

**Bachelor of Science with Major in Computer Science**  
**(Requires 120 credits.)**

**Computer Science Electives**

To satisfy the computer science (CS) elective requirement, all students must take 9 credits chosen from Computer Science and Computer Engineering upper-division courses that are not in the above CS core (students can take EGN 4040 and ISM 4133 for CS elective credit). In order to provide advanced content, as well as programming experience in a language other than C/C++, one of these elective courses must be: COP 4020, COP 4593, COP 4703 or CAP 4630. Students seeking a specialty may consider concentrating on one of the following groups of courses; additional courses from these groups may be taken as other electives (note that 5000-level or 6000-level CS courses can be taken as CS electives).

<b><i>Internet Technology</i></b>		
Introduction to Data Communications	CNT 4104	3
Introduction to Data and Network Security	CNT 4403	3
Component Program with .NET	COP 4593	3
Applied Database Systems	COP 4703	3
Web Services	COP 4814	3

<b><i>Applications</i></b>		
Introduction to Artificial Intelligence	CAP 4630	3
Computer Animation	CAP 4034	3
Mobile Apps Projects	COP 4655	3
<u>Introduction to Deep Learning</u>	<u>CAP 4613</u>	<u>3</u>

<b><i>Software Engineering</i></b>		
Software Engineering Project	CEN 4910	3

Python Programming	COP 4045	3
Object-Oriented Design and Programming	COP 4331	3
Advanced Systems Analysis and Design	ISM 4133	3

<b>System Performance</b>		
Introduction to Queueing Theory	MAP 4260	3
Modeling and Simulation of Systems	CAP 4833	3
Introduction to Computer Systems Performance Evaluation	CEN 4400	3

<b>System Programming</b>		
Programming Languages	COP 4020	3
UNIX System Programming	COP 4604	3

<b>Computer Architecture</b>		
Structured Computer Architecture	CDA 4102	3
Introduction to VLSI	CDA 4210	3
CAD-Based Computer Design	CDA 4204	3

The following courses may be taken as computer science electives. The group classification will be designated when offered:

Topics in Computer Science	COT 4930	1-3
Topics in Computer Science	COT 5930	1-3

Directed Independent Study	COT 4900	1-3
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Special permission is required to count more than 3 credits of directed independent study. Up to 3 computer science elective credits can be earned by taking Cooperative Education - Computer Science (COT 3949), with each one-semester period of COT 3949 contributing 1 credit.