Distance Ed Course Offerings

Fall 2017 08/28/17 - 12/08/17

Delivery Format Key

<table>
<thead>
<tr>
<th>CL = Classroom LIVE</th>
<th>OL = Online</th>
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<td>An integrated, web-based virtual environment that delivers programs in real time following the on-campus schedule from classrooms on Lehigh’s campus to students in their homes, at their workplace, or while traveling. These classes do require live participation and discussion and are also archived for later review.</td>
<td>An asynchronous online format that offers flexible scheduling and participation. A 3-credit online course includes approximately 36 hours of content and assignments. Each online course requires an additional $100 online fee.</td>
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<th>IS = Independent Study</th>
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<tr>
<td>Delivery requires contact with advisor to arrange a project or research.</td>
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Tuition


Tuition rates below are per credit hour.

All courses with OL and HY delivery formats are subject to $100 support fee per course.

<table>
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<tr>
<th>Course</th>
<th>Tuition</th>
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<tr>
<td>Arts and Science Courses</td>
<td>$ 940 per credit (plus $100 support fee if OL/HY delivery format)</td>
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<tr>
<td>Business Courses</td>
<td>$1,075 per credit (plus $100 support fee if OL/HY delivery format)</td>
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<tr>
<td>Engineering Courses</td>
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<td>Healthcare Systems Engineering Program</td>
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<td>Management Science and Engr. Program</td>
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Please click on the individual course Number/Sec fields to see the full Course Descriptions including:

- Course description
- Prerequisites
- Equipment or software requirements
- Attendance requirements
- Special course dates
- Textbooks

When printing document, please adjust
- page range
- print orientation
if you only want to print the course list without all of the course descriptions.
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<th>Number</th>
<th>Session</th>
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## Distance Ed Course Offerings

**Fall 2017**

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Distance Ed Course Offerings

Fall 2017

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### Fall 2017

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# Distance Ed Course Offerings

## Fall 2017

**DELIVERY METHOD KEY**
- **CL** = Classroom LIVE
- **OL** = Online
- **IS** = Independent Study
- **HY** = Hybrid

**SESSION KEY**
- **Full** = full term session
- **SS1** = session 1
- **SS2** = session 2

### Engineering

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<th>Time (Eastern Standard)</th>
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<td>ME 452-D10 OL</td>
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**Run Date:** 6/9/2017

**Current Version:** 8/29/17

**Fall 2017**
## Distance Ed Course Offerings

### Fall 2017

#### DELIVERY METHOD KEY
- **CL** = Classroom LIVE
- **OL** = Online
- **IS** = Independent Study
- **HY** = Hybrid

#### SESSION KEY
- **Full** = full term session
- **SS1** = session 1
- **SS2** = session 2

#### Table: Distance Ed Course Offerings

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<th>NumberSec</th>
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**Run Date:** 6/9/2017

**Current Version 8/29/17**

**Fall 2017**
Special Topics - Advances In Emulsion Polymers

Course Numbers: MAT 492-D10 OL

Prerequisites: none

Instructor - Eric Daniels (610) 758-3602 esd0@lehigh.edu

Examination of fundamental concepts important in the manufacture, characterization, and application of polymer latexes. Topics to be covered will include colloidal stability, polymerization mechanisms and kinetics, reactor design, characterization of particle surfaces, latex rheology, morphology considerations, polymerization with functional groups, film formation and various application problems.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:
(May be continued on next page)

Textbooks:

Required
Title: Chemistry and Technology of Emulsion Polymerization
Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore

Required
Title: Chemistry and Technology of Emulsion Polymerization
Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore

Required
Title: Chemistry and Technology of Emulsion Polymerization
Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore
Special Topics - Advances In Emulsion Polymers

Course Numbers: CHM 492-D10 OL

Prerequisites: none

Instructor - Eric Daniels  (610) 758-3602  esd0@lehigh.edu

Examination of fundamental concepts important in the manufacture, characterization, and application of polymer latexes. Topics to be covered will include colloidal stability, polymerization mechanisms and kinetics, reactor design, characterization of particle surfaces, latex rheology, morphology considerations, polymerization with functional groups, film formation and various application problems.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:

Required
Title: Chemistry and Technology of Emulsion Polymerization
Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore

ISBN(s): 978-1119953722

Required
Title: Chemistry and Technology of Emulsion Polymerization
Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore

ISBN(s): 978-1119953722

Required
Title: Chemistry and Technology of Emulsion Polymerization
Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore

ISBN(s): 978-1119953722
Special Topics - Advances In Emulsion Polymers

Course Numbers: CHE 492-D10 OL

Prerequisites: none

Instructor - Eric Daniels  (610) 758-3602  esd0@lehigh.edu

Examination of fundamental concepts important in the manufacture, characterization, and application of polymer latexes. Topics to be covered will include colloidal stability, polymerization mechanisms and kinetics, reactor design, characterization of particle surfaces, latex rheology, morphology considerations, polymerization with functional groups, film formation and various application problems.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:

**Required**

Title: *Chemistry and Technology of Emulsion Polymerization*

Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore


**Required**

Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore


**Required**

Author(s): Ed A. M. van Herk
Publisher: John Wiley and Sons
Additional Info: Lehigh Bookstore

Research - Biology

Course Numbers: BIOS 407-D**

Prerequisites: none

Instructor - Staff

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
Need Student's Advisor.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Research - Biology

Course Numbers: BIOS 407-D25

Prerequisites: none

Instructor - Prof. Vassie Ware (610) 758-3690 vcw0@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
Need Student's Advisor.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Physical Polymer Science

Course Numbers: CHE 393-D10 OL

Prerequisites: 1 year of physical chemistry

Instructor - Eric Daniels (610) 758-3602 esd0@lehigh.edu

Structural and physical aspects of polymers (organic, inorganic, natural). Molecular and atomic basis for polymer properties and behavior. Characteristics of glassy, crystalline, and paracrystalline states (including viscoelastic and relaxation behavior) for single-and multi-component systems. Thermodynamics and kinetics of transition phenomena. Structure, morphology, and behavior.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:
(May be continued on next page)

Textbooks:

Required
Title: Introduction to Physical Polymer Science
Author(s): Les Sperling
Publisher: Edition: 4th
ISBN(s): 978-0471706069

Additional Info: Link to Lehigh Bookstore

Required
Title: Introduction to Physical Polymer Science
Author(s): Les Sperling
Publisher: Edition: 4th
ISBN(s): 978-0471706069

Additional Info: Link to Lehigh Bookstore

Required
Title: Introduction to Physical Polymer Science
Author(s): Les Sperling
Publisher: Edition: 4th
ISBN(s): 978-0471706069

Additional Info: Link to Lehigh Bookstore
Techniques in Cell and Molecular Biology

Course Numbers: BIOS 427-D10

Prerequisites: none

Instructor - Prof. Vassie Ware
(610) 758-3690 vcw0@lehigh.edu

Independent research with approval of advisor. Laboratory experiences in three or more cell and molecular biological techniques: gel electrophoresis of nucleic acids/proteins; polymerase chain reaction; DNA/RNA sequencing; molecular hybridization techniques; fluorescence microscopy; confocal microscopy; flow cytometry; electron microscopy tissue preparation; immunological detection methods; molecular cloning techniques; molecular cloning techniques; oocyte microinjection techniques; tissue culture methods and autoradiography.

Additional Course Requirements:
Contact Prof. Ware for further instructions

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Title: None Required

Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Thesis - Biology

Course Numbers: BIOS 490-D10

Prerequisites: none

Instructor - Prof. Vassie Ware  (610) 758-3690  vcw0@lehigh.edu

Contact Prof. Ware for instructions.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:

Title: None Required
Author(s): Edition:
Publisher: ISBN(s):
Additional Info:

Title: None Required
Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Course Descriptions  Fall 2017

Thesis - Manufacturing Systems Engineering

Course Numbers: MSE 490-D10

Prerequisites: none

Instructor - Prof. Keith Gardiner (610) 758-5070  kg03@lehigh.edu

Please contact Prof. Keith Gardiner for more information.

Additional Course Requirements:
Instructor Permission

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Title: None Required

Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Transportation and Logistics Management

Course Numbers:  GBUS 453-D10

Prerequisites:  none

Instructor - Dr. Zach Zacharia  (610) 758-4433  zgz208@lehigh.edu

This course provides a variety of tools and frameworks that will help students understand the basis behind effective transportation and logistics planning and how it relates to broader issues in managing the entire supply chain and supporting the strategic objectives of a firm. The course will cover global supply chain issues as well as focus on the various modes of transportation, warehousing and distribution, material handling, inventory management, customer service, and logistics outsourcing. The methods used to convey and develop these ideas include a mix of lecture, interactive discussion, case study analysis, and independent research. The course material is drawn from a number of sources, including a published textbook, articles from the popular business press, published research, and real-world business experiences. Course may be used in the SCM Certificate Program.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
Links Supply Chain Management Simulation ($49) - Additional information can be found on website - http://www.links-simulation.com

Notes:
(May be continued on next page)

Textbooks:

Required  Title:  Logistics Management: Enhancing Competitiveness and Customer Value

Author(s):  Lisa Ellram, Stan Fawcett, Thomas Goldsby, Christian Hofer and Dale Rogers
Publisher:  MyEducator
Additional Info:  Available on-line at myeducator.com

Edition:  Copyright 2014-2015
ISBN(s):  
Quality and Process Improvement in Healthcare

Course Numbers: ISE 471-D10 OL

Prerequisites: none

Instructor - Ana Alexandrescu (610) 758-3865 aia210@lehigh.edu

Dimensions of healthcare quality and their definitions, quality metrics, accreditation and other benchmarking and evaluation methods. Change management, project planning and team management. Continuous improvement tools including "lean", "six-sigma", and "TQM".

Additional Course Requirements: none specified

Equipment / Software Requirements: Excel

Notes: (May be continued on next page)

Textbooks:
Introduction to the Organization and Its Environment

Course Numbers: MBA 401-D10

Prerequisites: none

Instructor - Prof. Andrew Ward (610) 758-6347 anw309@lehigh.edu
Instructor - Shawn Hayashi skh212@lehigh.edu

An MBA core course designed to provide a thorough understanding of business organizations by examining strategies middle and senior managers use to create and sustain organizational competitive advantage. The course examines the organization from an overall perspective within the context of the firm’s internal and external environment. The second aspect of this course deals with the ability to communicate effectively in today’s business and professional environment. Students will examine and practice the written and verbal communications strategies and skills that are essential to their success in business.

Additional Course Requirements:
This course is taught with heavy use of case studies and in-class discussion. Real-time participation is mandatory. Distance students are required to attend at the scheduled course time.
This course does not have a textbook. Instead, a course packet will be available for purchase online (approximately $45.) MSE students must take this course in conjunction with MSE 403, Global Competitive Environment (1 credit).

Equipment / Software Requirements:
Because this course requires real-time participation, online students MUST have their own web camera and use the recommended headset/microphone which is the Logitech Clear Chat USB headset and microphone. Distance students will be live on video during the whole class session.
New MBA students receive the headset/microphone at their on-campus orientation at the beginning of the semester. All MSE students taking this course receive the headset/microphone from the DE Office prior to the start of class.

Notes:

(May be continued on next page)

Textbooks:
Integrated Product Development

Course Numbers: ME 401-D10

Prerequisites: none

Instructor - Brandon Krick
(610) 758-5772 bak213@lehigh.edu

An integrated and interdisciplinary approach to engineering design, concurrent engineering design and manufacturing, industrial design and the business of new product development. Topics include design methods, philosophy and practice, the role of modeling and simulation, decision making, risk, cost, material and manufacturing process selection, platform and modular design, mass customization, quality, planning and scheduling, intellectual property issues, teamwork, creativity and innovation. The course uses case studies and team projects with geographically dispersed partners.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

Required
Title: Product Design and Development
Author(s): Karl Ulrich, Steven Eppinger
Publisher: McGraw/Hill
Edition: 5th Edition

Required
Title: Product Design and Development
Author(s): Karl Ulrich, Steven Eppinger
Publisher: McGraw/Hill
Edition: 5th Edition

Link to Lehigh Bookstore
Pharmacology for Chemists

Course Numbers:   CHM 477-D12 OL

Prerequisites:   Two semesters of organic chemistry, CHM 371 or its equivalent

Instructor - Dr. Joshua Gray   (860) 631-7483   jpg118@gmail.com

This is a specially designed course in Pharmacology for Chemists. The content conveys "the big picture" of how therapeutics respond in biological test systems. The structural drug types known to be efficacious in the primary organ systems (central nervous system, endocrine, pulmonary, gastrointestinal, etc.) as well as in primary disease types (cancer, inflammation, infectious disease, etc.) will be treated as well as discussions of their modes of action. The course also focuses on contemporary techniques for drug evaluation including in silico, high throughput, and high content screening. The course is intended to complement medicinal chemistry in that chemists working in the pharmaceutical industry need to know how their drug candidates are evaluated both in early stage ADME and in downstream, pre-clinical testing.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Required   Title: Principles of Pharmacology

Author(s):   David Golan, Armen Tashjian, Jr., Ehrin Armstrong and April Armstrong
Publisher:   Wolters Kluwer Health/Lippincott Williams & Wilkins


Additional Info:
Link to Lehigh Bookstore
Thesis - Mechanical Engineering

Course Numbers: ME 490-D10

Prerequisites: none

Instructor - Prof. Jacob Kazakia  (610) 758-3785  jyk0@lehigh.edu

Please contact Prof. Jacob Kazakia for information.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Title: None Required

Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Elements of Biochemistry I

**Course Numbers:** CHM 371-D10 OL

**Prerequisites:** One year of organic chemistry

Instructor - Prof. Michael Behe          (610) 758-3474  mjb1@lehigh.edu

A general study of carbohydrates, proteins, lipids, nucleic acids, and other biological substances and their importance in life processes. Protein and enzyme chemistry are emphasized.

**Additional Course Requirements:**
Permission required for non CAS students.

**Equipment / Software Requirements:**
none specified

**Notes:**
(May be continued on next page)

**Textbooks:**

**Recommended**

Title: Biochemistry-w/CD Solutions Manual
Author(s): Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-1-118-00814-0

Additional Info: Link to Lehigh Bookstore

**Required**

Title: Biochemistry-W/ CD
Author(s): Voet and Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-0470-57095-1

Additional Info: Link to Lehigh Bookstore

**Recommended**

Title: Biochemistry-w/CD Solutions Manual
Author(s): Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-1-118-00814-0

Additional Info: Link to Lehigh Bookstore
Required

Title: Biochemistry-W/ CD

Author(s): Voet and Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-0470-57095-1

Additional Info:

Link to Lehigh Bookstore
Elements of Engineering Analysis

Course Numbers:  EMA 350-D10 OL

Prerequisites:  none

Additional Course Requirements:
This course is available only to students currently enrolled in the M.S. or M.Eng. in Mechanical Engineering program; other students with an undergraduate background in Mechanical Engineering or Chemical Engineering; or by permission of instructor.

Equipment / Software Requirements:
MATLAB, Excel and C++ . Access to MATLAB is available to distance education students by using Lehigh's Virtual Public Site. Instructions on using the Virtual Public Site will be provided to registered students on the course web site.

Notes:
(May be continued on next page)

Textbooks:

**Required**

Title:  *The Mathematics Companion: Essential and Advanced Mathematics for Scientists and Engineers*

Author(s):  A. C. Fischer-Cripps
Publisher:  TAYLOR
ISBN(s):  9780750310208

Instructor - Prof. Jacob Kazakia  (610) 758-3785  jyk0@lehigh.edu

Engineering Mathematics (EMA) 350 is designed to be a refresher of mathematics and computation skills for graduate students who have been away from formal college level studies for some time. After completing this course students should be able to successfully participate in those graduate courses of the department which heavily utilize mathematics and computations. Examples of these courses are ME 442 (Math Methods), ME 443 (Advanced Math Methods), ME 413 (Numerical Methods), ME 423 (Heat & Mass Transfer), etc. This course may be appropriate to students in other departments of RCEAS needing some refresher course in Math and Computations. Please Note: The EMA 350-D10 will count towards any graduate degree within the constraints of the program. By the end of EMA 350 students will know how to perform the following tasks.

A)  Solving analytically basic differential equations
B)  Utilizing mathematical modeling to study basic engineering problems
C)  Working with vectors, arrays, matrices, determinants and performing mathematical operations with them.
D)  Solving systems of linear algebraic equations using analytical methods as well as numerical methods via MATLAB.
E)  Using MATLAB and Excel to solve and plot the results of certain simple engineering problems.
F)  Writing a computer program using either C++ or MATLAB in the context of an engineering problem.
G)  Using numerical methods in the following tasks: 1. solving transcendental equations 2. curve fitting data 3. differentiating and integrating functions 4. solving simple differential equations.
### Course Descriptions  Fall 2017

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<th>Title: <em>Getting Started with MATLAB 7</em></th>
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<tr>
<td>Author(s): Rudra Pratap</td>
<td>Edition: 10</td>
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<td>Publisher: OXF</td>
<td>ISBN(s): 9780199731244</td>
</tr>
<tr>
<td>Additional Info: Most of you may already use Matlab or instructions to access this program will be sent to you.</td>
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<tr>
<td>Author(s): Jeri Hanly</td>
<td>Edition: 2nd 02</td>
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<tr>
<td>Publisher: PEARSON</td>
<td>ISBN(s): 9780201741254</td>
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<td>Additional Info: Can be purchased on Lehigh’s Bookstore website; (C++ compiler will be downloaded for free.)</td>
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<th>Title: <em>Mathematical Methods in Chemical Engineering</em></th>
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<td>Author(s): V.G. Jenson and G.V. Jeffreys</td>
<td>Edition: 2nd</td>
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<td>Publisher: Academic Press</td>
<td>ISBN(s): 9780195098211</td>
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<td>Additional Info: This book will be provided through Distance Education with the cost of a handling fee to you. Upon completion, the book may be returned to Distance Education or you may have the option of purchasing the book from Distance Education at cost</td>
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Dissertation - Mechanical Engineering

Course Numbers: ME 499-D10

Prerequisites: none

Instructor - Prof. Jacob Kazakia (610) 758-3785 jyk0@lehigh.edu

Please contact Prof. Jacob Kazakia for more information.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks: Title: None Required

Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Research - Biology

Course Numbers:  BIOS 407-D28

Prerequisites:  none

Instructor - Michael Layden  (610) 758-3625  mjl514@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
  Need Student's Advisor.

Equipment / Software Requirements:
  none specified

Notes:
  (May be continued on next page)

Textbooks:
Control Systems

Course Numbers: ME 343-D10 OL

Prerequisites: ME 242, or ME 245, or ECE 125.

Instructor - Prof. Terry Hart (610) 758-4173 teh305@lehigh.edu

Linear analysis of mechanical, hydraulic and electrical feedback control systems by root locus and frequency response techniques. A design project provides experience with practical issues and tradeoffs. Students will complete an in-depth study of a particular system design of their choice and apply the various techniques taught in this course to achieve improved performance parameters.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required Title: Feedback Control of Dynamic Systems
Publisher: Pearson Prentice Hall ISBN(s): 978-0-13-349659-8

Additional Info:
Link to Lehigh Bookstore
Intro to Industrial Engineering Mathematics

Course Numbers: ISE 357-D10 OL

Prerequisites: none

Instructor - Charalambos Marangos  cm00@lehigh.edu

The objective of this course is to present a review of linear algebra and an introduction to quantitative analysis, manipulation of matrices, core concepts associated with systems of linear equations and linear optimization, algebraic and geometric models.

Additional Course Requirements: none specified

Equipment / Software Requirements:
MATLAB. Access to MATLAB is available to distance education students by using Lehigh's Virtual Public Site. Instructions on using the Virtual Public Site will be provided to registered students on the course web site.

Notes:
(May be continued on next page)

Textbooks:

Required

Title: Linear Algebra

Author(s): David C. Lay
Publishers:

Edition: 4th

Additional Info:
Link to Lehigh Bookstore
Eukaryotic Signal Transduction

Course Numbers: BIOS 471-D10 OL

Prerequisites: BIOS/CHM 372 or BIOS 411

Instructor - Prof. Linda Lowe-Krentz (610) 758-5084 lj0@lehigh.edu

Signal transduction between and within cells of multicellular organisms examined in the context of specialized functions that include: nutrition, hormones and neurotransmitters, vision, muscle contraction, adhesion and the immune system. The evolution of cancer based on mutations in these signaling systems. Lecture, discussion, and student presentations. Discussions and student presentations will be accomplished in an on-line, asynchronous format.

Additional Course Requirements:

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Recommended
Title: Cell Signaling: Principles and Mechanisms
Author(s): Lim, Mayer and Pawson
Publisher: Garland Science
Edition: June, 2014
ISBN(s): 10-0815342446 / 13-978-0815342441
Additional Info: Recommended to have one or both of these books as a resource.
Link to Lehigh Bookstore

Recommended
Title: Biology of Cancer
Author(s): Weinberg
Publisher: TAYLOR
ISBN(s): 10-0815342209 / 13-978-0815342205
Additional Info: Recommended to have one or both of these books as a resource.
Link to Lehigh Bookstore
Chemical Reaction Engineering

Course Numbers: CHE 410-D10 OL

Prerequisites: none

Additional Course Requirements: none specified

Equipment / Software Requirements:
MATLAB software will not be required but may be useful. Access to MATLAB is available to distance education students by using Lehigh's Virtual Public Site. Instructions on using the Virtual Public Site will be provided to registered students on the course web site.

Notes: (May be continued on next page)

Textbooks:
Title: TBD
Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
International Finance

Course Numbers: GBUS 473-D10

Prerequisites: Faculty permission

Instructor - Paul Brockman (610) 758-2914 pab309@lehigh.edu

Consideration of problems arising from the risks associated with international investing and multinational corporation finance (currency, political, etc.). Focus is on (a) investing in international market given the institutional constraints and differences between domestic markets, and (b) managerial issues relating to corporations, investors, and financial institutions. Consent of designated finance faculty representative.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Required
Title: International Financial Management
Author(s): Geert J. Bekaert and Robert J. Hodrick
Publisher: Pearson
ISBN(s):

Additional Info:
Lehigh Bookstore
Thesis (MOC) - Engineering

Course Numbers: ENGR 490-D10

Prerequisites: none

Instructor - Prof. John Coulter (610) 758-6310 jc0i@lehigh.edu

Please contact your advisor.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks: Title: None Required

Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Course Descriptions  Fall 2017

Research - Biology

Course Numbers:  BIOS 407-D29

Prerequisites:  none

Instructor - Prof. Mary Kathryn Iovine  (610) 758-6981  mki3@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
   Need Student's Advisor.

Equipment / Software Requirements:
   none specified

Notes:

(May be continued on next page)

Textbooks:
Research - Biology

Course Numbers: BIOS 407-D26

Prerequisites: none

Instructor - Prof. Robert Skibbens (610) 758-6162 rvs3@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements: Need Student's Advisor.

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:
Research - Biology

Course Numbers: BIOS 407-D10

Prerequisites: none

Instructor - Prof. Vassie Ware

(610) 758-3690  vcw0@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
Need Student's Advisor.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Independent Study in Materials

Course Numbers: MAT 310-D10

Prerequisites: none

Instructor - Prof. Raymond Pearson (610) 758-3857 rp02@lehigh.edu

Provides an opportunity for advanced, independent study of selected topics in materials science and engineering not covered in other formal courses. Please contact Prof. Raymond Pearson for more information.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

Title: None Required

Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Research - Biology

Course Numbers: BIOS 407-D17

Prerequisites: none

Instructor - Gregory Lang (610) 758-6359 gil213@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
Need Student's Advisor.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Numerical Methods in Mechanical Engineering

Course Numbers: ME 413-D10 OL

Prerequisites: none

Instructor - Prof. Jacob Kazakia  
(610) 758-3785  jyk0@lehigh.edu


Additional Course Requirements: none specified

Equipment / Software Requirements:
MATLAB software. Access to MATLAB is available to distance education students by using Lehigh's Virtual Public Site. Instructions on using the Virtual Public Site will be provided to registered students on the course web site.

Notes:
(May be continued on next page)

Textbooks:

Required
Title: Numerical Mathematics and Computing
Author(s): W. Cheney and D. Kincaid
Publisher: Brooks/Cole: Cengage Learning
Edition: 7th Edition

Additional Info:
Link to Lehigh Bookstore

Required
Title: Student Solutions Manual
Author(s): W. Cheney and D. Kincaid
Publisher: Brooks/Cole: Cengage Learning
Edition: 7th Edition

Additional Info:
Link to Lehigh Bookstore
Emulsion Polymers

Course Numbers: CHE 483-D10 OL

Prerequisites: none

Instructor - Eric Daniels  (610) 758-3602  esd0@lehigh.edu

Fundamental concepts important in manufacture, characterization, and application of polymer latexes. Topics include colloidal stability, polymerization mechanisms and kinetics, reactor design, characterization of particle surfaces, latex rheology, morphology considerations, polymerization with functional groups, film formation and various application problems.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

Title: None Required

Author(s): Edition:
Publisher: ISBN(s):

Additional Info:
Research - Biology

Course Numbers: BIOS 407-D20

Prerequisites: none

Instructor - Daniel Babcock
dab416@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:

Need Student's Advisor.

Equipment / Software Requirements:

none specified

Notes:

(May be continued on next page)

Textbooks:
Introduction to the Organization and Its Environment

Course Numbers:  MSE 402-D10

Prerequisites:  none

Instructor - Prof. Andrew Ward  (610) 758-6347  anw309@lehigh.edu

An MBA core course designed to provide a thorough understanding of business organizations by examining strategies middle and senior managers use to create and sustain organizational competitive advantage. The course examines the organization from an overall perspective within the context of the firm’s internal and external environment. The second aspect of this course deals with the ability to communicate effectively in today’s business and professional environment. Students will examine and practice the written and verbal communications strategies and skills that are essential to their success in business.

Additional Course Requirements:
- This course is taught with heavy use of case studies and in-class discussion. Real-time participation is mandatory. Distance students are required to attend at the scheduled course time.
- This course does not have a textbook. Instead, a course packet will be available for purchase online (approximately $45.) MSE students must take this course in conjunction with MSE 403, Global Competitive Environment (1 credit).

Equipment / Software Requirements:
- Because this course requires real-time participation, online students MUST have their own web camera and use the recommended headset/microphone which is the Logitech Clear Chat USB headset and microphone. Distance students will be live on video during the whole class session.
- New MBA students receive the headset/microphone at their on-campus orientation at the beginning of the semester. All MSE students taking this course receive the headset/microphone from the DE Office prior to the start of class.

Notes:

(May be continued on next page)

Textbooks:
Polymer Product Manufacturing

Course Numbers: ME 485-D10 OL

Prerequisites: (1) ME 385: Senior level standing in engineering or science. (2) ME 485: This course is a version of ME 385 for graduate students, with research projects and advanced assignments. Closed to students who have taken ME 385. Graduate level standing in engineering or science.

Instructor - Prof. John Coulter (610) 758-6310 jc0i@lehigh.edu

An exploration of the science underlying polymer processes such as injection molding through a combination of theory development, practical analysis, and utilization of commercial software. Polymer chemistry and structure, material rheological behavior, processing kinetics, molecular orientation development, process simulation software development, manufacturing defects, manufacturing window establishment, manufacturing process design, manufacturing process optimization. Closed to students who have taken ME 385.

Additional Course Requirements:

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Title: None Required

Author(s):
Edition:
Publisher:
ISBN(s):

Additional Info:
Course Descriptions  Fall 2017

Special Topics - Manufacturing Systems Engineering

Course Numbers:  MSE 472-D10

Prerequisites:  none

Instructor - Prof. Keith Gardiner  (610) 758-5070  kg03@lehigh.edu

Special Topics

Additional Course Requirements:
Instructor Permission

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Agile Organizations and Manufacturing Systems

Course Numbers: MSE 438-D10 OL

Prerequisites: none

Instructor - Prof. Keith Gardiner (610) 758-5070 kg03@lehigh.edu

Analysis of the factors contributing to the success of manufacturing enterprises in an environment characterized by continuous and unpredictable change. Fundamentals of lean production; aspects of systems design, value stream analysis, flow, set-up and cycle time reduction, kaizen, elimination of waste. Fundamentals of agility: global enterprises, virtual organizations, adapting to change, mass customization, manufacturing flexibility, activity-based management.

Additional Course Requirements:
It is expected that all students should commence reading and become familiar with relevant literature by notable 'manufacturing' practitioners. See example reading textbooks below.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Strongly Recommended Title: Direct from Dell: Strategies that Revolutionized an Industry
Author(s): Dell, Michael; Fredman, Catherine
Publisher: Collins
Edition: Jan. 3, 2006
ISBN(s): 0887309151
Additional Info: Other editions and ISBN#'s acceptable.

Link to Lehigh Bookstore

Strongly Recommended Title: Who Says Elephants Can't Dance? Inside IBM's Historic Turnaround
Author(s): Gerstner, L.V.
Publisher: Harper Business
Edition: November 2002
ISBN(s): 0060523794

Link to Lehigh Bookstore

Strongly Recommended Title: High Output Management
Author(s): Andrew S. Grove
Publisher:
ISBN(s): 0679762884

Link to Lehigh Bookstore
<table>
<thead>
<tr>
<th>Recommended</th>
<th>Title: <em>Only the Paranoid Survive: How to Exploit the Crisis Points That Challenge Company</em></th>
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<tbody>
<tr>
<td>Author(s):  Grove, A.S. Fredman, Catherine</td>
<td>Edition: 1996</td>
</tr>
<tr>
<td>Publisher:  Currency/Doubleday</td>
<td>ISBN(s): 0-385-48258-2</td>
</tr>
<tr>
<td>Additional Info: well worth reading</td>
<td></td>
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<tr>
<th>Strongly Recommended</th>
<th>Title: <em>American Icon: Alan Mulally and the Fight to Save Ford Motor Company</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s): Hoffman, Bryce G.</td>
<td>Edition:</td>
</tr>
<tr>
<td>Publisher:</td>
<td>ISBN(s): 0-907-88606-9</td>
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<td>Additional Info:</td>
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<tr>
<th>Recommended</th>
<th>Title: <em>Player Piano</em></th>
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</thead>
<tbody>
<tr>
<td>Author(s):  Kurt Vonnegut</td>
<td>Edition: January 12, 1999; July 1997</td>
</tr>
<tr>
<td>Publisher:  The Dial Press; Also Mass Market Paperback Reissue Edition.</td>
<td>ISBN(s): 0385333781; 0-440-17037-0.</td>
</tr>
<tr>
<td>Additional Info: well worth reading</td>
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<tr>
<th>Recommended</th>
<th>Title: <em>Brave New World</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s):  Aldous Huxley</td>
<td>Edition: September 1998</td>
</tr>
<tr>
<td>Publisher:  Perennial Classics, Harperperennial Library</td>
<td>ISBN(s): 0060929871</td>
</tr>
<tr>
<td>Additional Info: well worth reading, alternative editions are acceptable</td>
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</tr>
</tbody>
</table>
Seminar - Chemistry

Course Numbers: CHM 481-D10

Prerequisites: none

Instructor - Prof. Ned Heindel (610) 758-3464 ndh0@lehigh.edu

Student presentations on current research topics in the student’s discipline but not on subjects close to the thesis. A one-hour presentation.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

Title: None Required

Author(s): Edition:

Publisher: ISBN(s):

Additional Info:
Physical Polymer Science

Course Numbers: CHM 393-D10 OL

Prerequisites: 1 year of physical chemistry

Instructor - Eric Daniels  
(610) 758-3602  esd0@lehigh.edu

Structural and physical aspects of polymers (organic, inorganic, natural). Molecular and atomic basis for polymer properties and behavior. Characteristics of glassy, crystalline, and paracrystalline states (including viscoelastic and relaxation behavior) for single-and multi-component systems. Thermodynamics and kinetics of transition phenomena. Structure, morphology, and behavior.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

**Required**

Title: *Introduction to Physical Polymer Science*

Author(s): Les Sperling  
Publisher:  
ISBN(s): 978-0471706069

**Required**

Title: *Introduction to Physical Polymer Science*

Author(s): Les Sperling  
Publisher:  
ISBN(s): 978-0471706069

**Required**

Title: *Introduction to Physical Polymer Science*

Author(s): Les Sperling  
Publisher:  
ISBN(s): 978-0471706069
Dissertation - Chemical Engineering

Course Numbers: CHE 499-D10

Prerequisites: none

Instructor - Prof. Mayuresh Kothare (610) 758-6654 mvk2@lehigh.edu

Please contact Prof. Kemal Tuzla or Prof. Mayuresh Kothare for information.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:
Title: None Required
Author(s):
Edition:
Publisher:
ISBN(s):
Additional Info:
Course Descriptions Fall 2017

Elements of Biochemistry I

Course Numbers: BIOS 371-D10 OL

Prerequisites: One year of organic chemistry

Instructor - Prof. Michael Behe  (610) 758-3474  mjb1@lehigh.edu

A general study of carbohydrates, proteins, lipids, nucleic acids, and other biological substances and their importance in life processes. Protein and enzyme chemistry are emphasized.

Additional Course Requirements:
Permission required for non CAS students.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Recommended
Title: Biochemistry-w/CD Solutions Manual
Author(s): Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-1-118-00814-0
Additional Info: Link to Lehigh Bookstore

Required
Title: Biochemistry-W/CD
Author(s): Voet and Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-0470-57095-1
Additional Info: Link to Lehigh Bookstore

Recommended
Title: Biochemistry-w/CD Solutions Manual
Author(s): Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-1-118-00814-0
Additional Info: Link to Lehigh Bookstore
Required

Title: Biochemistry-W/ CD

Author(s): Voet and Voet
Publisher: Wiley
Edition: 4th
ISBN(s): 978-0470-57095-1

Additional Info:

Link to Lehigh Bookstore
Managing People

Course Numbers: MBA 405-D10

Prerequisites: MBA 401

Instructor - Douglas Mahony (610) 758-4935 dmm309@lehigh.edu

An MBA core course that focuses on how organizations create or sustain a competitive advantage through people. In this course you will learn to apply principles of organizational behavior toward effective human resource management. Topics covered in this course include organization and job fit, employee attraction and selection, motivation principles, negotiation and conflict management, organizational culture, job design, and change management. This course also offers students the opportunity to learn about their leadership strengths and weaknesses including decision making, communication, and team building. The course material will be covered using lectures, class exercises and discussion, current topics and case analyses.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:

Title: TBA

Author(s): Edition: 
Publisher: ISBN(s):

Additional Info:
Using basic biochemistry data, preclinical data, and the key documentation outlining results, this course covers how the clinical protocol is designed and how the trial is monitored. The use of transitional biomarkers, genetic analyses, PK/PD, dose-limiting toxicities, immunogenicity, imaging, and drug-drug interactions observed in preclinical studies serve as guideposts to the design of an optimum clinical protocol. The integration of chemistry, biology, and medicine proves essential to formulation of the first-in-man clinical study. The pathway from the chemistry lab to the clinic will be detailed with a focus on early development phase trials.

**Additional Course Requirements:**
Permission required for non CAS students.

**Equipment / Software Requirements:**
none specified

**Notes:**
(May be continued on next page)

**Textbooks:**

<table>
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<tr>
<th>Title: None Required</th>
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<tr>
<td>Author(s):</td>
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<tr>
<td>Publisher:</td>
</tr>
<tr>
<td>ISBN(s):</td>
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</tbody>
</table>
Biotechnology I

Course Numbers: CHE 441-D10 OL

Prerequisites: none

Instructor - Prof. Jim Hsu  (610) 758-4257  jth0@lehigh.edu

Applications of material and energy balances; heat, mass, and momentum transfer; enzyme and microbial kinetics; and mathematical modeling to the engineering design and scale-up of bio-reactor systems. Closed to students who have taken CHE 441.

Additional Course Requirements:
Closed to students who have taken CHE 441.

Equipment / Software Requirements:
Matlab or other programming for numerical computation.

Notes:
(May be continued on next page)

Textbooks:

Required  Title: Biotechnology
Author(s): Barnum  Edition: 2nd Edition
Publisher: Thomsom  ISBN(s): 534492967

Additional Info:
Link to Lehigh Bookstore

Required  Title: Biotechnology
Author(s): Barnum  Edition: 2nd Edition
Publisher: Thomsom  ISBN(s): 534492967

Additional Info:
Link to Lehigh Bookstore
Polymer Blends and Composites

Course Numbers: CHM 485-D10 OL

Prerequisites: An introductory course in polymers

Instructor - Eric Daniels (610) 758-3602 esd0@lehigh.edu

This course will emphasize polymer blends but will also cover polymeric composites. The polymer blends part will cover the fundamentals including thermodynamics, phase behavior and phase separation characteristics. In addition, specific lectures will emphasize compatibilization methods for optimizing polymer blends, types of various polymer blends, properties and applications. Composite lectures will cover particulate and fiber-filled systems.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required
Title: Polymer Blends: Comprehensive Review
Author(s): L.M. Robeson; Hanser
Publisher: HANSER-G
Edition: 2007
ISBN(s): 9781569904084

Required
Title: Polymer Blends: Comprehensive Review
Author(s): L.M. Robeson; Hanser
Publisher: HANSER-G
Edition: 2007
ISBN(s): 9781569904084

Link to Lehigh Bookstore
Research - Biology

Course Numbers: BIOS 407-D13

Prerequisites: none

Instructor - Prof. Michael Behe (610) 758-3474 mjb1@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
Need Student’s Advisor.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Research - Biology

Course Numbers: BIOS 407-D14

Prerequisites: none

Instructor - Prof. Lynne Cassimeris (610) 758-6275 lc07@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements:
Need Student’s Advisor.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Research - Chemistry

Course Numbers:  CHM 421-D11

Prerequisites:  none

Instructor - Prof. Ned Heindel  (610) 758-3464  ndh0@lehigh.edu

Research in one of the following fields of chemistry:  analytical, inorganic, organic, physical, polymer, biochemistry.

Additional Course Requirements:

Please be sure to register for the course section affiliated with your advisor.

Equipment / Software Requirements:

none specified

Notes:

(May be continued on next page)

Textbooks:

Title:  None Required

Author(s):  
Edition:  
Publisher:  
ISBN(s):  
Additional Info:  

Title:  None Required

Author(s):  
Edition:  
Publisher:  
ISBN(s):  
Additional Info:  
Molecular Cell Biology II

Course Numbers:  BIOS 422-D10

Prerequisites:  BIOS 345 or equivalent

Instructor - Prof. Mike Kuchka  (610) 758-3687  mrk5@lehigh.edu

Molecular aspects of gene expression, including genome structure and replication, RNA synthesis/processing, and protein synthesis.

Additional Course Requirements:
Attendance via ClassroomLive is required

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Title:  None Required

Author(s):  
Edition:  
Publisher:  
ISBN(s):  

Additional Info:
Managing Products and Services

Course Numbers: MBA 404-D10

Prerequisites: MBA 401

Instructor - Robert Trent (610) 758-4952 rjt2@lehigh.edu
Instructor - Prof. Steven Savino (610) 758-5342 sls209@lehigh.edu

An MBA core course focusing on the management of products and services within a firm’s value chain. The course addresses exceeding customer expectations, establishing total quality as the core foundation, developing a strong customer focus, creating value through supply chain management, developing new products for competitive advantage, matching aggregate supply with customer demand, and designing market channels & influencing customers.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:

(May be continued on next page)

Textbooks:

Required Title: Operations Management for MBAs
Author(s): Jack Meredith and Scott Shafer Edition: 5th Edition
Additional Info: Order online - not available in the Lehigh Bookstore.

Required Title: Managing Products and Services - Select Chapters from "A Framework for Marketing Management"
Author(s): Kotler & Keller; Articles and Cases Edition: 6th Edition
Publisher: ISBN(s): 13: 978-1-323-51699-7
Additional Info: Pearson Custom Coursepack available in bookstore Lehigh Bookstore
Project - Engineering

Course Numbers: MAT 460-D10

Prerequisites: none

Instructor - Prof. Raymond Pearson (610) 758-3857 rp02@lehigh.edu

In-depth study of a problem in the area of materials engineering or design. The study is to lead to specific conclusions and be embodied in a written report.

Additional Course Requirements:
Intended for candidates for the M.Eng. May be repeated for a total of three credit hours

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Title: None Required

Author(s): Edition:
Publisher: ISBN(s):
Additional Info:
Special Topics in Molecular Biology

Course Numbers: BIOS 405-D10

Prerequisites: none

Instructor - Prof. Vassie Ware (610) 758-3690 vcw0@lehigh.edu

Research, conferences, and reports on selected topics not covered in the general graduate offerings. May be taken more than once for credit.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

Title: None Required

Author(s):
Publisher:

Edition:
ISBN(s):

Additional Info:
Dissertation - Materials Science

Course Numbers: MAT 499-D10

Prerequisites: none

Instructor - Prof. Raymond Pearson (610) 758-3857 rp02@lehigh.edu

Contact Prof. Ray Pearson for further instructions.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
An integrated and interdisciplinary approach to engineering design, concurrent engineering design and manufacturing, industrial design and the business of new product development. Topics include design methods, philosophy and practice, the role of modeling and simulation, decision making, risk, cost, material and manufacturing process selection, platform and modular design, mass customization, quality, planning and scheduling, intellectual property issues, teamwork, creativity and innovation. The course uses case studies and team projects with geographically dispersed partners.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required | Title: Product Design and Development
---|---
Author(s): Karl Ulrich, Steven Eppinger | Edition: 5th Edition

Required | Title: Product Design and Development
---|---
Author(s): Karl Ulrich, Steven Eppinger | Edition: 5th Edition
Global Competitive Environment

Course Numbers: MSE 403-D10

Prerequisites: none

Instructor - Prof. Keith Gardiner              (610) 758-5070  kg03@lehigh.edu

Experimental projects in selected fields of manufacturing systems engineering, approved by the instructor. Projects discuss the global competitive environment in the context of material covered in MBA401/MSE 495. MSE students take this course in conjunction with MSE 402, Introduction to the Organization and its Environment (2 credits).

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:
Polymer Blends and Composites

Course Numbers: MAT 485-D10 OL

Prerequisites: An introductory course in polymers

Instructor - Eric Daniels  (610) 758-3602  esd0@lehigh.edu

This course will emphasize polymer blends but will also cover polymeric composites. The polymer blends part will cover the fundamentals including thermodynamics, phase behavior and phase separation characteristics. In addition, specific lectures will emphasize compatibilization methods for optimizing polymer blends, types of various polymer blends, properties and applications. Composite lectures will cover particulate and fiber-filled systems.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

<table>
<thead>
<tr>
<th>Required</th>
<th>Title: Polymer Blends: Comprehensive Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s): L.M. Robeson; Hanser</td>
<td>Edition: 2007</td>
</tr>
<tr>
<td>Publisher: HANSER-G</td>
<td>ISBN(s): 9781569904084</td>
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</tr>
</tbody>
</table>

Link to Lehigh Bookstore
Pharmaceutical Regulatory Affairs VI-Biologics

Course Numbers: CHM 477-D10 OL

Prerequisites: This course is offered as part of the Regulatory Affairs Certificate and the MS online CHEM program. Any questions should be directed to the Chemistry Graduate Advisor, Dr. Rebecca Miller (rebecca.miller@lehigh.edu)

Instructor - Ray Bakhtiar rab210@lehigh.edu

Bio-macromolecules are regarded as the most promising therapeutics of the 21st century, supplementing the long-established small molecule organic drugs. Whether poly-peptide, poly-nucleotide, or even poly-saccharide, properly designed, tested, and registered (with FDA) bio-macromolecules can regulate blood pressure, glycolysis, immunity, pain, malignancy, inflammation and a host of other human dysfunctions. Since the first biopharmaceutical approval in 1982 the biotechnology derived product market has been rapidly growing with introduction of a number of promising advances in medicine such as therapeutic monoclonal antibodies (humanized and fully human MABs), cancer vaccines, cytokines, anti-sense technology, interference RNA, and growth factors. As with traditional drugs (small molecules), the regulatory framework for approval of a biotechnology derived product (biologics) is complicated. In addition, there has been much debate about the introduction of follow-on-biologics (FOBs) or biosimilars using an abbreviated approval process. An overall biologics-based process map beginning with pre-clinical through the post-marketing stage will be discussed. Topics such as therapeutic proteins/peptides, gene therapy, stem cells, vaccines, interference RNAs, PK-PD, world-wide regulatory filings, preclinical IND-enabling studies, BLA/CTD filing, FOBs biologics, immunogenicity, comparability studies, manufacturing challenges, clinical trials, market exclusivity, and related regulatory guidelines will be discussed.

Additional Course Requirements:
This course is one of four courses required to fulfill the requirements for a Certificate in Regulatory Affairs. It may be applied as one of the 400-level credits in any of the Chemistry degree tracks.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Title: None Required

Author(s): 
Edition: 
Publisher: 
ISBN(s): 

Additional Info:
Mathematical Methods in Engineering

Course Numbers: CHE 452-D10 OL

Prerequisites: none

Instructor - Justin Jaworski  jwj213@lehigh.edu


Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:

**Required**

Title: Advanced Engineering Mathematics  
Edition: 2nd edition  
ISBN(s): 13:978-0133214314

Author(s): M.D. Greenberg  
Publisher: Prentice Hall

Additional Info: 
Link to Lehigh Bookstore

**Required**

Title: Advanced Engineering Mathematics  
Edition: 2nd edition  
ISBN(s): 13:978-0133214314

Author(s): M.D. Greenberg  
Publisher: Prentice Hall

Additional Info: 
Link to Lehigh Bookstore
Research - Chemistry

Course Numbers:  CHM 421-D10

Prerequisites:  none

Instructor - Prof. Rebecca Miller  (610) 758-3676  rsm4@lehigh.edu

Research in one of the following fields of chemistry:  analytical, inorganic, organic, physical, polymer, biochemistry.

Additional Course Requirements:

Please be sure to register for the course section affiliated with your advisor.

Equipment / Software Requirements:

none specified

Notes:

(May be continued on next page)

Textbooks:

Title:  None Required

Author(s):  
Publisher:  
ISBN(s):  
Additional Info:  

Title:  None Required

Author(s):  
Publisher:  
ISBN(s):  
Additional Info:  

Please be sure to register for the course section affiliated with your advisor.
Research - Biology

*Course Numbers:* BIOS 407-D19

*Prerequisites:* none

Instructor - Prof. Linda Lowe-Krentz  (610) 758-5084  ljl0@lehigh.edu

Laboratory investigations in one of the department’s research areas.

*Additional Course Requirements:* Need Student’s Advisor.

*Equipment / Software Requirements:* none specified

*Notes:* (May be continued on next page)

*Textbooks:*
Research - Biology

Course Numbers: BIOS 407-D11

Prerequisites: none

Instructor - Matthias Falk (610) 758-5896 mmf4@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements: Need Student's Advisor.

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:
Managing Information

Course Numbers: MBA 403-D10

Prerequisites: MBA 401, GBUS 401 and GECO 401 or equivalents

Instructor - Prof. David Zhang   (610) 758-4225   daz215@lehigh.edu
Instructor - Prof. David Hinrichs (610) 758-4674   djh404@lehigh.edu

An MBA core course dealing with concepts and methods involved in the collection, organization and dissemination of information that helps managers make operational and strategic decisions and examines enterprise-wide impacts of local decisions. Revenue, cost, time and quality-based information are accorded equal emphasis, while students are exposed to alternative evaluation methods for decisions related to different parts of the value chain. Topics include: activity-based costing; activity-based management; transaction analysis; operational and strategic investment analysis for short life-cycle investments; evaluation of uncertainty, risk and ambiguity; metrics development; compensation policies; segment evaluation methods; target costing and functional analysis; quality function deployment; total cost of ownership; and transfer pricing. In addition, the course deals with information technology enablers which allow firms to improve value delivered to customers; and evaluation and management of emerging forms of cooperation, such as joint ventures and project based strategic alliances.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required
Title: Data Analysis and Decision Making
Author(s): Albright, Winston and Zappe
Publisher: South-Western
Edition: Fourth Edition

Additional Info: CD not required
Link to Lehigh Bookstore

Required
Title: Accounting for Decision Making and Control
Author(s): Zimmerman
Publisher: McGraw Hill
Edition: Custom Lehigh Bookstore Version or 8th Edition
ISBN(s): (Lehigh) 978-1-12-1876484 (McGraw Hill) 978-0-07-802574-7

Additional Info:
Link to Lehigh Bookstore
Physical Polymer Science

**Course Numbers:** MAT 393-D10 OL

**Prerequisites:** 1 year of physical chemistry

Instructor - Eric Daniels  
(610) 758-3602  
esd0@lehigh.edu

Structural and physical aspects of polymers (organic, inorganic, natural). Molecular and atomic basis for polymer properties and behavior. Characteristics of glassy, crystalline, and paracrystalline states (including viscoelastic and relaxation behavior) for single-and multi-component systems. Thermodynamics and kinetics of transition phenomena. Structure, morphology, and behavior.

**Additional Course Requirements:**
none specified

**Equipment / Software Requirements:**
none specified

**Notes:**
*(May be continued on next page)*

**Textbooks:**

**Required**  
Title: *Introduction to Physical Polymer Science*  
Edition: 4th  
ISBN(s): 978-0471706069

Author(s): Les Sperling  
Publisher:  
Additional Info:  
[Link to Lehigh Bookstore](#)

**Required**  
Title: *Introduction to Physical Polymer Science*  
Edition: 4th  
ISBN(s): 978-0471706069

Author(s): Les Sperling  
Publisher:  
Additional Info:  
[Link to Lehigh Bookstore](#)

**Required**  
Title: *Introduction to Physical Polymer Science*  
Edition: 4th  
ISBN(s): 978-0471706069

Author(s): Les Sperling  
Publisher:  
Additional Info:  
[Link to Lehigh Bookstore](#)
Financial Reporting for Managers and Investors

Course Numbers: GBUS 401-D10

Prerequisites: none

Instructor - Robert Duquette red209@lehigh.edu


Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:

Required Title: Financial Accounting 9th, Edition: 16
Author(s): LIBBY Edition: 9th, Edition: 16
Publisher: MCG/CREATE ISBN(s): 9781308821672
Additional Info: Students to purchase "Financial Accounting 9e-Libby"; packaged with Connect bundle for Lehigh students.

Link to Lehigh Bookstore
Thesis - Materials Science

Course Numbers: MAT 490-D10

Prerequisites: none

Instructor - Prof. Raymond Pearson (610) 758-3857 rp02@lehigh.edu

Please contact Prof. Ray Pearson for more information.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

(May be continued on next page)

Textbooks:
Course Descriptions  Fall 2017

Integrative Experience-Simulation

Course Numbers:  MBA 406-D10

Prerequisites:  MBA 401, MBA 402, MBA 403, MBA 404, MBA 405 All other core courses must be completed.

Instructor - Prof. William Forster  (610) 758-3435  wif209@lehigh.edu

The MBA Integrative Experience places an emphasis on strategic management as a key tool for creating and sustaining organizational competitive advantage. By taking the point of view of the general manager, we will view the organization from an overall perspective in the context of the firm’s internal and external environment. We will examine historical perspectives, contemporary theories, and practical applications all in the spirit of helping you develop a broad understanding of strategic management issues and solutions. This course will expose you to rigorous theoretical analysis while providing you with hands-on, simulated real world business experience.

As the capstone experience in the College of Business & Economics’ MBA program, this course requires that you integrate the concepts, knowledge, and skills acquired in previous functional courses and creatively apply them toward understanding and analyzing strategic management issues.

Additional Course Requirements:  
none specified

Equipment / Software Requirements:  
Because this course requires real-time participation, online students MUST use the recommended webheadset/microphone, which is the Logitech Clear Chat USB headset and microphone. Several presentations are required as a part of this class. Distance students are required to have a web camera to present to the instructors and other students. Alternatively, distance students may attend class on campus on presentation days.

Notes:  
(May be continued on next page)

Textbooks:  

Required  
Title:  Strategic Management: Competitiveness and Globalization

Author(s):  Hitt, Ireland, and Hoskisson  

Publisher:  Southwestern Publishing  
ISBN(s):  978-1-285-42517-7

Additional Info:  
Link to Lehigh Bookstore
Introduction to Healthcare Systems

Course Numbers:  ISE 470-D10 OL

Prerequisites:  none

Instructor - Robert McDonald  (802) 233-6806  rbm216@lehigh.edu


Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Title: TBD
To Be Determined.

Author(s):  
Edition:
Publisher:  
ISBN(s):

Additional Info:
Planning & Scheduling in Manufacturing & Services

Course Numbers:  ISE 419-D10 OL

Prerequisites:  none

Instructor - Prof. Eugene Perevalov  (610) 758-4031  eup2@lehigh.edu

Models for the planning and scheduling of systems that produce goods or services. Resource allocation techniques utilizing static and dynamic scheduling methods and algorithms. Application areas include manufacturing and assembly systems, transportation system timetabling, project management, supply chains, and workforce scheduling.

Additional Course Requirements:  none specified

Equipment / Software Requirements:  none specified

Notes:  

(May be continued on next page)

Textbooks:
Adhesion and Adhesive Technology

Course Numbers: MAT 487-D10 OL

Prerequisites: none

Instructor - Prof. Raymond Pearson (610) 758-3857 rp02@lehigh.edu

Basics of intermolecular forces, surface science, and mechanics of materials and how these relate to adhesion. Processing and design of adhesive joints. Formulation and behavior of pressure sensitive and structural adhesives. Background in polymers is helpful.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:

Textbooks:

Required
Title: Adhesion and Adhesives Technology
Author(s): Alphonsus V. Pocius
Publisher: Carl Hanser Verlag: Munich 2012
Edition: 3rd

Additional Info:
Lehigh Bookstore
Regulatory Affairs for Engineers - Advanced Topics

Course Numbers: CHE 498-D10 OL

Prerequisites: none

Instructor - Prof. Lori Herz

(610) 758-6831
loh208@lehigh.edu

Technical aspects of regulations of drug and device development and manufacture. Current challenges and innovative technologies. Sample topics: biopharmaceutics and bioprocessing, quality engineering principles, informatics and systems approaches.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Optional
Title: Development of FDA Regulated Medical Products
Author(s): Elaine Whitmore
Publisher: 
ISBN(s): 

Additional Info:
Research - Biology

Course Numbers: BIOS 407-D18

Prerequisites: none

Instructor - Prof. Mike Kuchka (610) 758-3687 mrk5@lehigh.edu

Laboratory investigations in one of the department’s research areas.

Additional Course Requirements: Need Student’s Advisor.

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:
Course Descriptions  Fall 2017

Project - Manufacturing Systems Engineering

Course Numbers:  MSE 451-D10

Prerequisites:  none

Instructor - Prof. Keith Gardiner  (610) 758-5070  kg03@lehigh.edu

Please contact Prof. Keith Gardiner for information.

Additional Course Requirements:
  Instructor Permission

Equipment / Software Requirements:
  none specified

Notes:
(May be continued on next page)

Textbooks:
  Title: None Required

  Author(s): Edition:
  Publisher: ISBN(s):

  Additional Info:
Managing Financial and Physical Resources

Course Numbers: MBA 402-D10

Prerequisites: MBA 401, GBUS 401 or equivalent

Instructor - Prof. Samuel Weaver (610) 758-5282  scw0@lehigh.edu
Instructor - Neal Snow (610) 758-3451  nes315@lehigh.edu

An MBA core course designed to integrate financial and managerial concepts into operations decisions. Disciplines of accounting, finance and economics are combined to provide substantive foundations for discussing and analyzing data. Implications of analysis are applied to facilitate decision-making in other areas such as marketing, operations (manufacturing, logistics and engineering), human resources, information technology and general management. The major learning objectives will be applied through a series of “living” cases that are centered on analyzing historical financial performance, preparing a business plan, and valuing a business.

Additional Course Requirements:
Recommended: Wall Street Journal - Subscribe at the special student rate ($1/week).

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required, one of these, not both

Title: *Financial Statement Analysis*

Author(s): K. R. Subramanyam
Publisher: Lehigh Bookstore Custom Edition
Required

Title: *The Essentials of Financial Analysis*

Author(s): Samuel C. Weaver
Publisher: McGraw-Hill Companies, Inc.
Required, one of these, not both

Title: *Financial Statement Analysis*

Author(s): K. R. Subramonyam
Publisher: McGraw-Hill
Required, one of these, not both
Design of Experiments

Course Numbers:  ISE 410-D10 OL

Prerequisites:  Some statistical background and experimentation in prospect.

Instructor - Prof. Eugene Perevalov  (610) 758-4031  eup2@lehigh.edu

Experimental procedures for sorting out important casual variables, finding optimum conditions, continuously improving processes, and trouble shooting. Applications to laboratory, pilot plant and factory.

Additional Course Requirements:  none specified

Equipment / Software Requirements:  none specified

Notes:  
(May be continued on next page)

Textbooks:  

Required  Title: Design and Analysis of Experiments
Author(s): MONTGOMERY  Edition: WILEY
Publisher: WILEY  ISBN(s): 9780470128664

Additional Info:  
Link to Lehigh Bookstore
Financial Management

Course Numbers: GBUS 419-D10

Prerequisites: MBA 402 or equivalent background. Students not possessing the relevant prerequisites must obtain waivers from the designated finance faculty representative.

Instructor - Ke Yang

(610) 758-3684   key208@lehigh.edu

An intermediate level course in corporate finance. Coverage includes capital budgeting techniques including real options, decision tree analysis, risk analysis, advanced cost of capital theories, capital structure theory, dividend policy, working capital management, mergers and acquisitions, restructuring, and bankruptcies. The course emphasizes both theory and practice through lectures, cases, and financial modeling exercises.

Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required
Title: Corporate Finance (Plus MyfinanceLab)
Author(s): Berk and DeMarzo
Publisher: Pearson
Additional Info: Pearson
ISBN(s): 9780134083278
Biotechnology I

Course Numbers: CHE 341-D10 OL

Prerequisites: none

Instructor - Prof. Jim Hsu  (610) 758-4257  jth0@lehigh.edu

Applications of material and energy balances; heat, mass, and momentum transfer; enzyme and microbial kinetics; and mathematical modeling to the engineering design and scale-up of bio-reactor systems. Closed to students who have taken CHE 441.

Additional Course Requirements:
Closed to students who have taken CHE 441.

Equipment / Software Requirements:
Matlab or other programming for numerical computation.

Notes:

(May be continued on next page)

Textbooks:

Required  Title: Biotechnology

Author(s): Barnum  Edition: 2nd Edition
Publisher: Thomsom  ISBN(s): 534492967

Additional Info:
Link to Lehigh Bookstore

Required  Title: Biotechnology

Author(s): Barnum  Edition: 2nd Edition
Publisher: Thomsom  ISBN(s): 534492967

Additional Info:
Link to Lehigh Bookstore
Thesis (MOC) - Biology and Chemistry

Course Numbers: ARTS 490-D10

Prerequisites: none

Instructor - Staff

Contact Prof. Miller (Chemistry) or Prof. Ware (Biology) for further instructions

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:

Title: None Required

Author(s): Edition:

Publisher: ISBN(s):

Additional Info:
Advanced Cell Biology

Course Numbers: BIOS 411-D10 OL

Prerequisites: none

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:

**Recommended**

Title: *Lewin's Cells*

Author(s): George Plopper, David Sharp and Eric Sikorski
Publisher: Jones & Bartlett Learning
Edition: 3rd (Dec 2013)

Additional Info: Do Not need both books, can choose one.
[Link to Lehigh Bookstore](#)

**Recommended**

Title: *Molecular Biology of the Cell*

Author(s): Bruce Alberts
Publisher: Garland Science, Taylor and Francis Group
Edition: 6th
ISBN(s): 978-0815344322

Additional Info: Do Not need both books, can choose one.
[Link to Lehigh Bookstore](#)
Dissertation - Molecular Biology

Course Numbers: BIOS 499-D10

Prerequisites: none

Instructor - Prof. Vassie Ware     (610) 758-3690   vcw0@lehigh.edu

Contact Prof. Vassie Ware for further instructions

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes: (May be continued on next page)

Textbooks:
Pharmaceutical Regulatory Affairs I: Drug Discovery to Approval

Course Numbers: CHM 425-D10 OL

Prerequisites: This course is offered as part of the Regulatory Affairs Certificate and the MS online CHEM program. Any questions should be directed to the Chemistry Graduate Advisor, Dr. Rebecca Miller (rebecca.miller@lehigh.edu)

Instructor - Prof. Sam Niedbala (610) 758-6504 san204@lehigh.edu

Coverage includes the stages of the drug approval process and how these relate to the laboratory activities that provide the scientific basis for the New Drug Application (NDA). Lectures treat drug discovery, chemical process development of the active pharmaceutical ingredient (API), and pharmaceutical process development of the drug product. Regulatory issues in screening and testing, the management of the preclinical trials, and the management of clinical trials will be covered. The regulatory requirements for the production of the drug substance (API) from bench to pilot plant to full-scale manufacturing will also be covered. Included in the discussions will be Good Laboratory Practices (GLPs) and Good Manufacturing Practices (GMPs). The regulatory issues concerning the use of Contract Research Organizations (CROs) and Contract Manufacturing Organizations (CMOs) will also be treated. The processes for approvals of diagnostics and devices will also be covered. All topics are presented by practicing professionals in the regulatory affairs area. This course is one of four courses required to fulfill the requirements for a Certificate in Regulatory Affairs. It may be applied as one of the 400-level credits in any of the Chemistry degree tracks.

Additional Course Requirements:
This course is one of four courses required to fulfill the requirements for a Certificate in Regulatory Affairs. It may be applied as one of the 400-level credits in any of the Chemistry or Pharmaceutical Chemistry degree tracks.

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required

Title: FDA Regulatory Affairs. A Guide for Prescription Drugs, Medical Devices & Biologics

Author(s): Douglas J. Pisano, David Mantus
Publisher: Taylor
Edition: 2ND 08
ISBN(s): 9781420073546

Additional Info:
Link to Lehigh Bookstore
Required

Title: Development of FDA-Regulated Medical Products Prescription Drugs, Biologics, and Medical Devices

Author(s): Elaine Whitmore
Publisher: ASQC Publishers
Edition: 2ND 04
ISBN(s): 9780873896139

Additional Info:
Link to Lehigh Bookstore
Special Topics: Renewable Energy

Course Numbers: ME 450-D10 OL

Prerequisites: Must have completed: Intro to Physics Lab II, Thermodynamics I, Fluid Mechanics, OR instructor consent.

Instructor - Arindam Banerjee (610) 758-4099 arb612@lehigh.edu

Fundamentals and design aspects of Renewable Energy (RE) technologies; bio-fuels, hydropower, solar photovoltaic, solar thermal, wind, geothermal energies. Details and difficulties in implementing RE.

Additional Course Requirements:

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:
Mathematical Methods in Engineering

Course Numbers: ME 452-D10 OL

Prerequisites: none

Instructor - Justin Jaworski jwj213@lehigh.edu


Additional Course Requirements:
none specified

Equipment / Software Requirements:
none specified

Notes:
(May be continued on next page)

Textbooks:

Required
Title: Advanced Engineering Mathematics
Author(s): M.D. Greenberg
Publisher: Prentice Hall
Edition: 2nd edition
ISBN(s): 13:978-0133214314

Required
Title: Advanced Engineering Mathematics
Author(s): M.D. Greenberg
Publisher: Prentice Hall
Edition: 2nd edition
ISBN(s): 13:978-0133214314

Link to Lehigh Bookstore
Game Theory

Course Numbers: ISE 358-D10 OL

Prerequisites: a Calculus course and Eco 105 or 115

Instructor - Prof. Eugene Perevalov (610) 758-4031 eup2@lehigh.edu

Mathematical analysis of how people interact in strategic situations. Applications include strategic pricing, negotiations, voting, contracts and economic incentives, and environmental issues. In this course there will be an emphasis on the fundamentals with a fair degree of mathematical rigor while applications relevant for IE/OR will also be considered. The goal of this course is to develop main game theory tools to the extent sufficient to read and understand current research papers.

Additional Course Requirements: none specified

Equipment / Software Requirements: none specified

Notes:
(May be continued on next page)

Textbooks:

**Required**

Title: *An Introduction to Game Theory*

Author(s): M. J. Osborne
Publisher: Oxford University Press
ISBN(s):

Additional Info: Link to Lehigh Bookstore

Title: *Game Theory*

Author(s): D. Fudenberg and J. Tirole
Publisher: MIT Press
ISBN(s):

Additional Info: Reference Text
Link to Lehigh Bookstore

Title: *A Course in Game Theory*

Author(s): M. J. Osborne and A. Rubinstein
Publisher: MIT Press
ISBN(s):

Additional Info: Reference Text
Link to Lehigh Bookstore