

MATHEMATICAL SCIENCES
Institutional (ILO), Program (PLO), and Course (SLO) Alignment

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| Program: Computer Sciences | Number of Courses: 7 | Date Updated: 09.21.2014 | Submitted by: Susanne Bucher, ext. 3221 |
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|-------------|--|---|--|--|
| ILOs | 1. Critical Thinking <i>Students apply critical, creative and analytical skills to identify and solve problems, analyze information, synthesize and evaluate ideas, and transform existing ideas into new forms.</i> | 2. Communication <i>Students effectively communicate with and respond to varied audiences in written, spoken or signed, and artistic forms.</i> | 3. Community and Personal Development <i>Students are productive and engaged members of society, demonstrating personal responsibility, and community and social awareness through their engagement in campus programs and services.</i> | 4. Information Literacy <i>Students determine an information need and use various media and formats to develop a research strategy and locate, evaluate, document, and use information to accomplish a specific purpose. Students demonstrate an understanding of the legal, social, and ethical aspects related to information use.</i> |
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SLO-PLO-ILO ALIGNMENT NOTES:

Mark boxes with an 'X' if: SLO/PLO is a major focus or an important part of the course/program; direct instruction or some direct instruction is provided; students are evaluated multiple times (and possibly in various ways) throughout the course or are evaluated on the concepts once or twice within the course.

DO NOT mark with an 'X' if: SLO/PLO is a minor focus of the course/program and some instruction is given in the area but students are not formally evaluated on the concepts; or if the SLO/PLO is minimally or not at all part of the course/program.

| PLOs | PLO to ILO Alignment | | | |
|--|-----------------------------|---|---|---|
| | (Mark with an X) | | | |
| | 1 | 2 | 3 | 4 |
| PLO #1 Using Specifications Upon completion of their course of study in the Computer Science Department, students, when given a specification for a program or program segment, will be able to design, code, compile, test and document a solution. | X | | | |
| PLO #2 Tracing the Execution Upon completion of their course of study in the Computer Science Department, students, when given a code segment, will be able to trace the execution and give the output. | X | | | |
| PLO #3 Identifying and Correcting Errors Upon completion of their course of study in the Computer Science Department, students, when given a code segment with errors, will be able to identify and correct the problems. | X | | | |
| PLO #4 Explaining Concepts Upon completion of their course of study in the Computer Science Department, students will be able to explain concepts specific to a particular language. | | X | | |

| SLOs | SLO to PLO Alignment <i>(Mark with an X)</i> | | | | COURSE to ILO Alignment <i>*FOR OFFICE USE ONLY*</i> | | | |
|--|---|----|----|----|---|---|---|---|
| | P1 | P2 | P3 | P4 | 1 | 2 | 3 | 4 |
| CSCI 1 Problem Solving and Program Design Using C++: SLO #1 Writing Algorithms Students will write correct and detailed algorithms. (Properly analyze a problem using top down design, and write an algorithm that can be translated into computer code.) | X | | | | X | | | |
| CSCI 1 Problem Solving and Program Design Using C++: SLO #2 Using Correct Syntax Students will write C++ code that uses correct syntax (when declaring data types, writing algebraic and logical expressions, naming variables, etc.). | | X | | | | | | |
| CSCI 1 Problem Solving and Program Design Using C++: SLO #3 Input and Output Information Students will write C++ code that correctly uses control structures (and nested control structures) including conditionals (like "if"), loops (like "while" and "for") and user defined functions (both void and value returning). | | | X | | | | | |
| CSCI 1 Problem Solving and Program Design Using C++: SLO #4 Basic Data Structures Students will write C++ code that correctly uses basic data structures (including strings, arrays, and structs). | | | | X | | | | |
| CSCI 12 Programming for Internet Applications using PHP, JavaScript, and XHTML: SLO #1 Interactive Web Pages Design and implement an interactive web page. | X | | | | X | | | |
| CSCI 12 Programming for Internet Applications using PHP, JavaScript, and XHTML: SLO #2 Side-Scripts Develop a client-side script to create a drop down menu for a web page. | X | | | | | | | |
| CSCI 12 Programming for Internet Applications using PHP, JavaScript, and XHTML: SLO #3 Web Pages Date and Time Design and implement a program or function to process data collected from a web form. | X | X | | | | | | |
| CSCI 12 Programming for Internet Applications using PHP, JavaScript, and XHTML: SLO #4 Processing Web Data Design and implement a server-side program or function to a database and interact (insert, delete, update records) with it. | | | X | X | | | | |
| CSCI 16 Assembly Language: SLO #1 Developing PC Assembly Language Code Students will design, code, compile, test and document programming solutions to problems by developing PC assembly language code that makes direct use of processor instructions, interrupts, registers, the stack, as well as existing macro and procedure libraries. | X | | | | X | | | |
| CSCI 16 Assembly Language: SLO #2 Tracing Code Segments Students, when given a code segment will be able to trace the execution, providing the real-time content of registers during operations, the dynamic content of the stack during procedure calls and returns, and tracing the conditional execution of code generally, and within looping structures specifically. | | X | | | | | | |
| CSCI 16 Assembly Language: SLO #3 Identifying and Eliminating Errors Students, when given PC assembly language code with errors, will be able to identify what those errors are and will be able to modify the PC assembly language code to eliminate those errors. | | | X | | | | | |
| CSCI 16 Assembly Language: SLO #4 Explaining the Concepts of PC Assembly Language Students will be able to explain the concepts of PC assembly language registers, interrupts, data segment organization, addressing modes, internal data representation, decision structures, macros and procedures. | | | | X | | | | |

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|---|---|----|----|----|---|---|---|---|
| | P1 | P2 | P3 | P4 | 1 | 2 | 3 | 4 |
| CSCI 2 Introduction to Data Structures: SLO #1 Programming Solutions Students will design, code, compile, test and document a programming solution to a problem involving the basic data structures: lists, stacks, queues, trees, and related abstract data types. | X | | | | X | | | |
| CSCI 2 Introduction to Data Structures: SLO #2 Output of Program Segments Students, when given a C++ code segment, will be able to trace the execution, give the output, and analyze the efficiency of the basic data structures and techniques involved. | | X | | | | | | |
| CSCI 2 Introduction to Data Structures: SLO #3 Correcting Errors Students, when given a C++ code segment with errors, will be able to identify and correct the problems. | | | X | | | | | |
| CSCI 2 Introduction to Data Structures: SLO #4 Explaining C++ Concepts Students will be able to explain the C++ concepts related to pointers, classes, recursion, searching, sorting, templates and dynamic memory allocation. | | | | X | | | | |
| CSCI 3 Computer Programming in Java: SLO #1 Designing, Coding, Compiling and Testing Students, when given a specification for a program or program segment, will be able to design, code, compile, test and document a solution. | X | | | | X | | | |
| CSCI 3 Computer Programming in Java: SLO #2 Tracing Execution When given a code segment involving control structures, iteration structures and method calls, students will be able to trace the execution and give the output. | | X | | | | | | |
| CSCI 3 Computer Programming in Java: SLO #3 Describing What Users See When given a code segment involving data objects, graphical interface objects, and processing objects, students will be able to describe what the users sees and the events that take place as the user interacts with the interface. | | X | X | | | | | |
| CSCI 3 Computer Programming in Java: SLO #4 Understanding and Developing Desktop and Web Applications Students understand and be able to develop both desktop and web applications involving graphical user interfaces, animations, sound manipulations, File I/O, database, applets, and threads. | X | X | X | X | | | | |

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|--|---|----|----|----|---|---|---|---|
| | P1 | P2 | P3 | P4 | 1 | 2 | 3 | 4 |
| CSCI 30 Advanced Programming C++: SLO #1 Document Programming Solutions Students will design, code, compile, test and document programming solutions to problems requiring the development of C++ classes (by inheritance, by composition; templates), requiring C++ operator overloading, requiring effective use of the Standard Template Library, requiring effective use of pointers and dynamic memory allocation. | X | | | | X | | | |
| CSCI 30 Advanced Programming C++: SLO #2 Tracing and Verifying Students, when given a code segment involving use of a class, will be able to trace the construction of class objects, trace the destruction of class objects, verify whether memory leaks have occurred, trace object assignment operations, verify when copy constructors are invoked and when overloading of copy constructors is required. | | X | | | | | | |
| CSCI 30 Advanced Programming C++: SLO #3 Identifying and Eliminating Errors Students, when given C++ code with errors, will be able to identify what those errors are and will be able to modify the C++ code to eliminate those errors. | | | X | | | | | |
| CSCI 30 Advanced Programming C++: SLO #4 Explaining the Concept of C++ Students will be able to explain the concept of C++ class templates and how they relate to the concept of generics, the concept of virtual functions and polymorphism, the concept of multiple inheritance and virtual base classes, the concept of container types and the circumstances where specific containers should or should not be used. | | | | X | | | | |
| CSCI 40 Introduction to UNIX/LINUX Operating Systems: SLO #1 Shell Script Solutions Given a specification for a set of operating system tasks, students will create, edit, move, display, copy and delete files and subdirectories. | | | | X | X | | | |
| CSCI 40 Introduction to UNIX/LINUX Operating Systems: SLO #2 Using Shell Programming Students use shell programming to create file processing applications and control user interaction. | X | | | | | | | |
| CSCI 40 Introduction to UNIX/LINUX Operating Systems: SLO #3 Input/Output of Programs and Processes Students create, schedule, filter, monitor, format, sort and redirect and delete input / output of programs and processes. | | X | X | | | | | |
| CSCI 40 Introduction to UNIX/LINUX Operating Systems: SLO #4 Basic Administration Functions Students perform basic administration functions in system installation and maintenance, network services, user services. | | | | X | | | | |