School of Continuing Studies

BS in Applied Computing Systems and Technology

The program in applied computing systems and technology is designed to give the student a solid foundation in computing technology and the foundations upon which information systems are built.

The application development, database systems, Web development and business systems analysis concentrations cover specific concentration areas in information systems. In these concentrations students learn the skill needed to build information systems to meet the information needs of businesses and other enterprises, enabling them to achieve their objectives in an effective, efficient way. Information systems sees technology as an instrument to enable the generation, processing and distribution of needed information. Professionals in information systems are primarily concerned with the information that computer systems can provide to aid an enterprise in defining and achieving its goals, and the processes that an enterprise can implement and improve using computing technology.

In the information technology concentration, students obtain the combination of knowledge and practical, hands-on expertise to take care of both an organization’s information technology infrastructure and the people who use it. IT professionals guide the selection of hardware and software products appropriate for an organization, integrating those products with organizational needs and infrastructure, and installing, customizing and maintaining those applications for the organization’s computer users.

Note: Applied Computer Systems and Technology courses in the School of Continuing Studies do not count towards the degree requirements of full-time Newcomb-Tulane students.

Requirements for a Bachelor of Science Degree in Applied Computing Systems and Technology

**General Requirements**

**Proficiency Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 101 or CSEN 125</td>
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<td>Two math courses</td>
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**Supporting Requirements**

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**Distribution Requirements (at least two disciplines per category)**

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**Minor Requirements**

Since information systems are intimately tied to applications in a business environment, a business studies minor is strongly recommended. Students who choose the Web development concentration may wish to obtain a minor in media arts in lieu of the business minor.

**Major Requirements**

**Core Courses**

- Fundamentals of Information Systems and Information Technology
- Problem Analysis and Programming Principles I
- Problem Analysis and Programming Principles II
- Database Fundamentals
- IT Hardware and Software Fundamentals
- Networking Fundamentals

**Choose one area of concentration:**

### Applied Computer Systems and Technology

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- Networking Fundamentals

**Choose one area of concentration:**
Application Development Concentration
Object-Oriented Design Implementation
Object-Oriented Programming with Java
One of the following:
  Programming in C++
  Visual Application Development
Advanced Object-Oriented Methods
Two electives
Database Systems Concentration
Systems Analysis and Design
Oracle Forms and Reports
Relational Database Design and Development
Database Application Development
One of the following:
  Data Warehousing and Data Mining
  Database Administration
One elective
Web Application Development Concentration
Systems Analysis and Design
Webpage Design and Development
Two of the following:
  Website Development with XML/XHTML
  Website Development with JavaScript
  Website Development with CGI/Perl
  Website Development with ASP
Internet Database Application Development
One elective
Business Systems Analysis Concentration
Systems Analysis and Design

Information Systems Project Management
System Requirements Development and Testing
Systems Analysis Practicum
Two electives
Information Technology Concentration
Internet Technologies
Fundamentals of Information Security and Assurance
Four of the following (At least one at the 400 level):
  Internet Server Administration with Windows Server and IIS
  LAN Server Administration
  Internet Server Administration with Linux and Apache
  Microcomputer Hardware
  Managing a Network Infrastructure
  Wide Area Networks
  Network Security
  Website Security

Requirements for an Associate of Science Degree in Applied Computing Systems and Technology
Core Courses
Fundamentals of Information Systems and Information Technology
Problem Analysis and Programming Principles I
Problem Analysis and Programming Principles II
Database Fundamentals
IT Hardware and Software Fundamentals
Networking Fundamentals
Choose one area of concentration:
Development Concentration
Object-Oriented Design Implementation or Systems Analysis and Design
One 300 level elective

Information Technology Concentration

Internet Technologies

Fundamentals of Information Security and Assurance

Requirements for a Minor in Applied Computing Systems and Technology

Fundamentals of Information Systems and Information Technology
Problem Analysis and Programming Principles I
Problem Analysis and Programming Principles II
Database Fundamentals
IT Hardware and Software Fundamentals
Networking Fundamentals

Requirements for a Postbaccalaureate Certificate in Application Development

Fundamentals of Information Systems and Information Technology
Problem Analysis and Programming Principles I
Problem Analysis and Programming Principles II
Database Fundamentals
IT Hardware and Software Fundamentals
Networking Fundamentals
Object-Oriented Design Implementation
Object-Oriented Programming with Java
One of the following:
  Programming in C++
  Visual Application Development
Advanced Object-Oriented Methods
Two electives

Requirements for a Postbaccalaureate Certificate in Database Systems

Fundamentals of Information Systems and Information Technology
Problem Analysis and Programming Principles I
Problem Analysis and Programming Principles II
Database Fundamentals
IT Hardware and Software Fundamentals
Networking Fundamentals
Systems Analysis and Design
Website Development with XML/XHTML
Website Development with JavaScript
Website Development with CGI/Perl

Two of the following:
Website Development with ASP
Internet Database Application Development
One elective

**Requirements for a Postbaccalaureate Certificate in Business Systems Analysis**

Fundamentals of Information Systems and Information Technology
Problem Analysis and Programming Principles I
Problem Analysis and Programming Principles II
Database Fundamentals
IT Hardware and Software Fundamentals
Networking Fundamentals
Systems Analysis and Design
Information Systems Project Management
System Requirements Development and Testing
Systems Analysis Practicum
Two electives

**Requirements for a Postbaccalaureate Certificate in Information Technology**

*Core Courses*

Fundamentals of Information Systems and Information Technology
Problem Analysis and Programming Principles I
Problem Analysis and Programming Principles II
Database Fundamentals
IT Hardware and Software Fundamentals
Networking Fundamentals
Internet Technologies
Fundamentals of Information Security and Assurance
Four of the following (At least one at the 400 level):

Internet Server Administration with Windows Server and IIS
LAN Server Administration
Internet Server Administration with Linux and Apache
Microcomputer Hardware
Managing a Network Infrastructure
Wide Area Networks
Network Security
Website Security

**APPLIED COMPUTING SYSTEMS AND TECHNOLOGY COURSE DESCRIPTIONS**

**CPST-100 Introduction to Microcomputers**
This course introduces students to the microcomputer and some popular micro applications. Special attention is given to essential concepts, word processing, spreadsheets, and database management. The course also provides a preface to operating environments such as Windows. Includes hands-on laboratory sessions; currently, Microsoft Office tools are used for this course.

**CPST-101 Advanced Office**
This course uses Microsoft Office to teach intermediate to complex design and implementation skills with desktop computers. Tools for data analysis and cross-system integration are stressed. Embedding, importing, exporting and linking are taught using the word processor, spreadsheet and database software of an integrated vendor package. Lectures and practical exercises in the lab will be used to convey both practical and theoretical knowledge. The student learns to integrate powerful application software packages into a departmental information solution.

**CPST-102 Document Development with Word Processors**
This course covers concepts and principles for designing various types of documents using word processor packages on the microcomputer. It presents the development of word processing applications using macros, merge techniques, mathematical operations, style sheets, tables, outlining, graphics and desktop
publishing fundamentals. Representative word processing packages are used.

CPST-103 Presentation Software
This course prepares students to use a presentation graphics program to organize and present information for personal and professional use. Some topics include: importing, linking and inserting a variety of objects into slides, use of animation and transitions, and the delivery of presentations. Currently PowerPoint is used for the course.

CPST-104 Problem Solving with Spreadsheets
The course covers the use of electronic spreadsheets to perform key applied computing functions with the microcomputer. It presents techniques and methods for designing spreadsheet applications using basic layout and functions, templates, graphing data, macros, consolidation, and audits. It includes concepts and principles of budgeting, system design, and data analysis. Representative spreadsheet packages are used.

CPST-105 Applications of Database Software
Designed for end-users, this course includes design and implementation of various functions and processes using database packages. Topics include: definition of needs from the database software, development of data tables and fields, design of forms and reports, and construction of relationships and views. Representative software packages are used.

CPST-122 Introduction to Programming: Visual Basic
This introductory programming course assumes no previous programming experience and introduces programming in an "object-like" environment. The student is introduced to the use of problem-solving, logic skills and program design to develop simple computer-based solutions in Visual Basic. Students will write Visual Basic programs using elementary applied computing techniques including editing, calculation, decision branching, control looping, and file I/O.

CPST-125 Introduction to Programming: Java
This course introduces the student to the tools used in creating and executing programs and the use of the Java language for specifying
program instructions and concepts that are common to all modern programming languages and environments. The course covers the use of a text editor and compiler, the compiling and running of simple programs, the creation of a simple Java class that functions as the framework of a complete program, the characteristics of simple data types, the declaration, assigning, and manipulation of variables, the use and manipulation of string objects, the use of console-based input and output, the use of if-else constructs to make decisions, the use of loop constructs to perform iteration, the declaration, assigning, and manipulation of arrays, and call static methods.

**CPST-140 Working with the Internet**
This course acquaints the students with the Internet, its uses and history, and a wide variety of tools and applications for effectively accessing information. Students will have the opportunity to learn classic text-based Internet applications, as well as graphical and multimedia capabilities of the World Wide Web. Coverage of basic technologies (e.g., hardware, protocols, authoring software) is included.

**CPST-201 Statistical Software with SPSS or SAS**
This course will be based on either of two major statistical software packages, SPSS or SAS. Students will gain hands-on experience with data conversion and transformations, and will explore basic statistical analyses using data samples from business, marketing, clinical research, epidemiology and education.

**CPST-305 Technology and Ethics**
This course examines the ethical and social aspects of information technology with emphasis on computing. Pertinent issues include acquisition, access, stewardship, liability, freedom, privacy, control and security.

**CPST-310 Help Desk Operations**
This course covers the business practices, tools and technology most frequently used to support business help desk and support operations. Designed to allow students to retrieve the most up-to-date information of general IT and support business practices, using the Internet as a resource for white papers, product demonstrations, and trial versions of software. Students are expected to apply their knowledge through hands-on projects, exercises, and case study assignments.

**CPST-325 Advanced Object-Oriented Programming**
This course focuses on object-oriented principles and languages. Emphasis is placed on abstraction, the use of interfaces, creation and use of class hierarchies, advanced work with UML class diagrams, and an introduction to object-oriented design.

**CPST-345 Website Development with PHP (3)**
This course teaches the fundamentals of programming for web sites using PHP Hypertext Preprocessor, a popular tool for enhancing home pages. The language is part of the Open Source collaborative effort and may be found on millions of websites. Students develop PHP based functions and use MySQL to interface with a small database application using PHP code.

**CPST-405 Managing the Information Technology Department**
Examines the organization, planning and management of major I. S. department functions. Some of these are: technology, personnel, budget, productivity, assessment, project selection and implementation, operations, data custody and ownership.

**CPST-436 Advanced Database Administration**
This course is designed to give the student a firm foundation in advanced database administrative tasks. The student will gain the necessary knowledge and skills to set up a backup and recovery scheme for a high-end database system. Students will then follow a structured performance and tuning analysis of a database. Students will receive an introduction to network administration. Currently, Oracle is used for this course.

**CPST-445 Multimedia Website Development (3)**
This course provides understandings and skills with some of the tools and techniques of designing, developing and publishing
multimedia components on the Internet via the World Wide Web. Students become acquainted with the computer hardware, software (both used on the desktop and the Net), and programming techniques needed to design, create and maintain fully multimedia Web documents and sites. This course will primarily focus on sound, video, and animation component development and publishing. The course relies primarily on "plug-ins" but will require some programming as well.

**CPST-462 Advanced LAN Administration**

The focus of this course is managing a network infrastructure based on Windows 2003 Server and Active Directory. Students are expected to already be familiar with the common administrative tasks associated with the Windows 2003 Server network operating system, including administering users and groups, creation of file shares, assigning shared folder permissions and NTFS file/folder permissions, managing disk storage and disk fault tolerance, network printing, configuring networking protocols, such as TCP-IP, IPX/SPX, and NetBEUI, as well as an understanding of network naming and addressing services, such as DHCP, DNS, WINS, and NetBIOS.

**CPST-475 Fundamentals of Routers**

Students learn the functions, technologies and applications of routers. Usage of Cisco routers and software tools, plus RouterSim software, is included in the course. Configuration of routers using IOS commands is taught, as well as network protocols, design and management principles and tools, and security.

**CPST-476 Fundamentals of Wireless Networking**

This course is introduces the student to the techniques, design and application of wireless networking while avoiding “black box, plug and play” approach so as to develop a higher level of thought and understanding of the subject. Of primary importance is the application of so called “WiFi”, and its numerous offshoots, to create local area and personal area networks that are efficient in coverage and throughput, and secure. In addition, topics such as point to point links between networks, and wide area wireless deployments will be covered. The course will address the rapid changes and new applications as they pertain to wireless networks. Throughout the semester class discussion of the “latest” technologies in wireless will be encouraged. Security should be of prime concern in any wireless networking application and this course will present the tools to implement security within wireless networks, as well as introduce the latest techniques for enhancing security. Basic radio frequency concepts and implementations will be studied to provide a foundation for the understanding of wireless networks in the “real world” environment. Networking equipment and computers will be utilized throughout the course to demonstrate the applications of wireless networking.