SAMPLE UPPER- AND GRADUATE-LEVEL ELECTIVES

SYEN 5399 Power Systems Analysis and Design
SYEN 5399 Linux OS Internals
SYEN 5399 DSP & Micro-controller
SYEN 5320 Linear Systems Theory
SYEN 5329 Robust and Optimal Control
SYEN 5399 Computational Fluid Dynamics
SYEN 5399 Internet, Optical, and Wireless Communication
SYEN 5399 Markovian & Self-Similar Traffic Models
SYEN 5399 Optimization of Communication Networks
SYEN 5343 Networks and Combinatorial Optimization
SYEN 5399 Dynamic Programming
SYEN 5399 Spatial Time Series
SYEN 5399 Modeling Transportation Systems
SYEN 5353 Advanced Digital Communications
SYEN 5399 Mobile and Personal Communications Systems
SYEN 5399 Advanced Antennas for Wireless Systems
SYEN 5366 Advanced Digital Systems
SYEN 5399 Computer Graphics
SYEN 5399 Scientific Computing
SYEN 5399 Parallel Computing
SYEN 5399 Introduction to Thermal Systems Engineering
SYEN 5399 Bioinformatics
SYEN 5399 Wireless Multimedia Internet
SYEN 5399 Optical Networks
CPSC 7383 Modeling and Simulation
The UALR Donaghey College of Information Science and Systems Engineering offers a Graduate Certificate in Systems Engineering. The Certificate allows you to specialize in fields such as:

- Systems Architecture and Design
- Functional and Physical Design
- Requirements Analysis
- Concept Definition
- Design Trade-offs
- Risk Assessment
- Interface Definition
- Engineering Design
- System Integration
- Project Planning
- Verification and Validation
- Cost and Timeline Analysis

A Graduate Certificate in Systems Engineering can help you bring together all engineering fields, creating the “big picture” for accomplishing goals, and managing complex structures such as:

- Computer Networks
- Wireless Networks
- Thermal Power Plants
- Airplanes and Spacecraft
- Manufacturing Lines
- Transportation Systems

The Certificate consists of 18 credit hours of course work (half of a typical master's degree requirement). It is ideal for working professionals who wish to upgrade their skills in the intricacies of systems engineering. Certificate holders who have finished the program may further pursue a master’s degree in areas such as Applied Science, building upon the 18 hours already taken in the Certificate Program.

For the Certificate, students must take six three-credit-hour courses, consisting of four Systems Engineering core courses and two electives.

**Core Courses (12 hours)**
The Systems Engineering (SYEN) core courses are intended to provide the fundamental methods relevant to the design, implementation, and management of engineering systems. They include:

- SYEN 7311 Systems Design and Analysis
- SYEN 7312 Systems Architecture and Design
- SYEN 7313 Systems Management and Evaluation
- SYEN 7314 Multicriteria Decision and Risk Analysis

These four courses address methods and practices involved in the translation of a need, deficiency, or market opportunity into a feasible system or product architecture.

**Electives (6 hours)**
Due to the diversity of students’ professional backgrounds, students are encouraged to pick two upper-level elective courses (5000-level or above) that are compatible with their specific interests. These two technical courses, approved in advance by the faculty advisor, can be chosen from university departments such as:

- Systems Engineering,
- Applied Science,
- Computer Science,
- Information Science, or
- Other graduate science- or engineering-related programs.

The Certificate can also help you to:

- Integrate multifaceted engineering projects and disciplines;
- Model complex systems and optimize systems performance;
- Conduct real-life case studies by architecting and designing engineering projects.

The minimum entrance requirement is a bachelor degree in engineering, science, technology, or a related discipline. Because of the professional nature of the Certificate, the precise entrance requirements are determined on a case-by-case basis by the Systems Engineering Admissions Committee.