

### ECE 655 DEEP LEARNING FUNDAMENTALS

Recommended: Familiarity algorithms

This course focuses on Deep learning concepts including convolutional neural networks, recurrent neural networks, auto encoders, Generative Adversarial Networks (GAN) and their implementation. The implementation of these algorithms will be based on the state-of-the-art industry tools such as TensorFlow 2.0/Keras or Pytorch frameworks. All students are required to implement the above Deep Learning architectures in a real-world example in the final project/signature assignment.

### ICS 502 CYBER ATTACK COUNTERMEASURES

Recommended: Familiarity cybersecurity fundamentals

Countermeasures for the preventing of cyberattacks. Firewalls – design, types and comparisons, intrusion detection, network access controls, network and browser encryption, network management, and secure systems development, cloud security.

### ECE 502 ADVANCED PYTHON APPLICATIONS

Recommended: Familiarity with Python/Introduction to Python

This is an advanced course in Python programming that covers features of the language and its libraries. Students learn about advanced data structures and language constructs such as linked lists, generators and decorators. The application topics focuses on areas relevant to AI discipline such as parallel programming using threads and processes, network programming (client-side and server-side), database programming, text processing and regular expressions, and web scraping.

### ICS 525 PRINCIPLES OF ETHICAL HACKING

Recommended: Knowledge of C++, Java, or Python

In this course students will learn and practice hacking techniques used by malicious, black-hat hackers as a means to learn best defense from these same hackers. The course is an in-depth study using hands-on lab exercises. While these hacking skills can be used for malicious purposes, this course teaches you how to use the same hacking techniques to perform a white-hat, ethical hack, on your organization. The course trains for the CEH (Certified Ethical Hacker Certificate). Students will be trained to penetrate, test and hack their employers' own computer system in order to safeguard it from real (malicious) hackers. The Ethical Hacker is a trustworthy employee of an organization trained to attempt to penetrate networks and/or computer systems by using the same methods and techniques as a malicious hacker. Through this the individual can learn and master the malicious hackers methods find the weak pointes in an organization's network or computer systems and build safeguards against hacking attempts. The CEH is the most desired information security training program for any IT security professional.

### ECE 505 MACHINE LEARNING FUNDAMENTALS

Prerequisites: none

This course discusses the fundamentals of machine learning. Topics include, supervised/unsupervised learning, regression, decision trees, ensemble techniques, Vector Support Machines, perceptron and multilayer perceptron. The course focuses on implementation of these algorithm in Python using Scikit-learn library. This course is designed to build the foundation of machine learning and AI and is a prerequisite for most of the advanced courses in AI and Deep Learning.

### ECE 646 - IOT SYSTEM DESIGN

Prerequisites: none

Students will learn the fundamentals of IoT system design using Raspberry Pi boards running the Linux operating system. Students will work with system peripherals, e.g., GPIO, UART, I2C, SPI, and USB;

wireless data communications, e.g., Bluetooth Low Energy, WiFi, and Zigbee; and web services, e.g., Amazon Web Services (AWS). Application programming in Python and JavaScript (Node.js) will be used to complete labs that are designed to give students hands-on experience in IoT system designs.

### DGA 508 CG SOFTWARE FUNDAMENTALS

Prerequisites: None

This course will provide an overview of the computer graphics process utilized today in print, commercials, games, television and movies. The course will offer the student a hands-on tutorial covering modeling, rendering, lighting, animation and compositing. Students will get to construct a 3D model and take it through all phases of the computer graphic process culminating in a finished scene realistically composited into a 2D background. Other subjects covered include principles of rigging, animation, motion tracking and camera moves with examples provided. Lab fees may apply.

### BUA 503 GAME THEORY, BUSINESS STRATEGY AND THINKING STRATEGICALLY

Prerequisites: None

The focus of this course is the use of game theory to define the most likely outcome of business situations, especially where there is a communication between two or more decision makers to build business strategy. In addition, students will be introduced to methods in strategic thinking and its connections with current game theory to resolve strategic business problems. Students will need skill at numerical reasoning for this course.

### EMG 511 TECHNOLOGY MANAGEMENT AND ENTREPRENEURSHIP

Prerequisites: None

This course focuses on the connection between entrepreneurship and the creation of new technologies that drive economic development and the creation of wealth. A second area of study focuses on the existence or establishment of an "innovation ecosystem" to create and sustain economic development.

### DGA 518 UI/UX: USER INTERFACES AND USER EXPERIENCES

Prerequisites: None

This course offers students an engaging introduction and hands-on practice in the fundamental areas of human centered user experience (UX) design. This course will explore design-thinking strategies ranging from behavioral psychology basics to techniques for user research, design ideation, rapid prototyping and usability evaluations. Students will learn how to gather and translate user needs into clear and responsive user interface (UI) solutions. Students will demonstrate their creative problem solving skills by building a design portfolio across a range of UX / UI projects throughout the course.

### DGA 507 DESIGN FUNDAMENTALS

Prerequisites: None

This course blends classical visual language fundamentals with project-based design learning applicable to the media and tech industries. Students will learn how to apply core principles of typography, color, and composition to digital products. The emphasis of the course on design 98 methodologies in both theory and practice are instrumental in improving design performance, problem solving skills, and

making students into better designers. Course projects will enable students to build a portfolio of digital design solutions across mobile, web, games or film.

### ICS 501 INTRODUCTION TO CYBERSECURITY

Prerequisites: None

Overview of the field of Cyber Security: history and basics of cryptography, risk and data management, fundamental concepts, preventative measures, rules, regulations and legal issues, security testing and assessment, identity and access management, database security, computer ethics, digital signatures.

### MGT 690 PITCHING A BUSINESS PLAN TO VENTURE CAPITALISTS – CAPSTONE PROJECT

In today's extremely competitive world of raising money for startup companies, it is absolutely critical to have an effective and well-conceived pitch deck that compliments the project's vision and strategy. Only 1 of every 200 business plans submitted to venture capitalists (VCs) gets funded, so it is vital to present a well thought-out presentation that includes all of the elements that VCs (or any type of potential investor) will be looking for in deciding whether to invest in your company or not. Whether the student is interested in starting their own company someday, wants to work for a startup, or just wants to learn more about venture capital, Silicon Valley and startups in general, this will be a great opportunity to discover how startup companies have successfully raised money.

All new students are required to take Outbound exam with Peregrine Academic Services. The Outbound exam is required to be taken in the capstone course, either MBN 697 Master Thesis or MGT 690 Pitching a Business Plan to Venture Capitalists. Taking the Outbound exam will have a fee which is currently \$34. The Outbound exam is REQUIRED not OPTIONAL. Information on how to take the exams will be included in the course syllabus. Any new student who does not take the Outbound exam, will not be eligible for graduation. Current students are encouraged to take the exam.

### MGT 612 ADVANCED PROJECT MANAGEMENT

Prerequisites: Familiarity with Project Management

This course offers a study of the human and the operational sides of project management. The human side includes discussion on negotiating and conflict management, leveraging diversity, and selling project management. The operational side includes scope control techniques, risk management, and organizing for success. The students will learn how to effectively engage the project team, deal with the inevitable conflicts, and use intellectual and cultural diversity to encourage creative problem solving.

### SWE 562 ORACLE DATABASE MANAGEMENT/ADMINISTRATION

Prerequisites: None

This course introduces Oracle as a practical example of a widely used database system, teaches basic database concepts, data definition and manipulation languages (SQL), general architecture of database management systems, transaction management, concurrency control, security, distribution, and query optimization.