Courses I want to take:

++1.

**Course:**

**++ECEC 487 Pattern Recognition 3.0 Credits**

Theory of supervised and unsupervised statistical pattern recognition, presented through practical programming techniques.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ECE 361 [Min Grade: D]

Prerequisite:

**ECE 361 Probability and Data Analytics for Engineers 4.0 Credits**

This course will cover topics related to probability and statistics. Probability topics include sample space and probability, discrete and continuous random variables (single and multiple), and their properties and applications to modeling, and the central limit theorem. Topics in statistics will include parametric and non-parametric hypothesis testing, data analytics and related topics, computational approaches and bootstrapping.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D]

2.

**ECES 441 Bioinformatics 3.0 Credits**

This course will focus on developing the computational, algorithmic, and database navigational skills required to analyze genomic data that have become available with the development of high throughput genomic technologies. We will also illustrate statistical signal processing concepts such as dynamic programming, hidden markov models, information theoretic measures, and assessing statistical significance. The goals will be achieved through lecture and lab exercises that focus on genomic databases, genome annotation via hidden markov models, sequence alignment through dynamic programming, metagenomic analyses, and phylogenetics with maximum likelihood approaches.

No prerequisuites

3.

**ECE 310 Machine Learning Engineering Practicum 3.0 Credits**

This course emphasizes how to gather data then train, test, and deploy practical machine learning systems using modern software libraries, with an emphasis on scikit-learn, Keras on TensorFlow, and TensorFlow Agents. After garnering working familiarity with learning architectures including linear regression, support vector machines, decision trees, and deep neural networks, students will shift to practicing techniques that leverage state of the art published models via transfer learning. This is a hands-on project-focused course integrating coding activities into lectures. To provide the broadest applicability, datasets will range from rich text, to financial time series, to sound, images, and video, as well as data garnered through game play.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ECE 105 [Min Grade: D] or CS 172 [Min Grade: D]

Prerequisite:

**ECE 105 Programming for Engineers II 3.0 Credits**

This course will cover advanced usage and understanding of programming concepts using Python within the Linux environment. By the end of the course, students will not only possess strong programming capabilities but will also have a firm grasp on scientific computing fundamentals. Students should already have a working knowledge of bash, python, pylint, tmux/GNU screen, X11 tunnelling, and at least one terminal based editor (vim, nano, joe, etc) from [ENGR 131](https://catalog.drexel.edu/search/?P=ENGR%20131) or [ENGR 132](https://catalog.drexel.edu/search/?P=ENGR%20132).

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D] or CS 171 [Min Grade: D]

**CS 172 Computer Programming II 3.0 Credits**

Covers object-oriented design, inheritance hierarchies, information hiding principles, string processing, recursion, good programming style, documentation, debugging, and testing.

**College/Department:** College of Computing and Informatics  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** CS 171 [Min Grade: C] or CS 175 [Min Grade: C]

++4.

**++ECEC 357 Introduction to Computer Networks 3.0 Credits**

History of the Internet; introduction to packet switching, circuit switching and virtual circuit switching; statistical multiplexing; protocol layering; metrics of network performance including bandwidth, delay and loss; medium access protocols and Ethernet; routing algorithms; end-to-end issues; flow and congestion control; an overview of application layer protocols.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ECE 105 [Min Grade: D] or ECE 203 [Min Grade: D] or CS 171 [Min Grade: D]

Prerequisites:

**ECE 105 Programming for Engineers II 3.0 Credits**

This course will cover advanced usage and understanding of programming concepts using Python within the Linux environment. By the end of the course, students will not only possess strong programming capabilities but will also have a firm grasp on scientific computing fundamentals. Students should already have a working knowledge of bash, python, pylint, tmux/GNU screen, X11 tunnelling, and at least one terminal based editor (vim, nano, joe, etc) from [ENGR 131](https://catalog.drexel.edu/search/?P=ENGR%20131) or [ENGR 132](https://catalog.drexel.edu/search/?P=ENGR%20132).

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D] or CS 171 [Min Grade: D]

**ECE 203 Programming for Engineers 3.0 Credits**

Fundamentals of computer organization; rudiments of programming including data types, arithmetic and logical expressions, conditional statements, control structures; problem solving techniques for engineers using programming; object-oriented programming; arrays; simulation of engineering systems; principles of good programming practice.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Restrictions:** Cannot enroll if classification is Freshman

**CS 171 Computer Programming I 3.0 Credits**

Introduces fundamental concepts of computing including memory, instructions, function calls, and activation records. Covers fundamentals of structured computer programming in the language of instruction: variables, input and output, expressions, assignment statements, conditionals and branching, subprograms, parameter passing, repetition, arrays, top-down design, testing, and debugging.

**College/Department:** College of Computing and Informatics  
**Repeat Status:** Not repeatable for credit

+5.

**+ECE 304 Remote Sensing and Control 3.0 Credits**

This course will teach students the various steps involved in the construct a fundamental remote monitoring and control system over a local area network and Bluetooth/Bluetooth Low Energy, from the ground up. The course will use hardware and software to accomplish this goal to enhance the student learning experience.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ECE 303 [Min Grade: D]

++6.

**++ECE 302 Design with Embedded Processors 3.0 Credits**

A project-based course on design and implementation of mixed signal systems with embedded processors (digital, analog and software) with applications in signal processing, control, wireless and Internet of Things.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ECE 203 [Min Grade: D] or ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D] or CS 171 [Min Grade: D]

Prerequisite:

**ECE 203 Programming for Engineers 3.0 Credits**

Fundamentals of computer organization; rudiments of programming including data types, arithmetic and logical expressions, conditional statements, control structures; problem solving techniques for engineers using programming; object-oriented programming; arrays; simulation of engineering systems; principles of good programming practice.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Restrictions:** Cannot enroll if classification is Freshman

**CS 171 Computer Programming I 3.0 Credits**

Introduces fundamental concepts of computing including memory, instructions, function calls, and activation records. Covers fundamentals of structured computer programming in the language of instruction: variables, input and output, expressions, assignment statements, conditionals and branching, subprograms, parameter passing, repetition, arrays, top-down design, testing, and debugging.

**College/Department:** College of Computing and Informatics  
**Repeat Status:** Not repeatable for credit

Not Sure:

--1.

**--ECE 350 Introduction to Computer Organization 3.0 Credits**

This course will teach students the various steps involved in the construction of a full-fledged computer system, both hardware and software aspects, from the ground up. The course will use hardware and software projects to accomplish this goal. Students will design and simulate a hardware processing pipeline. A virtual machine, compiler, and assembler, for a simple object-based language will also be developed.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** (ECE 105 [Min Grade: D] or CS 172 [Min Grade: D]) and (ECE 200 [Min Grade: D] or CS 270 [Min Grade: D])

2.

**ECE 403 Computing and Control 4.0 Credits**

The computer in the loop is examined for binary inputs and outputs taking into account processing and actuator delays. The concept of stability is introduced and the inherent delay introduced by computer systems and software on stability is explored. The use of interrupts to implement fixed-rate sampling is introduced along with practical implementation of PID controllers. The Kalman filter is introduced as a stochastic state observer under measurement uncertainty as well as the extended Kalman filter to address non-linear systems. Students will perform laboratory projects and present a final group project.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ECES 301 [Min Grade: D] and ECE 361 [Min Grade: D]

++3.

**++ECE 471 Introduction to VLSI Design 3.0 Credits**

This is an introductory course where systematic understanding, design and analysis of digital VLSI integrated circuits will be covered. The course will begin with a review of CMOS transistor operation and semiconductor processes. Logic design with CMOS transistor and circuit families will be described. Specifically, layout, design rules, and circuit simulation will be addressed. Performance metrics will be analyzed in design and simulation.

**College/Department:** College of Engineering  
**Repeat Status:** Not repeatable for credit  
**Prerequisites:** ECE 200 [Min Grade: D] or CS 270 [Min Grade: D]