

ELEMENTARY/SECONDARY COMPUTER SCIENCE ENDORSEMENT

BHSU & SDSMT

Endorsement coursework requirements must include
courses from each Strand totaling 13 or more credits

Strand 1	Educational technology methodology course							
Strand 2	Demonstrated knowledge of basic computer technologies and networking concepts, terminology tools, and applications							
Strand 3	Study of designing, operating, and maintaining computer technologies and networking systems							
Strand 4	Development of skills with current productivity and multimedia tools for education							
Strand 5	Demonstrated competencies with integrating educational technology to support teaching and learning							
Strand 6	Study of equity and ethics associated with the use of educational technology in schools							
Courses Meeting the Requirement	CSC 150 (3 Credits)	CSC 215 (4 Credits)	CSC 315 (4 Credits)	CENG 244/L (3 Credits)	CSC 340 (3 Credits)	EDFN 365 (3 Credits)	EDFN 375 (1 Credits)	SEED 416 (3 Credits)
Strand 1						X	X	X
Strand 2	X	X	X					
Strand 3		X	X	X	X			
Strand 4						X	X	X
Strand 5						X	X	X
Strand 6						X	X	X

Total Required Credits through University: 21

Course Number	Course Name	University Course Description	Method	Sessions Offered	Total Credits
CSC 150	Computer Science I	An introduction to computer programming. Focus on problem solving, algorithm development, design, and programming concepts. Topics include sequence, selection, repetition, functions, and arrays.	In-person	Fall & Spring	3
CSC 215	Programming Techniques	This is a course that builds on the concepts and techniques introduced in Computer Science 1. Topics include binary files, bit manipulation, memory management, recursion, linked lists, stacks, queues and object oriented programming. Problem solving, algorithm design, standards of program style, debugging and testing are emphasized in this course.	In-person	Fall & Spring	4
CSC 315	Data Structures & Algorithms	A systematic study of data structures and accompanying algorithms with an emphasis on implementation and algorithmic complexity. Program development is done on Linux systems using standard software engineering tools. Topics may include: principles of object-oriented programming, such as inheritance, abstraction, polymorphism, encapsulation, and late binding; binary and m-ary trees, heaps, maps, sets, disjoint sets, and graphs; sorting techniques, hashing, shortest path and minimal spanning tree algorithms, string matching algorithms and an introduction to dynamic programming.	In-person	Fall & Spring	4
CENG 244/L	Introduction to Digital Systems/Lab	This course is designed to provide students with an understanding of the basic concepts of digital systems and their hardware implementation. Topics covered include combinational logic circuits, sequential logic circuits, and CPU control.	In-person	Fall & Spring	3
CSC 340	Software Engineering and Design	An introduction to the software engineering process including a survey of development methodologies (waterfall, iterative, incremental, agile). The class includes modules on fundamental software engineering tools and skills in the areas of testing, test plan development, performance analysis and tuning, and requirements analysis. Teams and teaming are a central theme supported by extensive use of project management systems for communication, source code/revision control, and project estimation.	In-person	Fall & Spring	3

Course Number	Course Name	University Course Description	Method	Sessions Offered	Total Credits
EDFN 365	Computer-Based Technology & Learning	Prepares students to integrate computers into the curriculum by exploring the evolving uses and expectations of technology as a teaching and learning tool. Course objectives based on ISTE standards.	In-person or Internet	Fall, Spring & Summer	3
EDFN 375	Methods of Technology Integration	Preparation applicable to all content areas to effectively integrate technology into instruction and active student learning.	Internet	Fall & Spring	1
SEED 416	5-12 Career and Technical Education (CTE) Methods	Students develop an understanding of the tools of inquiry of 5-12 career and technology education; the ability to design, deliver, and evaluate a variety of instructional strategies and processes that incorporate learning resources, materials, technologies, and state and national curriculum standards appropriate to 5-12 career and technology education; the ability to assess student learning in 5-12 career and technology education; and to apply the knowledge, skills, and dispositions to real life situations and experiences.	In-person	Fall	3