

Computing Program:

Table 1: Alignment of Computing Program Education Objectives with University Outcomes

Program Education Objectives	University Wide Learning Outcomes
Problem Solving and Critical Thinking	Apply critical thinking to argument and problem solving
Communication and Interpersonal Skills	Act as effective communicators
Ethical and Professional Responsibilities	Act ethically

Table 2 Relationship of Computing Program Education Objectives with Student Learning Outcomes

Program Educational Objectives	Student Learning Outcomes
Problem Solving and Critical Thinking (PS & CT)	1. (PS & CT a) Formulate project requirements and alternative solutions appropriate to the computing problems
	2. (PS & CT b) Integrate design and implementation principles to develop effective applications
	3. (PS & CT c) Perform critical analyses of the impacts of decisions based on mathematics
	4. (PS & CT d) Implement computing solutions that consist of system and application software written in various programming languages
	5. (PS & CT e) Create efficient, user-friendly applications appropriate to the computing problems

Communication and Interpersonal Skills (C & IS)	6. (C & IS a) Document all aspects of a system precisely and clearly
	7. (C & IS b) Use written, oral, and electronic communication to convey technical information effectively
	8. (C & IS c) Devise effective user interfaces based on the application
	9. (C & IS d) Work cooperatively in teams and with others
Ethical and Professional Responsibilities (E & PR)	10. (E & PR a) Determine the economic and organizational effects of information technology on global society
	11. (E & PR b) Recognize important legal issues and demonstrate appropriate social responsibilities in information technology
	12. (E & PR c) Demonstrate an awareness of the codes of professional ethics in the information technology industry
	13. (E & PR d) Plan for and ensure the security, privacy, and integrity of data
	14. (E & PR e) Recognize the need for continuing professional development

Table 3 Attainment of ABET Outcomes in Computing Curriculum

ABET Outcome	Student Learning Outcomes	Course Objectives (Course No –Objective No)
1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	PS & CT a. Formulate project requirements and alternative solutions appropriate to the computing problems	CPSC 146 – 1: Design an algorithmic solution to a problem using problem decomposition and step-wise refinement
		CPSC 311 – 1: Relate graphs and trees to data structures, algorithms and counting.
		CPSC 327 – 1: Set up network servers of various types, such as file servers, Web servers, and print servers.
		CPSC 327 – 3: Choose an appropriate server operating system, from among several popular ones, for the application at hand.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of	PS & CT b. Integrate design and implementation principles to develop effective applications	CPSC 130 – 1: Write structured web pages that utilize sequential, conditional, and iterative programming constructs.
		CPSC 146 – 2: Implement program solution to an algorithm or design specification.
		CPSC 207 – 1: identify and use system utilities to manage files, processes, network connections and other resources on two computing platforms
	PS & CT d. Implement computing solutions that consist of system and application software	CPSC 217 – 1: Write dynamic, scripted, web-based programs that involve decisions based on user input.

the program's discipline.	written in various programming languages	CPSC 246 – 1: Implement object-oriented programs that use advanced features of the language and run to normal termination and which meet written specifications.
		CPSC/MIS 323 – 1: Use a database query language for data definition, data manipulation, and data analysis.
		CPSC 423 – 1: Solve computer network problems by writing original network software and configuring existing network software.
3. Communicate effectively in a variety of professional contexts.	C & IS a. Document all aspects of a system precisely and clearly	CPSC 130 – 2: Make web pages that are understandable and appropriately documented.
		CPSC 146 – 4: Design programs that effectively communicate with the end user.
		CPSC 217 – 2: Make web pages that are understandable and appropriately documented.
		CPSC 246 – 3: Write well documented code with an appropriate user interface that meets style requirements for readability and usability.
	C & IS b. Use written, oral, and electronic communication to convey technical information effectively	CPSC/MIS 300 – 1: Locate, synthesize and evaluate information to communicate the challenges posed by computer technology through written papers.
		CPSC/MIS 300 – 2: Communicate the challenges posed by computer technology through oral reports.
		CPSC 427 – 3: Develop a written report concerning a large interface design project.
		CPSC 427 – 4: Develop an oral report concerning a large interface design project.

		CPSC 474 – 4: Give an oral presentation to convey advanced architecture and parallel computing topics.
		CPSC 474 – 5: Write a paper to convey advanced architecture and parallel computing.
		CPSC 488 – 2: Write a design document, user manual and technical manual.
		CPSC 488 – 3: Give an oral presentation on software engineering topic.
	C & IS c. Devise effective user interfaces based on the application	CPSC 146 – 3: Implement a program or module using multimedia or graphics and events
		CPSC 246 – 3: Write well documented code with an appropriate user interface that meets style requirements for readability and usability.
		CPSC 427 – 1: Build web based projects with appropriate computer-human interface designs and techniques.
		CPSC 488 – 4: Participate in a semester long team project on analyzing, designing, building, testing and deploying software.
4. Recognize professional responsibilities and make informed judgments in computing practice based on	E & PR b. Recognize important legal issues and demonstrate appropriate social responsibilities in information technology	CPSC 207 – 2: Understand the basic concepts on system and network security and use the related system tools
		CPSC 323 – 3: Identify the issues, the concerns and the backup and recovery techniques prevalent in multi-user database processing.
		CPSC 423 – 3: Identify security and privacy issues that relate to computer networks.
	E & PR c. Demonstrate an awareness of the codes of professional	CPSC 130 – 3: Recognize the ethical, legal, and social implications of information processing

legal and ethical principles.	ethics in the information technology industry	CPSC 146 – 5: Understand ethics and professionalism in the context of an introductory programming class.
		CPSC 207 – 3: Recognize the ethical, legal, and social implications of system deployment
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.	C & IS d. Work cooperatively in teams and with others	CPSC 300 – 3: Evaluate and communicate the challenges posed by computer technology through classroom peer groups.
		CPSC 405 – 5: Work with a team on data mining and analysis project
		CPSC 427 – 2: Work with a team to develop large interface design project.
		CPSC 488 – 5: Participate in a semester long team project on analyzing, designing, building, testing and deploying software.

Table 4 shows the attainment of the student learning outcomes in the common core courses and required courses for each concentration.

PEO	Problem Solving and Critical Thinking					Communications and Interpersonal Skills				Ethical and Professional Responsibilities				
Outcomes	A	b	c	d	e	a	b	c	d	a	b	c	d	E
CPSC 130		•			•	•				•		•		
CPSC 146	•	•			•	•		•				•		
CPSC 207		•									•	•		
CPSC 217				•		•								
CPSC 246				•		•		•						
CPSC 300							•		•	•				•
CPSC 311	•		•											
CPSC 323			•	•	•						•		•	•
CPSC 327	•												•	
CPSC 405									•	•				
CPSC 423				•							•		•	•
CPSC 427							•	•	•	•				
CPSC 474							•							
CPSC 488							•	•	•	•				