Graduate Courses Recommended as Electives for High Performing Upper Level Undergraduate Students and Graduate Students interested in gaining Depth or Breadth in Spatial Computing, Information Systems and/or Data Science

Spatial Computing Faculty members are often asked which SIE courses students from other disciplines might take as electives in pursuing their academic degrees. We recommend the following courses that may contribute substantially to the knowledge base of students in each domain indicated.

LEGEND:
Course is recommended as potentially germane for high performing students in:

- **I. Computer Science and Computer Engineering Students**
- **II. Biological and Physical Sciences Students and STEM Fields Generally**
- **III. Social Sciences and Humanities Students**

Course	Prerequisite	I.	II.	III.
SIE 501 - Introduction to Graduate Research	Grad standing or permission			
SIE 502 - Research Methods	SIE 501			
SIE 503 - Principles of Experimental Design	SIE 501	X		X
SIE 504 - The Beauty and Joy of Computing	None			
SIE 505 - Formal Foundations for Information Science	SIE 550			
SIE 507 - Information Systems Programming	Grad standing or permission		X	X
SIE 508 - Object Oriented Programming	SIE 507		X	X
SIE 509 - Principles of Geographic Information Systems	Grad standing or permission		X	X
SIE 510 - Geographic Information Systems Applications	SIE 509 or permission		X	X
SIE 512 - Spatial Analysis	Intro statistics & grad stndng or permission		X	X
SIE 515 - Human Computer Interaction	None	X		X
SIE 516 - Interactive Technologies for Solving Real-World Problems	Programming rcmnded & grad standing or permission	X		X
SIE 517 - Spatial Interaction Design	None	X	X	X
SIE 525 - Information Systems Law	Grad standing or permission			
SIE 550 - Design of Information Systems	Grad standing or permission			
SIE 554 - Spatial Reasoning	SIE 550			
SIE 555 - Spatial Database Systems	SIE 550 and programming	X		

	exp in Python, Java, C++ or C			
SIE 557 - Database System Applications	SIE 507		X	X
SIE 558 - Real-time Sensor Data Streams	SIE 550 and prgrmmng exp in Python, Java, C++ or C	X	X	
SIE 559 - Geosensor Networks	SIE 550 and prgrmmng exp in Python, Java, C++ or C	X		
SIE 580 - Ontology Engineering Theory and Practice	SIE 505 or permission	X	X	X
SIE 589 - Graduate Project	SIE Master project student			
SIE 590 - Information Systems Internship	Nine credits in grad program			
SIE 598 - Selected Studies in Spatial Information Engineering	Permission			
SIE 693 - Graduate Seminar				
SIE 694 - Doctoral Seminar	SIE501, SIE502, SIE693			
SIE 699 - Graduate Thesis/Research				
DSE 501 Statistical Foundations of Data Science and Engineering	College level statistics course			
DSE 510 Practicum in Data Science and Engineering	SIE 507 or permission		X	X