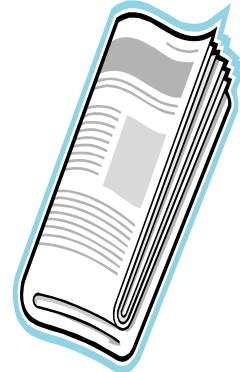


Summer 2008 Newsletter



ISEEM Chair's Message	2-3
ISEEM News	4
Course News	5
Summer 2008 Course Listing	6
Distance Learning News Corner	7
Tentative Future Courses.....	7
Deadlines & Academic Calendar.....	8
Registration Procedures.....	8
Distance Learning Advising Schedule	8
Summer 2008 Tuition Payments	8
Distance Learning Faculty and Staff	9
Registration Form	10
Textbook Order Form	11

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Engineering Distance Learning

An Industrial Engineering Perspective

From the ISEEM Chair – Jim “Scoop” Swain

A Passion for the Profession: What is our Profession?

Who are we, and what is it that industrial engineers do? This is a frequently occurring question, and one that does not admit an easy answer. Early pioneers such as Frederick W. Taylor and Frank and Lillian Gilbreth are not well known by the public; our work is more about relations between people, processes, and systems than about some instantly recognizable device or product. Some of the traditional symbols associated with the field, such as the stopwatch, are out of date and don't foster a positive image of our field.

We lack the iconic figure or the easy image that many other fields enjoy. Physics is surely over endowed with such figures as Newton, Einstein, Feynman, and Hawking, and everyone knows that physics is associated with atomic particles such as the neutrino and results such as nuclear fission. Likewise, whether we would count Archimedes or DaVinci as famous examples of civil engineers, we are surely surrounded by their works, infrastructure so ubiquitous that we hardly notice the individual elements such as bridges and dams until they surprise us by inadvertently failing. The connection between the circuits course that all engineers take and the iPod is not especially clear, though everyone knows that it is a product of electrical engineering. Yet who or what can we point to that says industrial engineering to the world?

Classical industrial engineering arose in the early twentieth century out of the needs of a newly mechanized industrial setting, where men and machines interacted to manufacture a product. While the individual machine might be designed and built by mechanical engineers according to the principles of stress and strain, the overall concern operated in the realm of profit and cost. Early questions of management in this novel setting included technical aspects, such as the maintenance of the drive belts used to power the individual machines: essentially a problem of engineering economy, in which an optimal cost policy for replacing the belts was formulated. Other management activities were more traditional activities such as planning and scheduling, and issues about pay and production incentives.

In this realm, efficiency was defined in terms of money or throughput, not thermodynamics. Frederick W. Taylor is best known for time studies and scientific management, which have evolved into entirely new areas such as human factors and industrial psychology. Taylor's shovel experiments suggested the need for tools that were appropriate for the job at hand; he also advocated planning for rest periods when work was demanding. Motion studies, developed by Frank and Lillian Gilbreth, further emphasized designing the work and workplace to reduce the number of steps needed to perform an activity, to reduce fatigue, and to prevent injuries. It was Frank Gilbreth who suggested that nurses provide surgeons with their tools, as needed, as a caddy assists a golfer. These activities are still necessary and important. Today those same ideals are being promoted in lean manufacturing activities such as 5S and *poke yoke*.

ISEEM Chair's Message

Engineering Distance Learning

Industrial engineering departments have traditionally emphasized the need for statistical tools to describe and model the uncertainty in the workplace. Variation is encountered in work design, quality, reliability, transportation, inventory, scheduling, and in the human factors of products themselves. The workplace must be designed to accommodate variety in the work force such as size, strength, or reach, while the manufacturing process must be able to monitor and control variations in the components so that the final product will function as designed, consistently and robustly. The quality control tools of Shewhart and the philosophy of Deming involve statistical methods and management principles. Many of these items and process improvement methods such as design of experiments have been incorporated in modern Six Sigma techniques.

To cope with the implications of statistical variation, industrial engineers have employed a variety of analytical and modeling tools including operations research models of queues and simulation that are applied to plant layout, scheduling of manufacturing operations, and supply chains. Where possible, optimization is used to design systems to reduce or eliminate the effects of variation on the finished product.

In the last three decades, the Toyota Production System has provided a fresh view of traditional industrial engineering thinking. As such, it provides a foundation for unifying the many apparently disparate techniques and to establish the critical element in the analysis. The Toyota Production System is, according to its developer Taiichi Ohno, Toyota Style Industrial Engineering. The focus in the Toyota Production Systems is on customer value and the elimination of anything (“waste”) which does not provide value, through strategies such as reducing setup, mistake proofing of processes, continuous improvement, and one piece flow. Because of the complex nature of most organizations, these improvements can only be achieved with the combined efforts of teams that involve everyone within the process, assisted by specialists such as industrial engineers but no longer dictated by them. It is also noted that individual processes do not occur in isolation from other portions of the system, and that corporations likewise are only a portion of the larger process of converting raw materials to products. As many firms are linked by logistical supply chains, problem solving frequently requires systems thinking to insure that the overall system is improving and not simply isolated components.

Using these major elements, the ISEEM department has identified the key elements in our vision of industrial engineering. The key elements are systems thinking and respect for people with an overriding focus on customer value. In addition, key skills for success in making this vision take place are waste minimization, variability reduction, and system optimization. Recent changes in the undergraduate program to introduce these concepts throughout the curriculum are under way, and the faculty is continuing to study the curriculum to more fully reflect this unifying paradigm.

ISEEM Chair's Message

ISEEM NEWS

The following students have passed their Ph.D. qualifying exams:

Gregg Hanold of Charleston, SC.
Richard Russell of Madison, AL.
Herbert Tuttle of Overland Park, KS.

The following student has passed the Ph.D. written and oral comprehensive exams:

Mark Antonison of Huntsville, AL.

The following students have met the requirements for the M.S.E.:

Enrico Celestini of Huntsville, AL. Capstone title: "Employing Quality Functional Deployment Methodology for Systems Engineering Request for Proposal Development."

Hansel Gill of Huntsville, AL. Capstone title: "A Correlation Between the Team Success Questionnaire and the Larson and LaFasto Team Evaluation Survey."

Sandeep Jeerreddy of Huntsville, AL. Capstone title: "Relevant Factors for Disaggregating National Freight Flow Data at the County Level."

David McCarty of Madison, AL. Capstone title: "Evaluation of Integrated Product Team Development Using the Tuckman Four-Stage Group Development Model."

Casandra Robinson of Trenton, SC. Capstone title: "A Comparison of Teaming Theories and Feedback Instruments Applied in the Teams in Action Research Effort 2000-2007."

Kristin Walker of Harvest, AL. Capstone title: "MBNQA vs. ISO Standards."

The following students have met the requirements for the M.S.O.R.:

Kenneth Johnson of Scottsboro, AL. Capstone title: "A POD Model Using Linear Model Fit Methods for Eddy Current Crack Detection in Space Shuttle Main Propulsion System (MPS) Flow Liners."

Melanie Selman of Harvest, AL. Capstone title: "Measuring Progress and Performance from EWIRDB to NGES."



Congratulations



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EM 667 Labor Relations for Engineers to be offered Summer 08

The EM labor relations course will be offered this summer for the first time in several years. The course will examine labor relations and collective bargaining with emphasis on the negotiation and administration of labor agreements. Included will be a survey of the historical, legal, and structural environments that influence the collective bargaining process. The final examination, required of all students, will consist of a 1/2-day collective bargaining simulation held in Huntsville on a Saturday morning. It will feature student labor and management negotiating teams meeting to hammer out labor agreements.

EM/ISE 767 – Contemporary Applications in EM/ISE Beginning in Fall 08 Now Open to Advanced Master's Students.

Heretofore open only to doctoral students, is being opened to second-year master's students beginning in the fall 08 semester. In this course, doctoral and advanced master's students will be given the opportunity to apply the key qualitative and quantitative principles of technical management learned in earlier engineering management and ISE course work to realistic case problems. Students work as teams to solve multidimensional management/organizational problems that require a cross-functional point of view to reach a totally satisfactory conclusion or solution. While each case may focus on some specific problem/situation that existed in the organization studied, students are challenged to look beyond the obvious immediate problem to seek out subtle or latent problems that must be considered in the modern manager's complex world. In-class time will be spent presenting and discussing alternative solutions. The idea is to distinguish between workable and unworkable solutions, and attempt to identify, where possible, a consensus solution. In approaching each case problem, students will be encouraged to take a freewheeling, broad-based, no-holds-barred approach that emphasizes resourcefulness, creativity, and thoroughness. Considerable emphasis will also be placed upon development of each student's presentation skills.



Special Topics Courses, Summer 2008 Instructor Dr. Mikel Petty, UAH CMSA

ISE 639 (a) Modeling and Simulation Environments

Architectures and attributes of modeling and simulation environments (live, virtual, and constructive), relative advantages and disadvantages of each, and determining the most appropriate environment for different applications. Significant models and simulations used and testing and validation approaches suitable in each environment. Simulation interoperability approaches (standalone, interoperable) and current interoperability protocol standards and their advantages and disadvantages in the different environments. Case studies of successful M&S applications in each of the different environments, with emphasis on test and evaluation and acquisition applications.

ISE 639 (b) Modeling and Simulation Data Strategies

Categories of data sets required (such as service time distributions, terrain databases, or sensor performance parameters) for typical modeling and simulation (M&S) applications. Data requirements for M&S in terms of data sets, data volume, data availability, data accuracy, data classification, data storage media, and data archival. Existing M&S data resources available for reuse. Commonly used formats for documenting data (e.g., meta-data) and for structuring and encoding data (e.g., XML). Concepts of data models and commonly used data models. Data set format conversions. Data acquisition and creation effort estimation. Case studies of successful M&S applications in each of the different environments, with emphasis on test and evaluation and acquisition applications.

New Elective Offering!

PY426/520 History & Systems in Psychology

Provides a brief survey of the history of science before focusing on the development of Psychology as a scientific study. You'll learn about the life and times of famous psychologists and how they influenced current thoughts on behavior. This is a great course for anyone preparing for the Psychology specialty GRE. It is also a good course to review foundations in Psychology for graduate students.

Industrial & Systems Engineering**ISE 439 (a) Engineering Economy (Grad)**

3 Hrs.– **Componation** - Tuesday & Thursday,
10:15-12:15, TH N 140

Text: *Fundamentals of Engineering Economy*, 2nd edition,
Park, ISBN 9780136017448

ISE 439 (b) Probability & Engineering Statistics (Grad)

3 Hrs.– **Gholston** – Monday & Wednesday,
5:00-7:00, TH N155

Text: *Statistics for Engineers & Scientists (W/Student Res CD)*, 2nd edition, Navidi,
ISBN9780073309491

ISE 526 Design/Analysis of Experiments

3 Hrs.– **Farrington** – Monday & Wednesday,
5:00-7:00, TH N 140

Text: *Design & Analysis of Experiments*, 6th edition,
Montgomery, ISBN 9780471487357

ISE 537 Electronics Manufacturing Processes

3 Hrs.– **Messimer** – Tuesday & Thursday,
12:30-2:30, TH S105

Text: *Surface Mount Technology*, 2nd edition, Prasad,
ISBN 9780412129216

ISE 638 Engineering Reliability

3 Hrs.–**Wessels** – Tuesday & Thursday,
2:45-4:45, TH N153

Text: *Practical Reliability Engineering*, 4th edition,
O'Connor, ISBN 9780470844632

ISE 639 (a) Modeling and Simulation Environments

3 Hrs.–**Petty**-Tuesday & Thursday, 12:30-2:30, TH N140
Text: No Text Required

ISE 639 (b) Modeling and Simulation Data Strategies

3 Hrs.–**Petty** -Tuesday & Thursday, 2:45-4:45, TH N140
Text: *Data Strategy*, 2005, Adelman, Moss & Abai
ISBN 0321240995

ISE 734 Decision Analysis

3 Hrs.– **Componation** – Tuesday & Thursday,
5:00-7:00, TH N155

Text: *Decision Analysis for Management Judgment*,
3rd edition, Goodwin, ISBN 9780470861080

ISE 697 Industrial & Systems Engineering Project I

3, 6 or 9 Hrs

ISE 698 Industrial & Systems Engineering Project II

3, 6, or 9 Hrs

ISE 699 Master's Thesis

1, 3, 6, or 9 Hrs

ISE 799 Doctoral Dissertation

3, 6, or 9 Hrs

Engineering Management**EM 661 Strategic Engineering Management**

3 Hrs.– **Henriksen** – Tuesday & Thursday,
5:00-7:00, TH N142

Text: *Competitive Strategy*, Porter,
ISBN 9780029253601

EM 667 Labor Relations

3 Hrs.– **Tippett** – Monday & Wednesday,
5:00-7:00, TH N142

Text: *Labor Relations*, 12th edition, Sloane & Witney,
ISBN 013196223X

EM 799 Doctoral Dissertation

3, 6, or 9 Hrs

Mechanical and Aerospace Engineering**MAE 540 Rocket Propulsion I**

3 Hrs.– **Staff** – Monday & Wednesday,
2:45-4:45, TH N155

Text: *Rocket Propulsion*, Sutton,
ISBN 9780471326427

MAE 541 Airbreathing Propulsion

3 Hrs.– **Staff** – Monday & Wednesday,
10:15-12:15, TH N153

Text: *Gas Turbine Theory*, Saravanamutto,
ISBN 9780130158475

MAE 568 Elements of Space Craft Design

3 Hrs.– **Benfield** – Tuesday & Thursday,
12:30-2:30, TH N153

Text: *Space Mission Analysis & Design*, Wertz, ISBN:
9781881883104

MAE 695 03 ST: Advanced Propellant Injectors

3 Hrs - **Landrum/Bazarov** - Tuesday & Thursday,
10:15-12:15, TH N153

Text: No Text Required

Other Courses**PY 520 ST: History and Systems**

3 Hrs.–**Torres** - 2nd Summer Session,
Monday-Thursday, 5:00-7:00, TH N153

Text: *Connections in the History & Systems
of Psychology*, 3rd edition, Thorne & Henley,
ISBN 0-618-41512-2

Forty Studies that Changed Psychology, 5th edition,
Hock, ISBN 978-0131147294

CS 617 Design & Analysis of Algorithms

3 Hrs.– **Zhang** – Tuesday & Thursday,
2:45-4:45, TH N155

Text: *Introduction to Algorithms (w/CD)*, 2nd edition,
Cormen, ISBN 9780072970548



Distance Learning

Volume 17, No. 2

Summer 2008

News Corner

UAH EMAIL SYSTEM

We appreciate the smoothness with which the students have migrated to using the official UAH email account for all information pertaining to courses. We appreciate your adaptability. For new students: you can redirect the email sent to your UAH account to an address you check regularly.

Fall 2008

- ISE 439-(a) Engineering Economy (Grad)
- ISE 439-(b) Probability & Eng. Statistics I (Grad)
- ISE 530 Manufacturing Sys. & Facilities Design
- ISE 547 Intro to Systems Simulation
- ISE 626 Intro to Operations Research
- ISE 627 Systems Engineering
- ISE 641 Advanced Quality Control
- ISE 670 Integrated Product & Proc. Design
- ISE 690 Statistical Methods for Engineers
- ISE 767 Contemporary Applications of ISE

- EM 660 Engineering Management Theory
- EM 666 Eng. Project Management
- EM 711 Research Methods
- EM 767 Contemporary Applications of EM

- CPE 631 Advanced Computer Sys. Architecture

- CS 650 Software Engineering

- MAE 530 Fundamentals of Aerodynamics
- MAE 540 Rocket Propulsion I
- MAE 541 Airbreathing Propulsion
- MAE 754 Hypersonic Flow
- MAE 580 Aircraft Stability & Control

- MKT 600 Survey of Marketing Management

- MSC 600 Operations Management

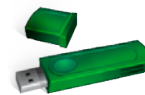
Technology Update

Course Management: UAHuntsville is moving to a new course management system, Angel, to replace WebCT/Blackboard. The new system will be in place for summer 2008 classes.

Instructional Technology: Instructors now have the opportunity to teach from the Sympodiums in each classroom.

Course Delivery Options: We are investigating downloadable files of our courses as an option to CD distribution. In the future we hope to eliminate the need for CD distribution.

As always, if you have suggestions or are experiencing problems, please let us know so we can respond to your needs.



Dottie Luke, Distance Learning Administrative Secretary
Technology Hall N138.....(256) 824-6976 luke@ise.uah.edu
.....Fax (256) 824-6608

Please call the Distance Learning Administrative Office with administrative questions or to have an exam proctored (256) 824-6976. You may contact the professor directly for specific information pertaining to current course work.



PLEASE PAY ATTENTION TO THE INSTRUCTIONS FOR REGISTERING, DROPPING OR WITHDRAWING FROM A COURSE AND/OR APPLYING FOR DEGREE. IF YOU DO NOT FOLLOW PROCEDURE THERE COULD BE UN-NECESSARY CONSEQUENCES!





!! MARK CALENDARS!!

!!!Registration Procedures!!!

- Complete registration form **IN FULL** each time!
- Use your A- Number rather than your Social Security Number.
- Signature at bottom is required.
- Late charges will be in effect for all late registrations or late payments.
- Call the Bursar at (256) 824-6223/6226 to make a payment; MasterCard, Visa, Discover, or American Express are accepted.
- If company covers tuition, all information concerning billing must be included with registration.
- Student is responsible for obtaining required textbooks. All books can be purchased through the UAH Bookstore. If using the UAH Bookstore, complete the form and fax to (256) 824-6754. For more information visit www.uah.bkstr.com or www.efollett.com.

Faculty Advising Schedule (Tentative)

AEDC Tullahoma, TN, EAF Lobby	April 30	10:00 am – 12:00 pm
SPAWAR, Charleston, SC.	May 5	9:30 am – 12:30 pm
Savannah River, Aiken, SC.	May 6	9:30 am – 12:30 pm
Huntsville, Arsenal Bldg 4488	May 8	11:30 am – 1:30 pm
Huntsville, Arsenal Bldg 5400, SELA	May 9	9:00 am – 11:00 am

Summer Tuition Payments

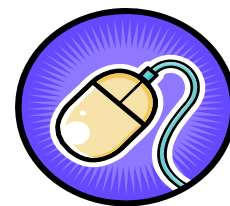
Zone	
1- Huntsville Area	\$1071
2- Alabama, Tennessee, Mississippi	\$1101
3- East of the Mississippi River	\$1158
4- West of the Mississippi River	\$1182
5- Pacific Coast	\$1375
6- International	\$1819

Academic Calendar

- May 11 - Spring Commencement.
- May 21 - Registration forms for summer due.
- May 26 - Memorial Day - Holiday.
UAH CLOSED
- May 27 - Classes begin.
- June 1 - MSE & PhD application deadline for students planning to graduate in summer.
See Dottie.
- June 2 - Last day to add a class.
- June 9 - Tuition due. Last day to drop with a refund. **NO REFUNDS AFTER THIS DATE.** Non payment of tuition does not constitute withdrawal from classes.
- June 15 - Last day for oral defense of thesis or dissertation. See advisor.
- June 16 - Last day to change from credit to audit.
- June 30 - Theses & dissertations to Graduate Studies.
- July 4 - Independence Day - Holiday.
UAH CLOSED
- July 15 - Last day to withdraw. NO REFUND. Last day for non-thesis final oral exam. See advisor.
- July 30-August 1 - Final exams.
- August 18 - Classes for fall semester begin.



Distance Learning Students must register and drop/add courses through Distance Learning Administrative Office.
Technology Hall, N138
(256) 824-6976



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Part-time Lecturer
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Robert.g.henriksen@boeing.com..... (256) 824-6256



Charity O'Neil

Distance Learning Operations Manager

Technology Hall N141 (256) 824-6563
oneil@ise.uah.edu..... Fax (256) 824-6608

Please contact the Production Office (256) 824-6563 for assistance with distribution of course work and material, or if you will be on travel and need to make special arrangements



Dottie Luke

Distance Learning Administrative Secretary

Technology Hall N138(256) 824-6976
luke@ise.uah.edu Fax (256) 824-6608

Please call the Distance Learning Administrative Office with administrative questions or to have an exam proctored (256) 824-6976. You may contact the professor directly for specific information pertaining to current course work.



Kathy Gentry

ISEEM Department Staff Assistant
Technology Hall N143
gentryk@ise.uah.edu ... (256) 824-6256
Fax (256) 824-6733

Please complete this form and fax it to:
UAH Distance Learning
N138 Technology Hall
Huntsville, AL 35899
Fax: (256) 824-6608

Summer 2008 Course Registration Form

Distance Learning Program

College of Engineering Degree Programs

UAH
The University of Alabama
in Huntsville

Course No. & Title	Credit Hours*	Credit or Audit	For Office Use Only	
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

*EM/ / ISE 799: 3, 6, or 9 & ISE 699: 3, 6, or 9

Please check method of delivery: CD Internet Delivery Only (must have high-speed connection)

Student Advisor: _____ **A Number** _____

Personal Information: Check here if this is a new address:

Full Legal Name: _____

Cell Phone (____) _____ Home Phone: (____) _____ Work Phone: (____) _____

Home Address: _____
Street City State Zip

Employer: _____ Daytime Email Address: _____

Work Address: _____
Street City State Zip

Proctor's Name: _____ Proctor's Email: _____

Proctor's Address: _____
Street City State Zip

Proctor's Phone: (____) _____ Proctor's Fax: (____) _____

.....
Tuition due **June 9, 2008**. Late payment will result in a \$50 late fee.

Bill Student: Bill Organization:

Purchase order # _____

Billing Address: _____

.....
Validation

I certify that the information given in this application is true and complete, and falsifying may result in dismissal from UAH. I understand that I am responsible for payment.

Signature: _____ Date: _____

UAH Distance Learning
Textbook Order Form
Please fax to 256-824-6754

Student's Name **(Please Print Clearly)** _____

Address **(No P.O. Boxes)** _____

City _____ State _____ Zip _____

TEXTBOOKS NEEDED:

COURSE # (Example: ISE 690)

_____	_____
_____	_____
_____	_____

Check here if you would like used textbooks (if available).

Check here if you would like to be notified of your total.

Payment Information:

Visa MasterCard Discover American Express

Government Credit Card (Must provide tax exempt #) _____

Card # _____ Exp. _____

Signature of Cardholder _____

If your employer will be paying for your books, you MUST provide the following information. Otherwise, payment will be YOUR RESPONSIBILITY.

Name of Employer: _____

Address: _____

City/State/Zip: _____

Contact Person: _____

Returns/Exchange

You must have your receipt to receive a refund or exchange. All books in plastic wrap must be unopened. Shipping will be UPS Ground at no charge to you. Express or overnight shipping will be additional. Questions? Call 256-824-6754. We will be glad to help you. Ask for more the Book Information Desk. www.uah.bkstr.com