

DUAL & GRADUATE LEVEL LIVE ENGINEERING COURSES

Purdue University Calumet

Fall 2008 (AUGUST 25, 2008 TO DECEMBER 20, 2008)

CRN: 34311 ECE 595A, Computer Architecture and Organization, N. Housangi , MW 5:00-6:20 PM

Prerequisite: ECE 371 An introduction in designing and analyzing current advanced computer architecture and organization. Major topics discussed include: Performance and Cost Analysis, Instruction set principles and Examples, Pipelining, Advanced Pipelining and Instruction-Level Parallelism, Memory-Hierarchy Design, I/O Systems, Interconnection Networks, Multiprocessor Architecture and parallel processing.

CRN: 34312 ECE 595B Wireless Communication, H. Gerber, MW 2:00-3:20 PM

Prerequisite: ECE 311 Electric and Magnetic Fields or Equivalent or consent of instructor One of the hottest fields in business and industry is wireless communications. The course is suitable for computer science and engineering students and covers the fundamental issues impacting wireless networks. A special coverage of third generation (3G) systems and wireless local area networks (WLANs), including Bluetooth™, that will transform communication systems in the coming years is presented. Some specific topics include: Channel assignment, handoff, trunking efficiency, frequency reuse, capacity planning, mobile radio propagation, multipath fading, LAN technology IEEE802.11a/b, 3G standards, W-CDMA, cdma2000, GPRS, UMTS, Bluetooth™.

CRN: 34314 ECE 595C Speech Processing, K. Gopalan MW: 3:30-4:50 PM

This course deals with some of the common digital signal processing techniques for the analysis of speech signals. Topics include: speech signal analysis using short-time Fourier transform, linear prediction, and cepstrum processing; applications in speech compression and coding, speech and speaker recognition, audio watermarking and steganography, and speech enhancement. Projects in speech analysis are assigned for implementation in MATLAB.

Prerequisite: Senior/graduate standing. Signal analysis, matrix operations and one dimensional Fourier transform.

Familiarity with MATLAB usage.

Textbook: T.F. Quatieri, *Discrete-Time Speech Signal Processing: Principles and Practice*, Prentice-Hall, 2002.

CRN: 34315 ECE 595E Image Processing TR: 5:00-6:20 PM

Prerequisites: MA 264, Phys 251 (or equivalent), or consent of instructor. Fundamentals of computer image processing and applications. Image enhancement in the spatial and frequency domains. Image restoration. Color image processing. Wavelets and image compression. Image segmentation: edge detection and texture analysis. Shape analysis and pattern classification.

CRN: 34316 ECE 595F Introduction to Applications in Java, X. Yang, TR 6:30-7:50 PM

The purpose of this course focuses on the design and implementation of complete applications. Topics considered will include: object-oriented programming concepts; the basics of Java; graphical user interface design and implementation; event-driven programming; networking; and animation.

CRN: 34317 ECE 595G Advanced Electric Drives, C. Apostoia TR 6:30-7:50 PM

This course covers topics related to advanced vector control of electric drives systems. The emphasis is on ac-motor drives that are used where high performances are required to control torque, acceleration, speed and position: hybrid and electric vehicles, wind-electric energy generation, industrial robots, biomedical applications, etc. Simulink-Matlab based computer simulations are used to study the vector control of induction and synchronous ac machines, and to simplify the development of a real-time dSPACE controller for experimentation.

CRN: 34318 EE 595K Energy Systems, R. Kramer, TR: 5:00-6:30 PM

Energy is one of the most critical issues facing the world both now and in the future. A reliable and high quality supply of energy is essential to maintain and develop economies internationally. One way to help meet both current and future needs is to use available energy sources more efficiently as well as developing new options and resources. This course will consider aspects of the design, analysis, and operation of various energy systems. Topics considered will include how to optimize energy value for systems including renewables (solar, wind, biomass), Combined Heat and Power, passive and active thermal, and solar. Related aspects of thermodynamics, electric analysis, economics, energy industry structure, and optimization will be covered. The Combined Heat and Power research installation at PUC will be used for class demonstrations and projects. This course will be of value to Engineers, Scientists, and others interested in learning how to more efficiently and economically use both conventional and alternative energy sources.

CRN: 34593 ECE 595N Computer Networks, MW 5:00 to 6:20 PM

CRN: 34345 ME 597A – Heat Exchanger Design, G. Nnanna MW 5:00-6:20 PM

To introduce the thermal design theory of heat exchangers in steady state and transient operation, and thermo-mechanical design challenges as applied to various heat exchanger configurations. Topics include: Classification of heat exchangers; Methods of analyzing various heat exchanger; Pressure drop analysis and flow distribution; Design considerations for regenerators, plate-fin, shell-and-tube heat exchangers, etc; Optimization of heat exchanger design; Methods of predicting heat exchanger fouling; Transient response of heat exchangers; and Two-phase flow and design of boilers.

CRN: 34346 ME 597B – Numerical Heat and Mass Transfer , X. Wang MW 6:30-7:50 PM

Fundamentals of computational fluid dynamics (CFD) for engineers. Finite volume methods. Numerical analysis of fluid flow and heat transfer problems. Use of commercial codes, applicability and pitfalls. Grid generation, convergence and accuracy. Understanding of CFD principles through select example problems solved by students with commercial CFD software.

CRN: 34347 ME 597E Fatigue Analysis, Y. Kin, TR 5:00-6:20 PM

The course will cover primary analytical methods, testing procedures and statistical approaches to quantify fatigue damage. This will give students the necessary background to provide design against fatigue damage. The primary fatigue analysis methods presented in the course are: the stress-life approach, the strain-life approach, and the fracture mechanics approach. The understanding of these techniques provides the background to perform optimum fatigue analysis for specific situations. Non-destructive methods for assessment of accumulated fatigue damage, correlation between modal simulation, experimental acoustical methods, and prediction of remaining life will be also discussed in this course.

CRN 34706 ME 597D Advanced Engineering Economy, M. Mojtahed, MW 6:30-7:50 PM

In today's world, it is nearly impossible for an engineer to perform without considering the financial implications of the design, manufacture, construction, sales, and the company strategic plan. Traditional accounting and financial decision-making are not much help to the engineer who needs to cut through paperwork and get to the bottom line. As a result, engineering and cost accounting are usually at odds with each other. The engineer-manager who must constantly compromise between engineering issues and financial decisions is thwarted from doing the best things for the company. A smart approach to finance, its implications for technical processes, and financial management of the technical firm are needed. This course provides skills related to the financial resources of the firm, focusing on capital budgeting, financial analysis, risk and return of financial planning.

CRN 34707 ECE 595D Advanced Engineering Economy, M. Mojtahed, MW 6:30-7:50 PM

In today's world, it is nearly impossible for an engineer to perform without considering the financial implications of the design, manufacture, construction, sales, and the company strategic plan. Traditional accounting and financial decision-making are not much help to the engineer who needs to cut through paperwork and get to the bottom line. As a result, engineering and cost accounting are usually at odds with each other. The engineer-manager who must constantly compromise between engineering issues and financial decisions is thwarted from doing the best things for the company. A smart approach to finance, its implications for technical processes, and financial management of the technical firm are needed. This course provides skills related to the financial resources of the firm, focusing on capital budgeting, financial analysis, risk and return of financial planning.

GRADUATE LEVEL CEE COURSES Fall 2008

(August 25 to December 20, 2008)

Registration Deadline: August 8, 2008

Taught live at Purdue West Lafayette

Available via streaming video (primarily), CD & Internet at Purdue Calumet

Course Administrator: T. Hentea

Fall 2008

Graduate Courses:

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|-------|--------------|---|--|--|--|
| 34507 | AAE532 | Orbit Mechanics | | | |
| 34484 | AAE550 | Multidisciplinary Design Optimization | | | |
| 34485 | AAE554 | Fatigue of Structures and Materials | | | |
| 34488 | AAE615/ME615 | Aeroacoustics | | | |
| 34508 | AAE624 | Laminar-Turbulent Transition | | | |
| 34361 | CE597D | Global Sustainable Engineering | | | |
| 34360 | CE597W | Characterization And Simulation Of Heterogenous Materials | | | |
| 34349 | CE597Y | Coordinate Systems and Conformal Mapping | | | |
| 34351 | CE597Z | Adjustment of Geospatial Observations | | | |
| 34482 | CS501 | Introduction To Computational Science | | | |
| 34486 | ECE538 | Digital Signal Processing I | | | |
| 34481 | ECE602 | Lumped System Theory | | | |
| 34497 | ECE610 | Energy Conversion | | | |
| 34504 | ECE695S | Power Electronic Converters and Systems | | | |
| 34487 | IE545 | Engineering Economic Analysis | | | |
| 34495 | IE558 | Safety Engineering | | | |
| 34499 | IE570 | Manufacturing Process Engineering | | | |
| 34500 | IE577 | Human Factors in Engineering | | | |
| 34501 | IE583 | Design and Evaluation of Material Handling Systems | | | |
| 34483 | MA527 | Advanced Mathematics for Engineers and Physicists I | | | |
| 34490 | ME509 | Intermediate Fluid Mechanics | | | |
| 34491 | ME560 | Kinematics | | | |
| 34492 | ME563 | Mechanical Vibrations | | | |
| 34496 | ME575 | Theory and Design of Control Systems | | | |
| 34498 | MSE512 | Powder Processing | | | |
| 34502 | MSE548 | Deposition Processing of Thin Films and Coatings | | | |
| 34493 | STAT512 | Applied Regression Analysis | | | |
| 34494 | STAT514 | Design of Experiments | | | |

- For more information: <https://engineering.purdue.edu/ProEd>
- For text books, contact: [University Bookstore, West Lafayette, IN](#), 765-743-9618 or
- Web Address: www.purdueu.com; [Follett's Bookstore, West Lafayette, IN](#)
- 765-743-9642 or 1-800-837-5388, Web Address: www.purdue.bkstr.com; or
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