

## BS CIS Specialization Options

The BS CIS major must select and complete one of the following specialized options. The courses listed below may dictate CSE core choices and technical elective choices. To declare or change focus area please see the CSE academic advisors in DL 374. For questions about course content or selection please see your assigned faculty advisor.

### Artificial Intelligence (AIT)

#### Required Courses

		Hours
CSE 3521	Survey of Artificial Intelligence I: Basic Techniques	3
CSE 5522	Survey of Artificial Intelligence II: Advanced Techniques	3

Choose one of the following:

CSE 5523	Machine Learning and Statistical Pattern Recognition	3
CSE 5524	Computer Vision for Human-Computer Interaction	3
CSE 5525	Foundations of Speech and Language Processing	3
CSE 5526	Introduction to Neural Networks	3

Additional Recommended Courses: CSE 5914

### Computer Graphics and Game Design (CGG)

#### Required Courses

CSE 3541	Computer Game and Animation Techniques	3
CSE 3902	Project: Design, Development, and Documentation of Interactive Systems	4

Choose one of the following:

CSE 5542	Real-Time Rendering	3
CSE 5543	Geometric Modeling	3
CSE 5544	Introduction to Data Visualization	3
CSE 5545	Advanced Computer Graphics	3
CSE 5912	Capstone Design: Game Design and Development	4
CSE 5913	Capstone Design: Computer Animation	4

### Database Systems and Data Analytics (DBA)

#### Required Courses

CSE 3241	Introduction to Database Systems	3
CSE 5242	Advanced Database Management Systems	3

Choose one of the following:

CSE 5243	Introduction to Data Mining	3
CSE 5523	Machine Learning and Statistical Pattern Recognition	3

### Information and Computation Assurance (ICA)

#### Required Courses

CSE 3461	Computer Networking and Internet Technologies	3
CSE 4471	Information Security	3

Choose one of the following:

CSE 5472	Information Security Projects	3
CSE 5473	Network Security	3

Additional Recommended Courses: CSE 3901, 5351, 5432; relevant courses in business, economics or law



**Computer Networking (CNT)**

Required Courses

CSE 3461	Computer Networking and Internet Technologies	3
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Choose two of the following:

CSE 5432	Mobile Handset Systems and Networking	3
CSE 5462	Network Programming	3
CSE 5463	Introduction to Wireless Networking	3
CSE 5472	Information Security Projects	3
CSE 5473	Network Security	3

Additional Recommended Courses: CSE 3901, 5351

**Computer Systems (CSY)**

Required Courses

CSE 3421	Introduction to Computer Architecture	3
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Choose one of the following:

CSE 5433	Operating Systems Laboratory	3
CSE 5441	Introduction to Parallel Computing	3

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CSE 5433	Operating Systems Laboratory	3
CSE 5441	Introduction to Parallel Computing	3
CSE 3461	Computer Networking and Internet Technologies	3
CSE 5243	Introduction to Data Mining	3

Additional Recommended Courses: CSE 5434, 6421\*, 6431\*, 6441\*

**Software Engineering (SWS)**

Required Courses

CSE 3231	Software Engineering Techniques	3
CSE 3232	Software Requirements Analysis	3

Choose one of the following:

CSE 3341	Principles of Programming Languages	3
CSE 5234	Distributed Enterprise Computing	3
CSE 5235	Applied Enterprise Architectures and Services	3
CSE 5236	Mobile Application Development	3

**Individualized Option (IND)**

Required Courses

Students should consult with their faculty advisors to identify the most reasonable set of courses that would be appropriate, given their specific interests.

\*Courses only available by petition