

# ENGINEERING (ENGR-GH)

## ENGR-GH 6210 Nonlinear Dynamics (3 Credits)

*Typically offered occasionally*

This course presents some of the most-widely utilized tools to analyze the behavior of nonlinear dynamical systems. The first part of the course introduces the different types of equilibrium solutions of ordinary differential equations, and shows how to assess their stability, how to establish the phase-space representation of the dynamics, and to construct bifurcation diagrams and basins of attractions. The second part introduces several perturbation techniques to analytically construct approximate solutions of nonlinear ordinary differential equations. The third and final part introduces several techniques to analyze the existence and stability of periodic, quasiperiodic, and chaotic motions.

**Grading:** Grad Abu Dhabi Graded

**Repeatable for additional credit:** No

- Bulletin Categories: Engineering: Graduate Level Courses

## ENGR-GH 6422 Data Analysis for Urban Systems (2 Credits)

*Typically offered Fall*

This course introduces students to the science and art of statistical model development using field and experimental data. The course is divided into three parts: 1) review of statistical inference, 2) linear regression models, and 3) models with limited dependent variables. The first component focuses on a review of statistical estimation methods, properties of estimators and hypothesis testing. The second component presents linear regression methods, with an emphasis on the statistical properties of the Ordinary Least Squares estimators under idealized conditions, and on appropriate correction methods when these conditions are violated. Systems of Linear Models are discussed with emphasis on identification. The third component extends the discussion to models with limited (discrete and censored) dependent variables, with emphasis on Logit and Probit models for categorical and ordinal data, and stochastic duration models for censored data. The course also covers models for count dependent variables, and models with discrete-continuous dependent variables. Sampling strategies are introduced.

**Grading:** Grad Abu Dhabi Graded

**Repeatable for additional credit:** No

**Prerequisites:** Must be graduate level.

- Bulletin Categories: Engineering: Graduate Level Courses

## ENGR-GH 6460 Select Topics: Advanced Risk Management (3 Credits)

*Typically offered occasionally*

Risk mitigation planning is the process of developing options and actions to enhance opportunities and reduce threats to projects. This course is intended to cover Project Management Institute (PMI) Best Practices related to Risk Identification, Risk Analysis and Risk Mitigation for multi-year, complex projects such as Engineering-Procurement-Construction projects and others from a variety of industries including Pharma, Manufacturing, Oil & Gas, and Infrastructure. Additionally, we will discuss Harvard Business School (HBS) Case Studies related to the topic.

**Grading:** Grad Abu Dhabi Graded

**Repeatable for additional credit:** No

**Prerequisites:** Must be graduate level.

- Bulletin Categories: Engineering: Graduate Level Courses

## ENGR-GH 7050 Advanced Topics: 3D Computer Vision (3 Credits)

*Typically offered occasionally*

3D object processing is an emerging field in computer vision with many applications across areas as diverse as engineering, science and medicine. The advancement in 3D acquisition technology has led to dramatic increase in the size of 3D datasets that necessitate automated 3D model processing, understanding, and analysis. This course will introduce students to the techniques of data-driven 3D object processing, including 3D shape matching, retrieval, registration, recognition, segmentation, classification and clustering.

**Grading:** Grad Abu Dhabi Graded

**Repeatable for additional credit:** No

- Bulletin Categories: Engineering: Graduate Level Courses

## ENGR-GH 7410 Independent Study: Engineering Graduate Level (3 Credits)

*Typically offered occasionally*

This course allows graduate students to explore advanced topics of special interest through mentored independent study. The course may be repeated for credit. Students must obtain permission from their faculty mentor.

**Grading:** Grad Abu Dhabi Graded

**Repeatable for additional credit:** No

- Bulletin Categories: Engineering: Graduate Level Courses

## ENGR-GH 7900 Graduate Seminar Series (0 Credits)

*Typically offered occasionally*

Weekly seminar series addressing a variety of engineering topics, delivered by experts from academia and industry.

**Grading:** Graduate Abu Dhabi Pass/Fail

**Repeatable for additional credit:** Yes

**Prerequisites:** Must be graduate level.

- Bulletin Categories: Engineering: Graduate Level Courses

## ENGR-GH 7910 Graduate Engineering Special Topics (2 Credits)

*Typically offered occasionally*

Special topics courses for graduate level engineering students.

**Grading:** Grad Abu Dhabi Graded

**Repeatable for additional credit:** No

**Prerequisites:** Must be graduate level.

- Bulletin Categories: Engineering: Graduate Level Courses