

# **COMPUTER SOFTWARE ENGINEERING TECHNOLOGY SCHEDULE & CURRICULUM**

## **MODEL SCHEDULE FOR COMPUTER SOFTWARE ENGINEERING TECHNOLOGY**

### **SEMESTER 1**

CSET 105 Intro to Web Applications 3

CSET 110 Web Development I 3

CSET 115 Technical Requirements & Data Structures 3

CSET 120 Software Project I 3

MATH 137 Intermediate Algebra(or higher) 3

ENG 106 English Composition 3

### **SEMESTER 2**

CSET 155 Database Design 3

CSET 160 Web Development II 3

CSET 170 Security & Professional Ethics OR 3

CNSA 172 Web Technologies & Network Security Fund 3

CSET 180 Software Project II 3

CIS 111 Introduction to Computer Applications 3

BUSN 106 Small Business Management 3

### **SEMESTER 3**

CSET 205 Advanced Data Integration OR 3

CNSA 222 Database Management Systems 3

CSET 210 Workplace Communications 2

CSET 220 Software Project III 3

PHYS 106 Physics for Everyday Life (OR  
any CHEM, BIO, SCI, or Higher PHYS) 3

ENG 221 Public Speaking 3

ENG 216 Technical Report Writing 3

### **SEMESTER 4**

TECH 104 Internship 4

CSET 260 Software Principles 3

ADVANCED ELECTIVES(Select One)

CNSA 266 Systems Administration II 3

CNSA 271 Network Design 3

ADDITIONAL GENERAL EDUCATION REQUIREMENTS

HEAL 106 Fitness and Wellness 1

Humanities Elective 3

## **TOTAL CREDITS 73**

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### **CSET 105 (3 Credits)**

#### **Introduction to Web Applications**

The course provides an introduction to the basic tools, processes, and workflow in the development of web applications. Students will cover version control, using the command line, and an introduction to automated testing during development. The course meets during the first twelve weeks of the semester.

### **CSET 110 (3 Credits)**

#### **Web Development I**

The course introduces front end web development concepts including HTML, CSS, and Javascript, and their role in building web applications. The course meets during the first twelve weeks of the semester.

### **CSET 115 (3 Credits)**

#### **Technical Requirements and Data Structures**

The course provides information regarding the process of disseminating specifications and managing a project, as well as data structures concepts. The course meets during the first twelve weeks of the semester.

## **CSET 120 (3 Credits)**

### **Software Project I**

This course requires the student to complete a computer software project that employs the skills acquired during that semester. Scheduled during the last three weeks of the semester, the specific projects are those suggested by local employers and advisory committee members.

Optional challenge projects are available for those students who wish to tackle complex problems.

Prerequisite: CSET 105, CSET 110 & CSET 115

## **CSET 155 (3 Credits)**

### **Database Design**

The course develops skills in the administration of databases. Students learn to organize data, and to store the data for use and retrieval. Common systems of data storage are introduced. Students will build a database, script a process to load data, and outline how to retrieve data from that database. The course meets during the first twelve weeks of the semester.

Prerequisite: CSET 110 & CSET 115

## **CSET 160 (3 Credits)**

### **Web Development II**

Students will look at server-side development and build more complex web applications using their knowledge

gained in CSET 110 (Web Development I). Students will have the option to choose between PHP and Ruby as their development language for labs and projects in this course. The course meets during the first twelve weeks of the semester.

Prerequisite: CSET 110 & CSET 120

### **CSET 170 (3 Credits)**

Security and Professional Ethics

The course explores issues of security in software development. Students analyze security problems and learn how they can be minimized or controlled. Students will also cover Secure Socket Layer (SSL) protocol and learn how to apply it to their web applications. The course meets during the first twelve weeks of the semester.

Prerequisite: CSET 110 & CSET 115

### **CNSA 172 (3 Credits)**

Web Technologies and Network Security Fundamentals

Students learn how to configure a web server that can host multiple websites. The course then moves into the creation of web pages from scratch using HTML, CSS, and a text editor. Since security has become an increasingly important issue in our times, some of the security measures that are commonly used on the Internet are included in this course. These security measures include an overview of threats and defense strategies, the

public key infrastructure (PKI), digital certificates, hash codes, and digital signatures.

### **CSET 180 (3 Credits)**

#### **Software Project II**

This course requires the student to complete a computer software project that employs the skills acquired during that semester and previous semesters. Scheduled during the last three weeks of the semester, the specific projects are those suggested by local employers and advisory committee members. Optional challenge projects are available for those students who wish to tackle complex problems.

Prerequisite: CSET 120, CSET 155, CSET 160 & CSET 170

### **CSET 205 (3 Credits)**

#### **Advanced Data Integration**

The course is an extension to more complex data operations skills. Students will learn the principles of creating APIs, explore methods of data analysis, and integrate their applications with external platforms like Open Earth and Twitter. The course meets 16 weeks during the semester (including final exams).

Prerequisite: CSET 155, CSET 160 & CSET 170

## **CNSA 222 (3 Credits)**

### **Database Management Systems**

An in-depth, hands-on survey course in which students develop the skills and the expertise required to design, implement, and manage databases using a relational database management system (RDBMS). Students learn concepts of the relational database model, the principles of database design and normalization, and database administration. In addition, the basic commands and functions of structured query language (SQL) are used for data manipulation and extraction, as well as for database administration. Finally, topics are introduced that relate enterprise databases to client/server systems, application programming, web database development, and e-commerce.

## **CSET 210 (2 Credits)**

### **Workplace Communications**

Students will learn the skills associated with good communications in the workplace. Students will learn the skills necessary to be a good team member. Tenets of customer interaction will also be emphasized. The course meets 16 weeks during the semester (including final exams).

Prerequisite: BUSN 106 & CSET 170

## **CSET 220 (3 Credits)**

### **Software Project III**

This course requires the student to complete a computer software project that employs the skills acquired during that semester and previous semesters. The specific projects are those suggested by local employers and advisory committee members. Optional challenge projects are available for those students who wish to tackle complex problems. The course meets 16 weeks during the semester (including final exams).

Corequisite: CSET 205 & CSET 210

### **TECH 104 (4 credits)**

#### Special Topics (Internship)

Special topics are selected. The topic to be studied is determined by the instructor and approved by the vice president for academic affairs. Credits earned are applicable either as free electives in the program or as credits used for graduation (with the approval of the vice president for academic affairs.)

### **CSET 260 (3 Credits)**

#### Software Principles

Students will be introduced to the most fundamental concepts and principles of software that have been used in practical means throughout this program. Course may cover topics including operating systems, object oriented principles, software design patterns, and system architecture. The course meets 16 weeks (including final exams). The course meets 16 weeks during the semester



(including final exams).

Prerequisite: CSET 205 & CSET 210

### **CNSA 266 (3 Credits)**

#### **Systems Administration II**

Students will also learn to implement dynamic web sites using PHP HyperText Preprocessor (PHP) and MySQL. Topics include configuring PHP and MySQL, reading HTML forms, variables and strings, selections, loops, arrays, cookies and sessions, functions, regular expressions, connecting to a MySQL database, writing basic Structured Query Language (SQL) commands, developing applications with PHP/MySQL, and configuring Apache server to work in conjunction with Internet Information Services (IIS) for website security.

### **CNSA 271 (3 Credits)**

#### **Network Design**

This is the first of two capstone courses in the CNSA curriculum that requires students to rely heavily upon the knowledge and skills acquired from their entire previous course experiences. Project teams manage all accounts (i.e., user, group, computer, security) in their respective domains. In designing their enterprise domains, the teams conduct appropriate research, analyze and evaluate enterprise requirements and specifications, and document the network design. Knowledge of the fundamentals of networking technology, experience supporting a network,

or successful completion of a networking essentials course is required