**A. ECE Degree Programs**

* Master of Engineering (ME) in Electrical Engineering (EE)
* Master of Science (MS) in EE
* Master of Engineering in Computer Engineering (CPE)
* Master of Science in CPE
* Master of Engineering in Applied Artificial Intelligence (AAI)
* Master of Science in AAI

**A.1 Program Timeline**

* Minimum 30 credits (10 courses) to graduate
* Complete in one and half year (three semesters) or two years (four semesters)
* Full-time study: 3 or 4 courses per semester: flat tuition
* Final semester: If 1 or 2 courses, then tuition is based on credits

**A.2 Study Plan**

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| --- |
| **Study Plan for the ME degree of EE, CPE, and AAI**: Students are required to complete   * + 1 mathematical foundation course   + 4 core courses in a chosen program   + 3 concentration courses in a chosen concentration   + 2 elective courses |
|  |
| **Study Plan for the MS degree of EE, CPE, and AAI**: Students are required to complete   * + 1 mathematical foundation course   + 4 core courses in a chosen program   + 3 concentration courses in a chosen concentration   + 6-credit research project or thesis |

**Important Notice:**

* **Complete the mathematical course and core courses during the first two semesters of study**
* **Submit the Study Plan to the Registrar’s Office two weeks before the end of the first semester** entering the program. Plan it well and keep a copy!
  + **Please do not wait until the last minute**
  + Only your academic advisor can sign the Study Plan
  + Find your advisor: myStevens ⇒ Web for Students ⇒ Advisor
  + Meet your academic advisor during his/her office hours
* All MS students need to do 6-credit research project or thesis
* If needed, you have one chance to change the Study Plan.
  + Fill in the **Request to Change Study Plan** form. You need to get your academic advisor’s approval before taking courses that are not on the approved Study Plan.
* All Study Plans must be generated from the ECE Department’s designated Auto Advising Apps. Available at: XXXX

**A.3 On Campus vs. Online Courses**

* Majority of ECE courses are offered on campus. **Full-time students are strongly encouraged to take the on-campus courses.**
* To meet part-time student’s needs, some courses are offered only online, denoted as (WS). If a course is offered both on campus and online, it is denoted as (A/WS). A course without an explicit postfix means it is offered only on campus.
* Courses offered in Fall (Spring) are denoted as [F] ([S]); [FS] means the course is offered in both Fall and Spring semesters – subject to change depending on enrollments and other factors.

**A.4 Program Requirements**

* **List of Mathematical Foundation Courses (select 1)**
  + EE:
    - EE 602 (Analytical Methods in Electrical Engineering) (A/WS) [FS] or
    - EE 605 (Probability and Stochastic Processes I) (A/WS) [FS]
  + CPE:
* CPE 602 (Applied Discrete Mathematics) [FS] or
* EE 605 (A/WS) [FS]
  + AAI:
    - EE 602 (A/WS) [FS] or
    - EE 605 (A/WS) [FS]
* **List of Core Courses (select 4)**
  + EE:
    - EE 548 Digital Signal Processing (A/WS) [FS]
    - EE 575 Introduction to Control Theory[FS]
    - EE 603 Linear Systems Theory (A/WS) [FS]
    - EE 608 Applied Modeling and Optimization [FS]
    - EE 609 Communication Theory [FS]
  + CPE
    - CPE 517 Digital and Computer Systems Architecture[FS]
    - CPE 555 Real-Time and Embedded Systems (A/WS) [FS]
    - CPE 593 Applied Data Structures & Algorithms [FS]
    - CPE 690 Introduction to VLSI Design (A/WS) [FS]
    - EE 608 Applied Modeling and Optimization [FS]
  + AAI
    - CPE 646 Pattern Recognition and Classification (A/WS) [FS]
    - CPE 695 Applied Machine Learning (A/WS) [FS]
    - EE 608 Applied Modeling and Optimization [FS]
    - EE 627 Data Acquisition and Processing I (Big Data) (A/WS) [FS]
    - EE 628 Data Acquisition and Processing II (Deep Learning) (A/WS) [FS]
    - EE 672 Applied Game Theory and Evolutionary Algorithms [F]
* **List of Concentrations for EE and CPE**
  + Communications (EE)
  + Power Engineering (EE)
  + Robotics and Automation Systems (EE)
  + Microelectronics and Photonics (EE)
  + Artificial Intelligence (EE and CPE)
  + Embedded Systems (CPE)
  + Software and Data Engineering (CPE)
  + Networks and Security (CPE)
* **List of Concentrations for AAI**
  + Electrical Engineering
  + Computer Engineering
  + Data Engineering
  + Software Engineering
  + Biomedical Engineering
  + Systems Biology
  + Mechanical Engineering
  + Artificial Intelligence in Design and Construction

**A.5 Courses for EE and CPE concentrations**

**Concentration 1: Communications (select 3)**

* EE 510 Introduction to Radar Systems (WS) [S]
* EE 568 Software-Defined Radio (WS) [Summer]
* EE 583 Wireless Communications (A/WS) [FS]
* EE 585 Physical Design of Wireless Systems (WS) [FS]
* EE 582 Wireless Networking: Architecture, Protocols and Standards (WS) [F]
* EE 584 Wireless Systems Security (WS) [FS]

**Concentration 2: Power Engineering (select 3)**

* EE 575 Introduction to Control Theory [FS]
* EE 589 Introduction to Power Engineering [F]
* EE 590 Smart Grid [S]
* EE 629 Internet of Things [FS]
* CPE 679 Computer and Information Networks [F]
* CPE 691 Information Systems Security (WS) [FS]

**Concentration 3: Robotics and Automation Systems (select 3)**

* EE 575 Introduction to Control Theory [FS]
* EE 621 Nonlinear Control [S]
* EE/CPE 631 Cooperating Autonomous Mobile Robots [S]
* CPE 521 Introduction to Autonomous Mobile Robots [F]
* CPE 645 Image Processing and Computer Vision (A/WS)
* EE 553 Engineering Programming: C++ [FS]

**Concentration 4: Microelectronics and Photonics (select 3)**

* CPE 690 Introduction to VLSI Design (A/WS) [FS]
* EE/PEP 503 Introduction to Solid State Physics [S]
* EE/PEP 507 Introduction to Microelectronics and Photonics (WS) [FS]
* EE/PEP 509 Intermediate Waves and Optics [S]
* EE/PEP 561 Solid State Electronics for Engineering I (WS) [FS]
* EE/PEP 562 Solid State Electronics for Engineering II [S]

**Concentration 5: Embedded Systems (select 3)**

* CPE 517 Digital and Computer Systems Architecture [FS]
* CPE 545 Communication Software and Middleware [S]
* CPE 555 Real-Time and Embedded Systems (A/WS) [FS]
* CPE 556 Computing Principles for Embedded Systems [F]
* CPE 690 Introduction to VLSI Design (A/WS) [FS]
* EE 629 Internet of Things [FS]

**Concentration 6: Software and Data Engineering (select 3)**

* CPE 545 Communication Software and Middleware [S]
* CPE 593 Applied Data Structures & Algorithms [FS]
* EE 627 Data Acquisition and Processing I (Big Data) (A/WS) [FS]
* EE 551 Engineering Programming: Python (A/WS) [FS]
* EE 552 Engineering Programming: Java [FS]
* EE 553 Engineering Programming: C++ [FS]
* EE 628 Data Acquisition and Processing II (Deep Learning) (A/WS) [FS]
* EE 629 Internet of Things [FS]

**Concentration 7: Networks and Security (select 3)**

* CPE/CS 579 Foundations of Cryptography [S]
* EE 584 Wireless Systems Security (WS) [FS]
* CPE 604 Analytical Methods for Networks (WS) [S]
* CPE 654 Design and Analysis of Network Systems (WS) [FS]
* CPE 679 Computer and Information Networks [F]
* CPE 691 Information Systems Security (WS) [FS]
* EE 552 Engineering Programming: Java [FS]

**Concentration 8: Artificial Intelligence (select 3)**

* EE 551 Engineering Programming: Python (A/WS) [FS]
* EE 672 Applied Game Theory and Evolutionary Algorithms [F]
* EE 627 Data Acquisition and Processing I (Big Data) (A/WS) [FS]
* EE 628 Data Acquisition and Processing II (Deep Learning) (A/WS) [FS]
* CPE 646 Pattern Recognition and Classification (A/WS) [FS]
* CPE 695 Applied Machine Learning (A/WS) [FS]

**A.6 Courses for AAI concentrations**

* **Concentration 1: Electrical Engineering (select 3)**
  + EE 548 Digital Signal Processing (A/WS) [FS]
  + EE 575 Introduction to Control Theory [FS]
  + EE 582 Wireless Networking: Architecture, Protocols and Standards (A/WS) [F]
  + EE 603 Linear Systems Theory (A/WS] [FS]
  + EE 609 Communication Theory [FS]
  + EE 608 Applied Modeling & Optimization [FS]
* **Concentration 2: Computer Engineering (select 3)**
  + CPE 517 Digital and Computer Systems Architecture [FS]
  + CPE 555 Real-Time and Embedded Systems (A/WS) [FS]
  + CPE 593 Applied Data Structures & Algorithms [FS]
  + CPE 679 Computer and Information Networks [F]
  + CPE 690 Introduction to VLSI Design (A/WS) [FS]
  + EE 608 Applied Modeling & Optimization [FS]
* **Concentration 3: Data Engineering (select 3)**
* CPE 593 Applied Data Structures & Algorithms [FS]
* EE 627 Data Acquisition and Processing I (Big Data) (A/WS) [FS]
* EE 628 Data Acquisition and Processing II (Deep Learning) (A/WS) [FS]
* EE 551 Engineering Programming: Python (A/WS) [FS]
* **Concentration 4: Software Engineering (select 3)**
* CPE 593 Applied Data Structures & Algorithms [FS]
* EE 627 Data Acquisition and Processing I (Big Data) (A/WS) [FS]
* EE 553 Engineering Programming: C++ [FS]
* EE 552 Engineering Programming: Java [FS]
* EE 551 Engineering Programming: Python (A/WS) [FS]
* **Concentration 5: Biomedical Engineering (select 3)**
* BME 810: Biomedical Digital Signal Processing [F]
* BME 558: Introduction to Brain Computer Interface
* BME 504/CPE 585: Medical Instrumentation and Imaging [S]
* **Concentration 6: Systems Biology (select 3)**
* BIO 687: Molecular Genetics [F]
* CH 580 Biochemistry I [F]
* BIO 668 Computational Biology [F]
* **Concentration 7: Mechanical Engineering (select 3)**
* ME 598 Introduction to Robotics [FS]
* ME 621: Introduction to Modern Control [S]
* ME 644: Computer-Integrated Design and Manufacturing [F]
* **Concentration 8: Artificial Intelligence in Design and Construction (select 3)**
* OE 511 Urban Oceanography [F]
* CM 521 Construction Organizations
* CM 530 Strategic Responses to Cyclical Environments [S]
* CM 560 Sustainable Design [S]

**A.7 Electives for ME Students**

For students in the ME program, you may choose any two EE/CPE courses or two relevant courses outside the ECE department (**Academic advisor approval is required**).

**A.8 Project Courses and Thesis for MS Students**

* List of Project Courses (3 credits)
  + EE 800 Special Problems in Electrical Engineering [FS]
  + CPE 800 Special Problems in Computer Engineering [FS]
  + AAI 800 Special Problems in Applied Artificial Intelligence [FS] *(to be added)*
* List of Thesis (two semesters for total 6 credits)
  + EE 900 Thesis in Electrical Engineering [FS]
  + CPE 900 Thesis in Computer Engineering [FS]
  + AAI 900 Thesis in Applied Artificial Intelligence [FS] *(to be added)*