

ADMISSION AND REGISTRATION

[**NOTE:** Only officially admitted students are eligible to register for Lehigh University courses for academic credit] Admitted students must register using LESN GRADUATE REGISTRATION FORM under <http://www.lesn.lehigh.edu/> or contact the Lehigh Office of Distance Education at 610-758-6210/e-mail rjm0@lehigh.edu. ***Alternate instructions for registration will be sent to the MBA students and MSE students.*** Follow payment instructions included with registration form

- LESN-Online Fall course registration deadline – 8/17/07
- Students seeking admission should contact the Lehigh Office of Distance Education at 610-758-6210, e-mail rjm0@lehigh.edu. Fall 2007 admission application deadline – See listings for individual program for deadline dates.
- Fall semester runs from 8/27/07 thru 12/07/07. **Unless otherwise noted, all courses will be available week of 8/27/07.**
- Textbooks may be ordered directly through the Lehigh University online link to the bookstore from www.lesn.lehigh.edu under “forms” or going directly to the website: <http://lehigh1.bkstore.com/bkstore/content>

Please check on www.distance.lehigh.edu for schedule revisions and updates

BUSINESS/MBA

ECO 401-D10 (CRN#41509). Basic Statistics for Business and Economics (3)

Descriptive statistics, probability and probability distributions, estimation, hypothesis testing, correlation and regression, chi-square analysis and analysis of variance. Computer applications. **This course will include 6 Elluminate sessions scheduled by the instructor.**

Instructor: Prof. Robert Thornton

e-mail - rjt1@lehigh.edu

Phone: 610-758-3460

- Course includes approximately 36 hours of content, plus assignments.,
- **Textbook Required** – “*Basic Statistics for Business and Economics*,” Anderson, Sweeney, and Williams, South-Western, 9th edition, ISBN#0 324 20082 X.

GBUS 401-D10 (CRN#40258). Financial Reporting for Managers and Investors (3)

Corporate financial reporting under Generally Accepted Accounting Principles. Analysis and interpretation of financial statements: accrual accounting, balance sheet valuation, income determination and cash flow analysis. Profit manipulation, window dressing and “creative accounting” through accounting policy choices. Fraudulent financial reporting, uses and limitations of accounting information. Accounting information as a tool for strategic decision making. **This course will include 6 Elluminate sessions scheduled by the instructor.**

Instructor: Professor Parveen Gupta

Moderator: Prof. Gary Smith

e-mail: gas205@lehigh.edu

Phone: (610) 758-5963

- Course includes approximately 36 hours of content, plus assignments
- **Textbooks Required** – “*Financial Accounting in An Economic Context*”, Jamie Pratt, 6th Ed., by John Wiley & Sons, Inc., ISBN#0-471-65528-7
- **Optional Textbook:** Study Guide to Accompany the above text by Joseph H. Anthony and Robin P. Clement. ISBN#0-471-73111-0.

GBUS 447-D10 (CRN#43471). Negotiations (3)

The course examines the behavioral foundations for the negotiation process. Topics include: The negotiation process, negotiation planning, power in negotiations, communications in negotiations, tactics, concepts of win-win and win-lose, social styles, individual and team negotiations, ethical considerations, cultural differences, negotiating in sole source (customer) situations, using third parties.

Instructor: Prof. Mike Kolchin

e-mail: mgk1@lehigh.edu

Phone: 610-758-3421

- Course includes approximately 36 hours of content, plus assignments
- Required Elluminate Sessions TBD
- **Textbook Required:** “*Negotiation: Readings, Exercises, and Cases (5th Edition)*”, Roy L. Lewicki, David M. Saunders, John W. Minton and Barry; Publisher: McGraw Hill/Irwin, 2003; ISBN#0-07-242965-8.

GBUS 450-D10 (CRN#44598). Strategic Supply Management (3)

A survey course designed to introduce the MBA/MSE student to the vital role played by supply management in achieving overall effectiveness for the firm in today’s global economy. The course starts by examining the traditional purchasing process and then

moves on to an examination of the evolution of purchasing into supply management and, finally, to the role purchasing plays in improving effectiveness of the entire value chain. Course consists of lectures, discussion and case analysis. This class includes eight 1.5 hour live web-based discussion sessions.

Instructor: Professor Robert Trent

e-mail: rit2@lehigh.edu

Phone: 610-758-4952

- Course includes approximately 36 hours of content, plus assignments
- Required Elluminate Sessions TBD
- **Textbook Required:** "Purchasing and Supply Chain Management," Monczka, Trent, and Handfield, 3rd Ed, Southwestern, ISBN: 0-324-02315-4

MBA 402-D10 (CRN#44596). Managing Financial and Physical Resources (4)

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.

Prerequisites: MBA 401, GBUS 401 or equivalent.

Instructor: Prof. Sam Weaver

e-mail: scw0@lehigh.edu

Phone: 610-758-5282

Special Dates: 9/26/07 thru 12/19/07

- Course includes approximately 48 hours of content, plus assignments
- Required Elluminate Sessions TBD
- **Textbooks Required:** "*Strategic Financial Management*," Weaver, Publ.:Thomson; "*Strategic Fin. Mgt. Solution Manual*," Weaver, Publ.: Thomson; "*Strategic Financial Mfg. W/access*," Weaver, Publ:Thomson

MBA 404-D10 (CRN#44597). Managing Products and Services (4)

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. Prerequisite:MBA 401

Instructor: Prof. Robert Trent

e-mail: rit2@lehigh.edu

Phone: 610-758-4952

Prof. Teresa McCarthy

tem3@lehigh.edu

Phone: 610-758-3421

Special Dates: 7/02/07 thru 9/21/07

- Course includes approximately 48 hours of content, plus assignments
- Required Elluminate Sessions TBD
- **Textbooks Required:** "*Framework for Marketing Management*," Kotler, Publ:Pearson; "*Prin. Of Operations Management w/CD*," Raturi, Publ:Thomson

BIOLOGY

BIOS 471-D10 (CRN#43631)/CHM 471-D10 (CRN#43632). Eukaryotic Biochemistry (3)

Biochemistry of selected eukaryotic processes including hormone chemistry, blood clotting, immunochemistry, vision chemistry, muscle chemistry and photosynthesis. The second part of the course will involve presentation and discussion of the current literature by class participants. **Prerequisite:** BIOS /CHM 372 or consent of department chair. Elluminate sessions will be scheduled.

Instructor: Prof. Linda Lowe-Krentz

e-mail: lj10@lehigh.edu

Phone: 610-758-5084

- Course includes approximately 36 hours of content, plus assignments
- **Textbook Required:** "*Biology of Cancer*" – with CD, Weinberg, Publ: Garland, 1st Ed. '06; ISBN#15340761

CHEMISTRY

CHM 332-D10 (CRN#43446). Analytical Chemistry (3)

Theory and practice of chemical analysis. Principles of quantitative separations and determinations; theory and application of selected optical and electrical instruments in analytical chemistry; interpretation of numerical data design of experiments, solute distribution in separation methods.

Instructor: Prof. James Roberts

e-mail: jer1@lehigh.edu

Phone: 610-758-4841

- Course includes approximately 36 hours of content, plus assignments
- **Textbook Required** – "*Quantitative Chemical Anal.*," W. H. Freeman, 7th Ed. D. C. Harris, ISBN#0-7167-7041-5

CHM 358-D11 (CRN#44206). Advanced Organic Chemistry (3)

Reaction mechanism types and supporting physical-chemical data. Classes of mechanisms include elimination, substitution, rearrangement, oxidation-reduction, enolate alkylations, and others. **Prerequisite:** one year of organic chemistry

Instructor of Record: Prof. Ned Heindel **Moderator:** Prof. Roger Egolf

e-mail: rae4@psu.edu

- Course includes approximately 36 hours of content
- **Textbook Required:** “*Advanced Organic Chemistry*,” PART B:Reaction & Synthesis (4th 01) ISBN#0306462451

CHM 424-D10 (CRN#41659). Medicinal and Pharmaceutical Chemistry (3)

Principles of drug design, structure-activity relationships in antibacterial, antimalarial, anti-inflammatory and psychoactive drugs; synthesis and modes of action of pharmacologically active agents radioactive pharmaceuticals. **Prerequisite:** 1 year of organic chem.

Instructor of Record: Prof. Ned Heindel

Moderator: Dr. Peter Kennewell

e-mail: pete@kennewell5855.fsnet.co.uk

- Course includes approximately 36 hours of content, plus assignments
- **Textbook Required:** “*Medicinal Chemistry: An Introduction*”, ISBN#0471489352, Thomas, Gareth

CHM 425-D10 (CRN#42937). Pharmaceutical Regulatory Affairs I: Drug Discovery to Approval (3)

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. 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 or Pharmaceutical Chemistry degree tracks.

Instructor: Prof. Sam Niedbala

e-mail: san204@lehigh.edu

- Course includes approximately 36 hours of content, plus assignments
- **Textbooks Required:** (1) “*Development of FDA-Regulated Medical Products Prescription Drugs, Biologics, and Medical Devices*,” Elaine Whitmore, 2nd Ed., ASQC Publ., ISBN#0873896130 and (2) “*FDA Regulatory Affairs. A Guide for Prescription Drugs, Medical Devices and Biologics*,” by Douglas J. Pisano, David Mantus, ‘03 Edition, CRC Press, ISBN#1587160072

CHM 428-D10 (CRN#42938). Pharmaceutical Regulatory Affairs II: Medical Devices and Combination Technologies: Concept to Commercialization (3)

This course is one of four courses required to fulfill the requirements for a Certificate in Regulatory Affairs. It may be applied as 400-level credit in any of the Chemistry or Pharm Chemistry degree tracks. Technological advancement in the medical and veterinary fields has fueled research and development of medical devices and products resulting from combination technologies. Each year, over 4,000 devices are reviewed by the U. S. Food & Drug Administration for efficacy and safety before being allowed to enter the marketplace. This course will review the history of medical device law and regulations in the U.S. It will also define current requirements of science needed to allow technologies to be developed according to regulations. Case studies will be used to educate participants on Design Controls, Quality System Regulations, Manufacturing Requirements and International Harmonization. Specific content may include Nucleic Acid Diagnostics, Cardiovascular Stents, Drug Delivery, Cancer Diagnostics, and Consumer Self-Testing. Students will also use knowledge gained to prepare class presentations to address current issues within the field.

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 Pharm Chemistry degree tracks.

Instructor: Prof. Sam Niedbala

e-mail: san204@lehigh.edu

- Course includes approximately 36 hours of content, plus assignments
- **Textbooks Required:** (1) “*Development of FDA-Regulated Medical Products, Prescription Drugs, Biologics, and Medical Devices*” by Whitmore, Elaine; (2) “*Mastering and Managing the FDA Maze*” by Gordon Harnack, ‘99 Edition, ASQC Publ., ISBN#0873894553.

CHM 471-D10 (CRN#43632)/BIOS 471-D10 (CRN#43631). Eukaryotic Biochemistry (3)

Biochemistry of selected eukaryotic processes including hormone chemistry, blood clotting, immunochemistry, vision chemistry, muscle chemistry and photosynthesis. The second part of the course will involve presentation and discussion of the current literature by class participants. **Prerequisite:** BIOS /CHM 372 or consent of department chair. Elluminate sessions will be scheduled.

Instructor: Prof. Linda Lowe-Krentz

e-mail: lj10@lehigh.edu

Phone: 610-758-5084

- Course includes approximately 36 hours of content, plus assignments
- **Textbook Required:** *“Biology of Cancer”* – with CD, Weinberg, Publ: Garland, 1st Ed. ’06; ISBN#15340761

CHM 477-D10 (CRN#40945). Toxicological Principles for the Pharmaceutical Industry (3)

The key to the successful process of drug development is the measurement, mechanistic understanding, and pharmacological interpretation of the biological effects of the promising new drug substance. How a candidate substance impacts a mammal-and ultimately man-in all major organ systems must be understood before the pharmaceutical goes forward to registry. This course has been especially organized for the students of Lehigh University’s Distance Education program by Rutgers University toxicologist, Dr. Diane E. Heck. The course is team-taught by toxicologists and pharmacologists from pharmaceutical industry and from academia. Any BS/BA graduate in the biological, chemical, and pharmaceutical sciences should have appropriate academic preparation for this course. Undergraduate organic chemistry and a minimum of one-semester of biochemistry would be essential.

Instructor: Prof. Ned Heindel

Moderator: Dr. Diane Heck

e-mail: heck@ehsi.rutgers.edu

Co-Moderator: Dr. Joshua Gray

e-mail: gray@ehsi.rutgers.edu

- Course includes approximately 36 hours of content, plus assignments
- **Textbook Required:** *“Toxicology: The Basic Science of Poisons,”* Casarett and Doull, Curtins D. Klassen, 6th Ed., Publisher, McGraw Hill, ISBN# 0-07-134721-6

CHM 477-D11 (CRN#43452). Pharmaceuticals & the Immune System (3)

Biological immune response modifying agents (pharmaceutical drugs) have both general and specific targets that encompass a wide range of clinical conditions from cancer to obesity. Clinical trials have shown the impact these pharmaceutical agents have had in the areas of infectious disease prevention (vaccines), immune suppression (transplantation, auto-immune disease), therapies (cancer treatment, infectious diseases) and symptom relief/prevention (allergies). The course is divided into two parts. Part I will provide the basic immunology background required to understand the fundamental principles of immunology used in the design of applied pharmaceuticals. Part II will be given by representative lecturers from the pharmaceutical industry as well as major medical research centers that will discuss the design, formulation, delivery and clinical outcome of immune-based therapies. The topics will cover vaccination strategies in the area of infectious diseases and cancer, the application of monoclonal antibodies as therapeutics and as delivery motifs in radio-immunotherapeutics and immunoconjugates of chemo-therapeutics and toxins, immune suppression and activation, and other related topics. This course should provide to the student with the necessary background and examples of applied immunology required to understand current immune modulating pharmaceuticals and to aide in the future design of more effective immune-based agents.

Instructor: Prof. Ned D. Heindel

Moderator: Dr. Kathy Alpaugh

e-mail: RK_Alpaugh@fcc.edu

- Course includes approximately 36 hours of contact
- **Textbook Required:** *“Immunobiology”* by Janeway et al. Garland Publishing (Taylor & Francis Group), 6th Ed 2005, ISBN#0815341016

CHM 489-D11 (CRN#44222). Organic Polymer Science II (3)

This is a continuation of CHM 394 (Organic Polymer Science I) and it covers the higher chapters (10-17) of the textbook for that course, (*“Polymer Chemistry – An Introduction,”* by M. Stevens). Since these two courses are somewhat linear, students who have not taken CHM 394 may still be able to enroll in CHM 489 if they have consulted the course instructor and discussed their level of preparation. The course will commence with a review of the kinetic expressions for chain and step-polymerization and then deal with the organic synthesis and properties of conductive polymers, polyethers and related analogs, polyesters, polyamides and related analogs, phenol- and urea-formaldehyde resins, heterocyclic and furfuryl alcohol polymers, natural polymers, synthetic biopolymers, inorganic polymer, commercial polymers and special applications thereof. The course will also treat polymer-supported reagents useful in organic synthesis and macro beads as polymeric microreactors. Some common laboratory preparations for polymers will also be reviewed. Students in the pharmaceutical industry will find the treatments of synthetic methodologies & of natural/synthetic biopolymers of special application to their discipline.

Instructor of Record: Prof. Ned Heindel

Moderator: Prof. Fran Waller

e-mail: wallerfj@entermail.net

- Course includes approximately 36 hours of contact
- **Textbook Required:** *“Polymer Chemistry:An Introduction”* (3rd 99). ISBN#0195124448 – Stevens, M.P.

ENGINEERING

IE 328-D11 (CRN#44579). Engineering Statistics (3)

Random variables, probability functions, expected values, statistical inference, hypothesis testing, regression and correlation, analysis of variance, introduction to design of experiments, and fundamentals of quality control. This course requires use of Minitab Software. “Minitab” computer program will also be needed for this course.

Instructor: Prof. Eugene Perevalov

e-mail: eup2@lehigh.edu

Phone: 610-758-4031

- Course includes approximately 36 hours of content and assignments

- **Textbook Required:** “Miller+...Probab. And Stat. for Engineers,” Johnson, 7th Ed., 05, Publ. Pearson, ISBN#013143745-6; 013143745-3

IE 405-D11 (CRN#44581). Special Topics in IE: Foundations of Systems Engineering (3)

Instructor: Prof. Nicholas G. Odrey

e-mail: ngo0@lehigh.edu

Phone: 610-7584036

- Course requires approximately 36 hours of content and assignments
- **Textbook Required:** “*The Engineering Design of Systems*,” Buede, D.M., Publ., Wiley, ISBN#0471282251

IE 410-D11 (CRN#44583). Design of Experiments (3)

Principles and analysis of manual and automated production systems for discrete parts and products . Cellular manufacturing, flexible manufacturing systems, transfer lines, manual and automated assembly systems, and quality control systems.

Instructor: Prof. Eugene Perevalov

e-mail: eup0@lehigh.edu

Phone: 610-758-4031

- Course requires approximately 36 hours of content and assignments
- **Textbook Required:** “*Design and Analysis of Experiments*,” Montgomery, Publ., Wiley, 6th Ed., ISBN#47148735X

IE 426-D11 (CRN#44578). Optimization Models and Applications (3)

Modeling and analysis of operations research problems using techniques form mathematical programming. Linear programming, integer programming, multi-criteria optimization, stochastic programming and nonlinear programming using an algebraic modeling language. This course is a version of IE 316 for graduate students, with research projects and advanced assignments. Closed to students who have taken IE 316. Prerequisite: IE 220 or equivalent background.

Instructor: Staff (TBA)

- Course requires approximately 36 hours of content and assignments
- **Textbook Required:** “*Applications of Optimization w/Xpressmp*,” Gueret, Dash Optim, ISBN#095435030-7;095435030-8

IE 443-D11 (CRN#44585)/ MSE 427-D11 (CRN#44587). Automation and Production Systems (3)

Principles and analysis of manual and automated production systems for discrete parts and products. Cellular manufacturing, flexible manufacturing systems, transfer lines, manual and automated assembly systems, and quality control systems.

Instructor: Prof. Mikell P. Groover

e-mail: mpp0@lehigh.edu

Phone: 610-758-4030

- Course requires approximately 36 hours of content and assignments
- **Textbook Required:** “*Automation, Prod. Sys. And Computer Integrated Manufacturing*,” Groover, M., Publ., Pearson, 3rd Ed; New edition out in July (order new edition)

EMA 350-D10 (CRN#43885). Elements of Engineering Analysis (3)

Engineering Mathematics (EMA) 250 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 250-D10 will count towards the Master of Engineering degree, but not towards the Master of Science in ME. However EMA 350-D10, which requires additional work, will count towards any graduate degree within the constraints of the program.

By the end of EMA 250/350 students will know how to perform the following tasks:

- Solving analytically basic differential equations
- Utilizing mathematical modeling to study basic engineering problems
- Working with vectors, arrays, matrices, determinants and performing mathematical operations with them.
- Solving systems of linear algebraic equations using analytical methods as well as numerical methods via MATLAB.
- Using MATLAB and Excel to solve and plot the results of certain simple engineering problems.
- Writing a computer program using either C++ or MATLAB in the context of an engineering problem.
- Using numerical methods in the following tasks:
 - solving transcendental equations
 - differentiating and integrating functions
 - curve fitting data
 - solving simple differential equations

Instructor: Prof. Jacob Kazakia

e-mail: jvk0@lehigh.edu

Phone: 610-758-3785

- Course includes approximately 36 hours of content and assignments
- **Textbooks Required:** (1) “*Mathematical Methods in Chemical Engineering*,” 2nd edition, Jenson & Jeffreys (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; (2) “*The Mathematics Companion:Essential and Advanced Mathematics for Scientists and Engineers*,” by A. C. Fischer-Cripps; (3) “*Essential C++ for Engineers and Scientists*,” 2nd edition by Jeri Hanly can be purchased on Lehigh’s Bookstore

website; (C++ compiler will be sent to you on CD); (4) “*Getting Started with MATLAB 7*”, by Rudra Pratap (most of you may already use Matlab or instructions to access this program will be sent to you).

ME 385-D11 (CRN#44693)/ME 485-D11(CRN#44696). Polymer Processing (3)

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. **Prerequisites:** (ME 385: Senior level standing in engineering or science). (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

e-mail: jc0i@lehigh.edu

Phone: 758-6310

- Course includes approximately 36 hours of content and assignments
- Textbook Required: None required

ME 401-D11(CRN#43887)/ MSE 423-D11(CRN#43633). Product Design/Analysis (3)

Integrated approach to design and analysis of products and systems. Principles for robust design and use of computer-aided engineering to model, evaluate, and enhance design. Case studies and design assignments are major components of this course.

Instructor: Prof. John Ochs

e-mail: jbo0@lehigh.edu

Phone: 610-758-4593

- Course includes approximately 36 hours of content and assignments
- Textbook Required:

ME 413-D10 (CRN#44017). Numerical Methods in Mechanical Engineering (3)

Zeros of functions, difference tables, interpolation, integration, differentiation. Divided differences, numerical solution of ordinary differential equations of the boundary and initial value type. Eigen problems. Curve fitting, matrix manipulation and solution of linear algebraic equations. Partial differential equations of the hyperbolic, elliptic and parabolic type. Application to problems in mechanical engineering.

Instructor: Prof. Jacob Kazakia

e-mail: jvk0@lehigh.edu

Phone: 610-758-3785

- Course includes approximately 36 hours of content and assignments
- Textbook Required: “*Numerical Mathematics and Computing*,” 5th Ed., by Ward Cheney and David Kincaid; Publ. Brooks/Cole Publishing Company, 2004, ISBN#0-534-38993-7

ME 430-D11 (CRN#44694). Advanced Fluid Mechanics (3)

This course is a first graduate course in compressible fluid mechanics, providing a broad coverage of key areas of viscous and inviscid fluid mechanics. Topics covered include: Flow kinematics, differential equations of motion, viscous and inviscid solutions, vorticity dynamics and circulation, vorticity equation, circulation theorems, potential flow behavior, irrotational and rotational flows, simple boundary layer flows and solutions, and real fluid flows and consequences.

Instructor: Prof. Chuck Smith

e-mail: crs1@lehigh.edu

Phone: 610-7585532

- Course includes approximately 36 hours of content and assignments
- Textbook Required:

ME 442-D11 (CRN#44695). Mathematical Methods in Eng. I (3)

Analytical techniques are developed for the solution of engineering problems describe by algebraic systems, and by ordinary and partial differential equations. Topics covered include: linear vector spaces; eigenvalues, eigenvectors, and eigenfunctions. First and higher-order linear differential equations with initial and boundary conditions; Sturm-Liouville problems; Green’s function. Special functions; Bessel, etc. Qualitative and quantitative methods for nonlinear ordinary differential equations; phase plane. Solutions of classical partial differential equations from the physical sciences; transform techniques; method of characteristics.

Instructor: Prof. Phillip Blythe

e-mail: pab0@lehigh.edu

Phone: 610-758-3782

- Course includes approximately 36 hours of content and assignments
- Textbook Required:

MSE 423-D11(CRN#43633)/ ME 401-D11(CRN#43887). Product Design/Analysis (3)

Integrated approach to design and analysis of products and systems. Principles for robust design and use of computer-aided engineering to model, evaluate, and enhance design. Case studies and design assignments are major components of this course.

Instructor: Prof. John Ochs

e-mail: jbo0@lehigh.edu

Phone: 610-758-4593

- Course includes approximately 36 hours of content and assignments
- Textbook Required:

MSE 427-D11 (CRN#44587)/ IE 443-D11 (CRN#44585). Automation and Production Systems (3)

Principles and analysis of manual and automated production systems for discrete parts and products. Cellular manufacturing, flexible manufacturing systems, transfer lines, manual and automated assembly systems, and quality control systems.

Instructor: Prof. Mikell P. Groover

e-mail: mpg0@lehigh.edu

Phone: 610-758-4030

- Course requires approximately 36 hours of content and assignments
- **Textbook Required:** “Automation, Production Systems, and Computer Integrated Manufacturing,” Groover, M.P., Publ: Pearson, 3rd edition. Book not available until July 2007 – order new edition.

MSE 433-D11 (CRN#44627). Technology and the Factory of the Future (3)

Engineering and technological issues affecting future developments in manufacturing. Topics include flexible automation systems, integration of design and production through the factory data network, intelligent machines, the man-machine interface, and the manufacturing management information system.

Instructor: Prof. Alan Feiertag

e-mail: adf5@lehigh.edu

Phone: 610-758-TBA

- This course consists of approximately 36 hours of content and assignments
- **Textbook Required:** Serope Kalpakjian, Steve Schmid, “Manufacturing, Engineering & Technology,” Prentice Hall, 5th Edition, ISBN#0-13-148965-8
- **Textbook Recommended:** “21st Century Manufacturing,” Wright, Paul K., Prentice Hall, 2001. ISBN#0-13-095601-5

MSE 438-D11 (CRN#44629). Agile Organizations & Manufacturing Systems (3)

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.

Instructor: Profs. Gardiner/Groover

e-mails: kg03@lehigh.edu (X85070)

mpg0@lehigh.edu (X84030)

- This course consists of approximately 36 hours of content and assignments
- **Textbooks Required:** S. Goldman, R. Nagel, and K. Preiss, “Agile Competitors and Virtual Organizations,” Van Nostrand Reinhold, 1995 and R. Dove, “Response Ability-The Language, Structure, and Culture of the Agile Enterprise,” John Wiley & Sons, Inc. 2001; P. Turney, “Common Cents, Cost Technology, Inc.,” Beaverton, Oregon, 1992.
- **Textbooks Recommended:** “The Lean Enterprise Memory Jogger, Create Value and Eliminate Waste throughout your Company,” GOAL/QPC, 1st Ed, 2002. ISBN#1-57681-045-3; “The Six Sigma Memory Jogger II, A Pocket Guide of Tools for Six Sigma Improvement Teams,” GOAL/QPC, 1st Ed., 2002. ISBN#1-57681-044-5

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