**Electronic Intelligent Systems**

The Electronic Intelligent Systems minor offers the opportunity to gain breadth as well as depth in the area of electronic intelligent systems that connect to the physical and social world. The minor includes sub-areas such as robotics, machine learning, and artificial intelligence as well as electronic/electrical engineering. Students learn computer programming as well as computer engineering. EIS minors achieve an understanding of conceptual foundations and emerging applications over a broad range of electrical engineering, computer engineering, and computer science subjects.

**General Guidelines**

- All courses taken to fulfill the minor requirements must be taken for graded credit.
- All upper division courses taken to fulfill the minor must be completed with an overall GPA of 2.0 or above.
- No more than one upper division course may be used to simultaneously fulfill requirements for a student’s major and minor programs.
- Completion of the minor program cannot delay a student’s graduation.
- EECS majors should not be pursuing an EIS minor.
- All students must complete the EIS Minor Completion Form during their final semester.

**Requirements**

**Lower Division Requirements**

- EL ENG 16A  
  Course Not Available
- EL ENG 16B  
  Course Not Available
- Select from one of the following:
  - COMPSCI 61A  
    The Structure and Interpretation of Computer Programs  
    4
  - COMPSCI C8 & COMPSCI 88  
    Foundations of Data Science and Computational Structures in Data Science  
    4

**Upper Division Requirements**

Select two from the following:

- EL ENG 105  
  Microelectronic Devices and Circuits  
  4
- EECS C106A  
  Introduction to Robotics  
  4
- EL ENG 117  
  Electromagnetic Fields and Waves  
  4
- EL ENG 118  
  Introduction to Optical Engineering  
  3
- EL ENG 120  
  Signals and Systems  
  4
- EECS 126  
  Probability and Random Processes  
  4
- EECS 127  
  Optimization Models in Engineering  
  4
- EL ENG 130  
  Integrated-Circuit Devices  
  4
- EL ENG 134  
  Fundamentals of Photovoltaic Devices  
  4
- EL ENG 137A  
  Introduction to Electric Power Systems  
  4
- EL ENG 143  
  Microfabrication Technology  
  4
- EL ENG 147  
  Introduction to Microelectromechanical Systems (MEMS)  
  3
- EECS 149  
  Introduction to Embedded Systems  
  4
- EECS 151  
  Introduction to Digital Design and Integrated Circuits  
  3

- COMPSCI 152  
  Computer Architecture and Engineering  
  4
- COMPSCI 170  
  Efficient Algorithms and Intractable Problems  
  4
- COMPSCI 188  
  Introduction to Artificial Intelligence  
  4
- COMPSCI 189  
  Introduction to Machine Learning  
  4

Select one from the following:

- COMPSCI 61C  
  Great Ideas of Computer Architecture (Machine Structures)  
  4
- COMPSCI 70  
  Discrete Mathematics and Probability Theory  
  4
- OR any upper division EE or EECS course

1 All courses used for the minor must be at least 3 units.