLOGY PROGRAM

GENERAL EDUCATION REQUIREMENTS:
(20 credits)

Communications (6 credits)	
ENG 101 College Composition I	3
ENG 102 College Composition II or ENG 105 Technical Writing	3
Social Science (3 credits)	
Select a course from: ANT 101, 105; ECO 101, 102; POL 101, 104; PSY 101, 102, 219; SOC 101, 108, 219	3
Quantitative Knowledge & Skills/Scientific Knowledge & Reasoning (8 credits)	
MTH 100 Introductory College Mathematics	4
Select one math course or one lab science course from: *Math*: MTH 113, 119, 120, 121, 122, 127, 136, 213, 221, 222, or 239 *Lab Science*: BIO 101, 102, 103, 104, 121, 122; CHM101, 102, 103, 104; PHY101, 102, 103, 104, 113, or 114	4
Humanities (3 credits)	
Select one history class from: HST 101, 102, 111, 112,121, 122, 131, 132, 134-137, 161, 162	3

MAJOR COURSE REQUIREMENTS:
(30 credits)

CSC 104 Network Fundamentals	3
CSC 137 Introduction to Programming in Java	4
CSC 237 Enterprise Java Programming	4
CSC 151 Intro to Developing Web Applications	3
CSC 251 Web Application Development	4
CSC 255 Mobile Application Development with Android or iPhone	4
CSC 231 Database Design	4
CSC 232 Advanced Database Management	4

ADDITIONAL COURSE REQUIREMENTS
(11-12 credits):

CSC 113 Intro to Linux/Unix Operating System **or** CSC 114 Computer Networks **or** CSC 116 Intro to Computer and Network Security	4
CSC 253 Intro to System and Cloud Administration	4
CSC 250 IT Capstone Project **or** CSC 260 Internship **or** Approved Technical Course	3-4

RECOMMENDED SEQUENCE OF COURSES*:

First Semester
ENG 101 College Composition I (3 credits)
MTH 100 Introductory College Mathematics (4 credits)
CSC 137 Introduction to Programming in Java(4 credits)
CSC 104 Network Fundamentals (3 credits)

Second Semester
Quantitative Knowledge & Skills/Scientific Knowledge & Reasoning (4 credits)
CSC 151 Intro to Developing Web Applications (3 credits)
CSC 113 Intro to Linux/Unix Operating System **or**
CSC 114 Computer Networks **or**
CSC 116 Intro to Computer and Network Security (4 credits)
CSC 237 Enterprise Java Programming (4 credits)

Summer
Humanities (3 credits)

Third Semester
Social Sciences (3 credits)
CSC 231 Database Design (4 credits)
CSC 251 Web Application Development (4 credits)
CSC 255 Mobile Application Development with Android (4 credits)

Fourth Semester
Communications (3 credits)
CSC 232 Advanced Database Management (4 credits)
CSC 253 Intro to System and Cloud Administration (4 credits)
CSC 250 IT Capstone Project (3 credits) **or**
CSC 260 Internship (3 credits) **or**
Approved 3-4 credit Technical Course

Total Credits Required for Degree: **61-62**

NOTES:

(1) The two General Education Integrated Course Goals, Ethical Reasoning & Action and Information Literacy, are both addressed by the required curriculum described above, regardless of specific choices made by the individual student.

(2) This plan assumes the completion of all required developmental courses in reading, writing, and mathematics as well as other pre- and co-requisites for some of the courses, as listed in the Course Descriptions section.

C. Curriculum Guide

1. Traditional:

2. Recommend Semester Sequence; (see Table II).

Table II. Recommended Sequence of Courses

Essex County College – Division of Engineering Technologies & Computer Science

New Curriculum Proposal

First Semester
ENG 101 College Composition I (3 credits)
MTH 100 Introductory College Mathematics (4 credits)
CSC 137 Introduction to Programming in Java(4 credits)
CSC 104 Network Fundamentals (3 credits)
TOTAL – (14 Credits)

Second Semester
Quantitative Knowledge & Skills/Scientific Knowledge & Reasoning (4 credits)
CSC 151 Intro to Developing Web Applications (3 credits)
CSC 113 Intro to Linux/Unix Operating System **or**
CSC 114 Computer Networks **or**
CSC 116 Intro to Computer and Network Security (4 credits)
CSC 237 Enterprise Java Programming (4 credits)
TOTAL – (15 Credits)

Summer
Humanities (3 credits)
TOTAL – (3 Credits)

Third Semester
Social Sciences (3 credits)\
CSC 231 Database Design (4 credits)
CSC 251 Web Application Development (4 credits)
CSC 255 Mobile Application Development with Android (4 credits)
TOTAL – (15 Credits)

Fourth Semester
Communications (3 credits)
CSC 232 Advanced Database Management (4 credits)
CSC 253 Intro to System and Cloud Administration (4 credits)
CSC 250 IT Capstone Project (3 credits) **or**
CSC 260 Internship (3 credits) **or**
Approved 3-4 credit Technical Course
TOTAL – (14-15 Credits)

TOTAL – (61-62 Credits)

D. Attach description for all new courses

CSC 151 **Introduction to Developing Web Applications**

Course Description

This course discusses the concepts and skills required to plan, design and build web applications. The topics include Web document structure, HTML5 tags, Cascading Style Sheets (CSS) and JavaScript with a focus on user interaction enabled by programming the web browsers.

CSC 113 **Introduction to Linux/UNIX Operating Systems**

Students will be introduced to Linux/UNIX as an open-source computing environment. They will learn how to install and configure Linux/UNIX as both a server operating system and as a desktop operating system. On the server side they will learn how to set up and configure basic network services. On the desktop side they will learn to set up and configure a graphical environment and will learn how to install and configure office-suite applications. Students will become familiar with the UNIX file system structure, editors and shell programming. Students will learn networking in UNIX as well as basic system administration. Students will be able to contrast and compare UNIX with LINUX.

CSC 114 **Computer Networks I**

The first half of the semester corresponds to the first CCNA course, Introduction to Networks. The topics covered are the architecture, structure, functions, components, and models of the Internet and computer networks. The principles of IP addressing and fundamentals of Ethernet concepts, media, and operations are introduced. The second half of the semester corresponds to the second CCNA course, Routing and Switching Essentials. The topics covered are architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality.

CSC 116 **Introduction to Computers & Network Security**

The course provides a foundation in network security fundamentals for those responsible for protecting network services, devices, traffic and data. The topics include the current risks and threats to an organization's data together with a structured way of addressing the safeguarding of these critical electronic assets. Additionally, the course provides the broad-based knowledge necessary to prepare students for further study in other specialized security fields and prepares students to take the Security+ certification.

CSC 232 **Advanced Database Management**

Course Description

This course provides students with the essential concepts, principles, and techniques of modern database systems. This course covers the principles for the design and techniques of database modeling, and database system architecture, query optimization, query processing, and transactions and user/program interfaces. Building systems that have a relational database as a backend and the Web as a frontend, data mining and data warehousing will be introduced as class projects.

CSC 237 **Enterprise Java Programming**

Course Description

This course continues effective hands on instruction in the Java object-oriented language that was begun in CSC137. Topics may include object-oriented design solutions, exception handling, manipulating files and databases, and graphical user interfaces, multimedia based application and network application. Students will build Java Platform, Enterprise Edition (Java EE) applications that use Enterprise JavaBeans (EJB) and the Java Persistence API (JPA) a layered architectural framework.

CSC 251 **Web Application Development**

Course Description

This course covers Internet applications and concepts from client/server programming to 3-tier architectures. HTML, JavaScript, the Document Object Model, basic HTTP, XML, DTD's and Cascading Style Sheets are introduced as tool for illustrating methods for exchanging, structuring and presenting information. A database (such as DB2), SQL, and a server-side language (such as JSP) are used to implement 3-tier applications.

CSC 255 **Mobile Application Development**

Course Description

This course introduces students to the specific skills needed to develop native applications for mobile devices. Students learn how to design and develop mobile applications that run in an Android or iOS environment. The topics include the essential application programming interfaces (APIs) and tools that enable the development, back-end integration, security, and management of cross-platform mobile applications. A significant project is integrated into the course.

CSC 253 **Introduction to System and Cloud Administration**

Course Description
This course will introduce the tasks and techniques required to perform as a system administrator of Linux systems and introduce the building blocks of most cloud computing solutions. Topics to be covered include: booting, process control, the file system, managing users and resources, backups, configuration management, networking, the network file system, email servers, security, hardware devices, interoperability, daemons, an overview of cloud concepts, which will including delivery models, provisioning, service management, monitoring, and best practices. Whenever possible, lectures will be augmented with hands-on exercises.

CSC 250 **IT Capstone Project**

Course Description

This course is intended for students who are part of the IT Program at Essex County College and who want to enroll in the Capstone Research Project which is part of that program. Each student will develop a proposal for his/her capstone project and then will complete the project as independent study with the oversight of a faculty mentor. Upon completion of the project, the student will make a written report and an oral presentation.