THE UNIVERSITY of TENNESSEE

SPACE INSTITUTE

Continuing Education Program

2009-2010

Tullahoma, Tennessee 37388
888-822-8874 x276
or 931-393-7276
www.utsi.edu

THE UNIVERSITY OF TENNESSEE SPACE INSTITUTE

The Continuing Education Programs are presented at The University of Tennessee Space Institute in Tullahoma, Tennessee. UTSI is a campus of the University of Tennessee.

Dr. Angelia P. Bukley,
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Director Continuing Education Program

The University of Tennessee Space Institute (UTSI) does not discriminate on the basis of race, sex, color, religion, national origin, age, handicap, or veteran status in provision of educational opportunities or employment opportunities and benefits. UTSI does not discriminate on the basis of sex or handicap in the education programs and activities which it operates, pursuant to the requirements of Title IX of the Education Amendments of 1972, Public Law 92-318; and Section 504 of the Rehabilitation Act of 1973, Public Law 930112; respectively. This policy extends both to employment by and admission to UTSI. Inquiries concerning Title IX and Section 504 should be directed to the Affirmative Action Officer, Mail Stop 11, The University of Tennessee Space Institute, Tullahoma, TN 37388. Telephone (931) 393-7265. Charges of violation of the above policy should be directed to the Affirmative Action Officer.

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CONTINUING EDUCATION

The rapid changes occurring in technology make it essential that a university provide opportunities for continuing engineering studies. The University of Tennessee Space Institute recognizes continuing education as an important and basic responsibility and considers it to be an integral part of the academic programs of the Institute.

The Continuing Education Program offers are designed to be responsive to the needs of engineers, scientists, and the skilled craftsman in industry and government. The courses have been carefully selected and emphasis is given to new developments. The courses are conducted by the UTSI staff and by the most qualified persons available in education, industry, government, and the private sector.

Suggestions for additional courses are always solicited. Courses designed to meet the specific requirements of an organization can be arranged upon request, and can be presented in-house on a contract basis.

COURSES FOR ORGANIZATIONS

In addition to the professional development courses listed herein, the faculty and staff of The University of Tennessee Space Institute have the capability of presenting courses in several other disciplines. If you are interested in a particular subject, please communicate that interest to us. If you or your organization have special educational requirements in the engineering fields, computer science, or physical science, or the application of these disciplines, the Institute would be pleased to work with you in tailoring courses to meet your needs. **Courses may be presented here at the Institute or by special arrangements in the facilities of your own company or organization, thus realizing a savings in staff time and travel expenses for a sufficiently large group.**

Direct all questions regarding technical aspects of the course to the individual Course Director at UTSI, and questions regarding administrative aspects to the Continuing Education Department, The University of Tennessee Space Institute, Mail Stop 15, 411 B. H. Goethert Parkway, Tullahoma, Tennessee, 37388-9700, Telephone No.: 931-393-7276, e-mail address: bstines@utsi.edu.

GENERAL INFORMATION

Visit our Web site at: http://www.utsi.edu

Enrollment

Individual announcements for each course are mailed approximately two months prior to presentation. You may enroll by mail, telephone, e-mail, or fax. Telephone enrollment made by an official training office is considered a firm registration and the cancellation policy will apply. To enroll by mail, use the registration form included in each brochure, or telephone the UTSI Continuing Education Office at (931) 393-7277. You may fax your enrollment by dialing (931) 393-7327. The e-mail address is bbright@utsi.edu. UTSI reserves the right to limit class size to ensure optimum interaction among participants.

Casual dress is appropriate.

PLEASE NOTIFY US IF YOU REQUIRE SPECIAL MEALS, WHEELCHAIR ACCESS, OR OTHER ACCOMMODATIONS.

Fees

All fees are payable in U.S. dollars. Payment may be made by check, money order, or credit card. We now accept MasterCard, VISA, and Discover credit cards. Fee information is listed under the pertinent course description.

Training taken to maintain or improve professional knowledge and skills may be tax-deductible. Consult your tax advisor.

Continuing Education Units

Continuing Education Units (CEUs) are nationally recognized standard units of measurement awarded for participation in approved continuing education. A certificate for the appropriate number of CEUs as determined by the University of Tennessee will be presented to each attendee at the close of each course.

Substitute Speakers/Course Notes

UTSI reserves the right to substitute speakers in the event of unusual circumstances.

UTSI does not sell the course notes. You must attend a course in order to receive the course materials.

Cancellations/Refund Policy

Refunds of registration fees can be made if cancellation notice is received 10 working days prior to the beginning of a course. Cancellations made less than 10 working days prior to the course will be assessed 20% of the registration fee. Registration made within the 10 working days prior to the course are subject to the same cancellation policy. Substitutions may be made at any time.

UTSI reserves the right to cancel any course due to insufficient enrollment or circumstances beyond its control. Enrollees will be notified and a full refund will be made. The liability of The University of Tennessee Space Institute is limited to the registration fee. UTSI will not be responsible for airline ticket cancellation fees or any other expenses incurred because of a course cancellation.

Confirmation

Each enrollee will be mailed a letter of confirmation prior to the course. A telephoned registration made by an individual (to reserve a space) will be confirmed with a letter as soon as either the fee is paid or official notification is received by UTSI from his/her company or organization. A list of area motels will be included if the course is to be held on campus, or pertinent travel information will be included if the course is to be held off-site.

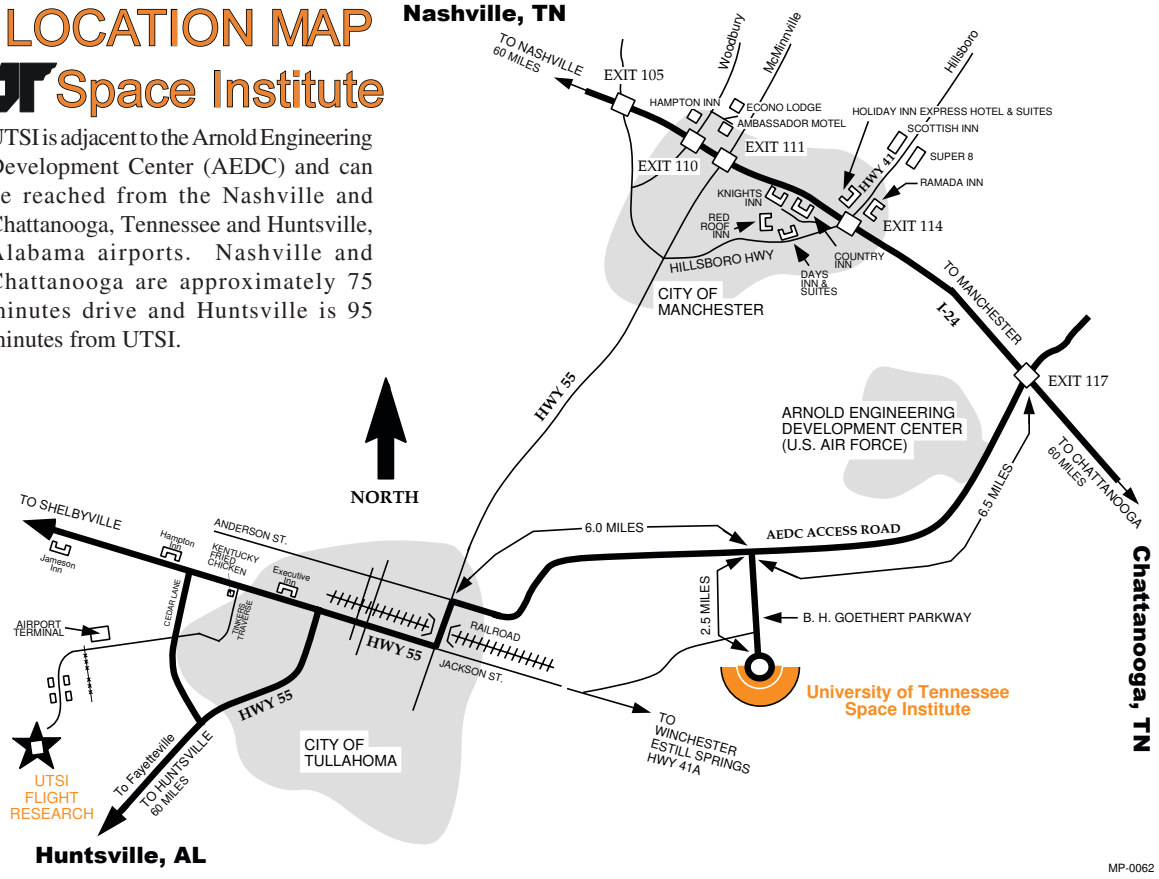
Accommodations

Motels are located approximately 12 miles from UTSI. The list of motels included with the confirmation letter is offered as a convenience and does not represent an endorsement of any particular establishment. Lodging expense is the responsibility of the enrollee. When making a motel reservation be sure to mention that you are a guest of UTSI to receive a special rate. Military personnel and government employees may stay at the Arnold Air Force Base VOQ located approximately two miles from the Institute. The Office of Continuing Education will assist with VOQ reservations.

LOCATION MAP

Space Institute

UTSI is adjacent to the Arnold Engineering Development Center (AEDC) and can be reached from the Nashville and Chattanooga, Tennessee and Huntsville, Alabama airports. Nashville and Chattanooga are approximately 75 minutes drive and Huntsville is 95 minutes from UTSI.



MP-0062

TECHNICAL COURSES

INFLIGHT ICING AND ITS EFFECTS ON AIRCRAFT HANDLING CHARACTERISTICS

September 22-25, 2009
Course Director: Mr. Richard Ranaudo
Course Fee: $1899 for full 4-day session or $899 for 2 day lectures only

This course will consist of a ground school covering all pertinent aspects of aircraft icing, and use of two simulation devices to provide practical training and experience with icing effects on aircraft performance and handling. One simulator will allow attendees to plan and conduct typical flight test maneuvers and analyze test results as required by the latest changes in the FAR's and advisory materials. The other, which is NASA's Ice Contamination Flight Training Device (ICEFTD), will provide a unique opportunity for course attendees to experience the effects of icing on aircraft handling qualities in a scenario based pilot training format. Participation in simulator training is limited to 16 students, but an unlimited number of individuals may attend the Tuesday and Wednesday ground school at a reduced fee, and observe the simulation sessions. A combination of guest lecturers and UTSI staff, who are experts in various fields of icing technology, flight testing, and flight operations, will provide a comprehensive curriculum covering the following subject matter:

- Icing Meteorology including Supercooled Large Droplet (SLD) icing
- Ice shape formations and how they relate to the physical properties of icing clouds
- Aerodynamic effects of icing on airfoils
- Practical applications of aircraft stability control and performance to selected icing certification testing
- Flight test results of icing effects on aircraft performance, stability and control, including SLD and Ice Contaminated Tailplane Stall
- Icing related upsets
- Methods and facilities for icing simulation: Codes, wind tunnels, airborne tankers
- FAR 23/25 icing certification requirements including discussion of AC 25-25
- Simulator training to provide practical applications for flight test planning and execution, and for experiencing the unique affects of icing on aircraft handling characteristics

SIMULATOR LABORATORY AND TRAINING

UTSI employs two simulators in order that course attendees have the opportunity to apply themselves to planned exercises in flight test planning, data analysis, and pilot assessment of aircraft handling qualities. UTSI's Flight Research Simulation Laboratory is a PC based system with high fidelity graphics, head down displays, and flight controls. This simulator is programmed with an ice contamination aerodynamic data base from the NASA DH-6 "Twin Otter" icing research aircraft, provided for this course, courtesy of

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Bihrle Applied Research (BAR), Hampton, VA. The simulator model runs in the BAR D-Six® simulation environment and is the same model that drives the NASA ICEFTD, which is described below. Course instructors will guide attendees in developing test plans and performing data analysis in accordance with the latest icing certification rules and related advisory material. The simulator is used to obtain flight data for analysis and presentation of results.

The flight simulations using the NASA ICEFTD provides a unique opportunity for students to experience and understand important flight characteristics related to icing induced handling anomalies. The NASA ICEFTD simulator operates with a full computing aerodynamic data base, derived from extensive wind tunnel testing from a subscale model of the NASA Twin Otter icing research aircraft, and flight test data from the full scale aircraft. Training profiles are structured to provide realistic scenarios where progressively degraded handling characteristics due to various ice formations affect flying qualities. A control loading system provides representative control forces and dynamic feedback, which emulates that of the actual aircraft. Under the guidance of experienced instructors, course attendees practice flight control techniques associated with loss of stability and control effectiveness. A structured one hour training session is provided to all full course attendees.

MATLAB

November 16-19, 2009
Course Director: Dr. Chris Parigger
Course Fee: $499

In a review of Matlab® (commercial, university site license) one finds that Matlab® is highly suitable for numerical computations. Several embedded features are of immanent advantage, e.g., symbolic manipulations, graphing, and so on. In this short course series several aspects of Matlab® applications will be addressed, ranging from start-up, novice-type of sessions to advanced practical sessions. The initial block of 1 to 2 days will cover introduction and standard applications along the following lines: (a) Matlab® session basics, variables, elementary operations, and functions; (b) Vectors and vector operations in Matlab®; (c) Function and vector plotting; (d) Floating-point arithmetic and numerical data types; (e) Basic programming constructs (loops,branching); (f) Matlab® scripts and functions; (g) Comparison with “Octave." Days 3 to 4 will address specific areas of applications, namely, (i) Graphical User Interface (GUI) design. Here, MatLab’s® GUI editor, called GUIDE, will be used. Topics covered ‘keypress,’ ‘buttondown,’ ‘callbacks,’ and ‘resize’ possibilities; (ii) Classes, including Basic classes structure, Handle versus Nonhandle classes, Property access, Set and Get functions, Simple Parsing, and Controlling GUIs with classes; (iii) Other applications including Anonymous functions and the cellfun() function, Menu building/linking and dynamic menus, Dynamic structures and generating code snippets with xlswrite, Dialog design; (iv) Numerical model applications, viz. example codes typically used in numerical Mathematics; (v) Symbolic computations, (vi) Matlab® toolbox applications; and (vii) Presentation by Mathworks personnel of extensions to Matlab® including Simulink®.

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COMBUSTION INSTABILITY: ANALYSIS, DIAGNOSIS, AND CORRECTIVE PROCEDURES

March 2-5, 2010
Course Director: Dr. Gary Flandro
Course Fee: $1,249.00

Despite intensive work spanning five decades, the problem of oscillatory behavior of high-energy propulsion systems and industrial burners is still an important engineering problem. New problems continue to threaten important propulsion development programs such as the NASA Constellation program with its heavy-lift ARES system based on the five-segment version of the Shuttle SRB. Current mathematical and computational tools in widespread use have failed to yield reliable techniques for predicting and especially for controlling such problems. It is imperative that correct procedures be implemented, since combustion instability problems usually appear late in the development cycle resulting in large, unexpected expenditures and delays in schedule. They are too often the reason for propulsion system program cancellation.

New research has resulted in sharpened physical understanding, better diagnostic techniques, and improved predictive computational algorithms. This course will present a detailed and balanced coverage of the theory of combustion instability and the means to implement it in the design process. Emphasis will be on new findings including the effects of vorticity and other flowfield interactions not incorporated in the classical theories and computational tools. These will be discussed in detail along with a full treatment of established viewpoints including effects of flow-turning, velocity coupling, and distributed combustion effects. New techniques will be introduced that greatly improve the modal analysis procedures needed in identifying acoustic mode shapes and frequencies in complex system configurations. Vastly improved nonlinear analytical techniques now allow accurate determination of limit cycle amplitudes giving a much better indication of the threat of instability to the motor system. New improvements also extend the mean flow Mach number range so that problems in supersonic combustion instability can be accommodated. The course also includes comprehensive treatment of vortex shedding, effects of nonlinear interactions, and new methods for controlling combustion instabilities. Applications in solid and liquid rockets, turbojet thrust augmentors, ramjets and scramjets are covered. A multitude of data sets from research and development programs and from current encounters with combustion instability difficulties will be used as case studies. Emphasis is on avoiding instabilities in the design process of a new system and eliminating them in an effective manner if they appear in the development cycle.

Attendees will receive a comprehensive literature package and text material by Culick, Price, Yang, and Flandro covering all aspects of the course. These will be distributed in DVD format. Tables of experimental data and other visual supportive material and viewgraphs will be included. Latest versions of predictive algorithms will be demonstrated.

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HYBRID ROCKET PROPULSION

March 18-19, 2010
Course Director: Dr. Joe Majdalani
Course Fee: $ 1,095.00

The "Hybrid Rocket Propulsion" short course is quintessential for all professionals specializing in chemical propulsion. The mechanisms associated with hybrid combustion and propulsion are diverse and affect our abilities to successfully advance and sustain the development of hybrid technology. It is our penultimate goal to promote the science of hybrid rocketry which is safe enough to be used in academia and the private sector. A historical demonstration of hybrid rocket capability is the 2004 X-prize winner Space Ship One. This course reviews the fundamentals of hybrid rocket propulsion with special emphasis on application based design and system integration, propellant selection, flow field and regression rate modeling, solid fuel pyrolysis, scaling effects, transient behavior, and combustion instability.

FUNDAMENTALS OF SOLID PROPELLANT ROCKET MOTORS

March 29 – April 2, 2010
Course Director: Dr. Gary Flandro
Course Fee: $ 1,575.00

This course is a concise coverage of the fundamental principles of solid rocket motor design and analysis. Attendees will acquire a comprehensive working knowledge of all features that are unique to the operation of a solid rocket motor including: propellant formulations and their characteristics, propellant mixing and casting, CFD simulations of the casting process, propellant burning rate laws, the ignition process, combustion effects, detonation, combustion chamber flow, steady and unsteady flow effects, design of propellant grain geometry, simulation of the burning process, two-phase flow effects involving combustion of metallic additives, nozzle flow and nozzle design, heat conduction effects and material ablation.

A brief introduction of operational problems unique to solid rockets is also presented. The course emphasizes the correct choice and application of analytical and numerical tools in design and in solid rocket development problem solving. Many case studies and examples of successful problem solutions are presented.

DIGITAL SIGNAL PROCESSING FOR INSTRUMENTATION AND DATA ANALYSIS

April 13-15, 2010
Course Director: Drs. Bruce Bomar and Montgomery Smith
Course Fee: $ 1,249.00

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This is a three day course intended for scientists and engineers involved in experimental data acquisition and analysis who wish to become familiar with recently developed methods of signal processing for use in their work. It provides a working knowledge of digital signal processing (DSP) techniques and systems with emphasis on those methods of interest in instrumentation and data analysis. Familiar applications to often-encountered experimental data types are emphasized. Examples of the DSP techniques will be given using the interactive numeric computation software package MATLAB®. Numerous exercises are provided during the course workable in The Student Edition of MATLAB®.

The course begins on day one with an introduction to the fundamental principles of discrete signals and DSP. The concept of frequency analysis of signals is introduced and developed to acquaint the participant with the widespread utility of this technique. Common numerical schemes such as differentiation, integration and smoothing of digitized data are examined in light of this approach. Frequency domain methods are developed further in a session on the discrete Fourier transform, including its computation via the fast Fourier transform (FFT) and its variations.

On the second day, useful techniques for performing spectral analysis of digitized data are covered in the first session. Principles of finite impulse response and infinite impulse response filtering are then addressed, and methods of filter design are presented. The second day concludes with a session where students will use computers to practice using MATLAB® for implementing DSP methods and filter design techniques.

Algorithms for efficiently implementing such filters in software are covered in the first session of day three with examples used to illustrate the fundamental principles. Methods for changing the sample rate of digital signals via interpolation and decimation are then discussed along with practical schemes for A/D and D/A conversion. The course material then moves into the use of high-speed digital signal processor chips for implementing DSP methods. Typical characteristics and architectures of floating-point digital signal processors are examined along with an overview of available personal-computer-based coprocessor cards utilizing these chips. The course considers how DSP methods would be implemented in the C programming language for efficient execution on DSP chips. The course concludes with sessions on finite word length effects and methods for the lossless and lossy compression and restoration of digital data.

AERO-PROPULSION SYSTEMS, TECHNOLOGY TEST AND EVALUATION

May 3-7, 2010
Course Directors: Dr. Stephen Corda and Roger Crawford
Course Fee: $1,575.00

The "Aero-Propulsion" short course has been updated and presented annually since 1964. This is the 59th offering of this unique course, designed to present an overview of aero-propulsion system performance, engine operability, engine technologies, and test and evaluation processes. Current and future air breathing propulsion systems performance and technology status will be presented to engineers, scientists and managers engaged in research, development, maintenance and operation, and test and evaluation. Lecturers from academic, government and industrial organizations who are actively engaged in air breathing propulsion technology will discuss the state-of-the-art and the trends in Aero-Propulsion. The Aero-Propulsion short course was developed with support and sponsorship of the

American Institute of Aeronautics and Astronautics (AIAA) Air Breathing Propulsion Technical Committee (ABPTC), and the Tennessee Section of the AIAA.

LABVIEW FOR AEROSPACE GROUND AND FLIGHT TEST

June 21-25, 2010
Course Director: Mr. John Muratore
Course Fee: $2,195.00

National Instruments' LabVIEW is an extremely powerful computer programming tool for data acquisition, analysis and control applications. LabVIEW has grown quite popular in the aerospace ground and flight test community. The purpose of this course is to teach LabVIEW fundamentals while emphasizing the unique aspects of aerospace ground and flight test problems and how to best utilize LabVIEW to deal with these unique challenges. In this course each student will be at a computer with LabVIEW and access to networked data acquisition equipment and each student will build and test Virtual Instruments (VI's) dealing with typical aerospace data processing problems which include:
- Typical aerospace data types
- How to format and decode telemetry
- How to log and playback test information
- How to decode Global Positioning Satellite (GPS) receiver messages
- Working with typical aerospace sensors and devices
- Unique aerospace data visualization tasks with LabVIEW
- Interfacing to flight simulators via networks
- Networks and Avionics Data buses
- Making sense of test data using statistics, regression analysis and digital filters in LabVIEW
- Using the internet for ground and flight test data distribution

LabVIEW is a registered trademark of National Instruments XPlane is a trademark of Laminar Research

FUNDAMENTALS OF FLIGHT TEST ENGINEERING

July 26 - August 6, 2010
Course Director: Dr. Stephen Corda
Course With Flying: $6,750.00 (6 student limit)
Course Without Flying: $2,750.00

This two week Short Course teaches the Fundamentals of Flight Test Engineering in a comprehensive, exciting format that incorporates academic lectures, an extensive flight simulator session, an on-runway ground exercise, and 8 in-flight laboratory sessions where the students fly as Flight Test Engineers in UTSI Aviation Systems research aircraft. Academics and Flight Test Techniques for Performance, Flying Qualities, and Systems flight testing will be covered, along with Flight Test Instrumentation, Data Acquisition, and System Safety. After taking this course, the student will be well grounded in the fundamentals required for performing the duties of a Flight Test Engineer, including aircraft familiarization, airmanship, test planning, and test reporting.

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WORKFORCE DEVELOPMENT MODULES

(Each module section is 1 day in length with a fee of $149/attendee/day, group rates are available)
Modules may be attended in full or selected module sections may be attended.
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A. HUMAN FACTORS

August 17 – 25, 2009

Customer Communications and Service – Quality From Within

This module is designed to provide any employee who represents your company, whether over the telephone or in person, practical skills and information in developing more profitable relationships with external and internal customers and clients. You will learn how to receive, document, assimilate and recall verbal communications.

Conflict Resolution - Dealing With Difficult People

Difficult or not they are customers or have resources we need. Anyone who struggles regularly with the aggravation, frustration and pain of dealing with a truly difficult person will look back at this workshop with a real sense of satisfaction and gratitude!

Making Meetings Work

Tired of meetings? Learn techniques for turning meetings from information sharing into proactive implementation planning.

Time Management Skills & Managing Multiple Priorities

Discover how to feel organized and in control of the work day. Learn how to choose priorities, delegate responsibilities, solve problems and organize time effectively and efficiently.

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Supervision Today

Do you manage in a diverse, technological workplace? Learn the step by step guides to supervise in a constantly changing environment and corporate restructuring. Find the tools to supervise as an empowering coach and learn to handle ethical and moral dilemmas, including the ability to observe and listen carefully, to be patient, to think creatively, to be flexible, to know when to take charge and when to hold back.

People and Teamwork

This module goes beyond delegation. It includes techniques for coaching and channeling the efforts of natural team leaders. The underlying theme is creating a common vision for the team. It covers the internal customer supplier relationships and communication required for successful project completion.

Work Force Development and Skill Mix

This module covers techniques to plan and implement a cross skill workforce. The tools assist the engineering manager in identifying the common skill sets needed. Computer based tools are presented that assist in developing Individual Development Plans that are tied to common organizational goals.

B. FINANCIAL AND ECONOMIC FACTORS

September 14 - 22, 2009

Engineering Economy

Economic decision making utilizing techniques including equivalent annual cost, rate of return, present worth and benefit cost methods. Pre and post tax pro forma statistical decision making and replacement policy are also covered.

Advanced Engineering Economy

Learn how to examine the design and analysis of capital investment strategies in a technical environment.

Finance and Accounting for Non-financial Managers

Economic fundamentals for those who need to know the story behind the financial reports.

Finance for the Entrepreneur

Startup finances including venture capital strategies.

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Finance for the Small Business Owner

Comprehensive coverage of financial tools for the small business owner.

Understanding Financial Statements

Comprehensive coverage of financial statements and their use in decision making throughout the organization.

Value Engineering and Design

Attracting new customers with existing technologies. Design and modify existing products and processes to reduce cost and improve performance.

C. PLANNING AND PROCESS FACTORS

October 5 – 19, 2009

Implementation Strategies

Developing and utilizing Performance Scoreboards. A heavy emphasis on Defining, Measuring, Analyzing, Improving and Controlling (DMAIC). What is the fallacy of the TQM, JIT, MRP, etc. step programs. It is in the tailoring of the implementation strategy for your specific organization. This module covers how to make these programs successful for YOU!

Supply Chain Management & Strategic Management of Resources

Explores the relationships of existing and emerging processes and technologies to manufacturing strategy and supply chain-related functions.

Strategic Management and Technology

Strategic Management principles with focus on the integration of technical, marketing, financial, legal and operational issues. Strategic and Tactical Planning in a Technical Environment.

Technical Entrepreneurship

Examination of technology, organizational, and human factor issues in technological companies of all sizes. Technology leadership and technology entrepreneurship are explored for various stages of a company's development.

Engineering Management Fundamentals

Basic operational theory and science of managing in a technical environment.

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Enterprise Resource Planning

Transform your enterprise and supply chain management with the techniques taught in this course.

Knowledge Preservation and Management

When corporate knowledge is gone it is gone. Loss occurs through retirement, job hopping, and changing mission. This module introduces an artificial intelligent based tool to capture and maintain organizational knowledge.

Outlook Business Management

Covers the use of this software as a business tool.

PDA Palm Pilot/PC Time Management

Techniques utilizing a PDA for Time Management. Especially helpful for those converting from a paper based system.

Technology Transfer and Deployment - Product Development

Attracting new customers with new technologies. Examination of the activities necessary for successful development of a product or service.

Technical Project Management

Focus on the technical project or organization. Techniques for resource identification and allocation, integration of scheduling and cost factors, development of project plans and control.

D. TECHNICAL FACTORS

November 16 – 20, 2009

(ALSO SEE FULL LENGTH WEB BASED COURSES)

E-Commerce and E-Business

Discover the way to establish and expand your on-line business.

Engineering Optimization Methods

Explore engineering and mathematical optimization techniques for engineering and management applications.

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Industrial Plant Layout

Types and techniques of plant layout and location.

Process Improvement - Reduction of Cycle Time

Techniques for improving process quality, reducing cycle time and scrap, thereby improving productivity.

Welding Management

More appropriately titled Materials Bonding Management. This module outlines the newest welding technologies and the steps to create a quality certified welding management system.

E. QUALITY AND MANUFACTURING SYSTEMS FACTORS

(THESE COURSES WILL BE SCHEDULED AS INTEREST IS RECEIVED)

Quality Management Systems

Implementation strategies for establishing a comprehensive Quality Assurance System.

Advanced Statistics and Design of Experiments

Taguchi methods and other advanced techniques for the improvement of product and process design.

Certified Quality Engineer (CQE) Review

Review course for certification program.

Certified Quality Manager Review (CQM)

Review course for certification program.

Certified Quality Technician (CQT) Review

Review course for certification program.

Failure Mode and Effects Analysis

Design and implementation of deterrents to product failure.

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Manufacturing Engineering Lean and Six Sigma for Engineering Managers

Produce quality products by cost reduction activities and a cultural focus on employee involvement through empowerment. Comprehensive continuous improvement program techniques through process DMAIC (Define, Measure, Analyze, Improve, Control).

Reliability Centered Maintenance

Techniques for predicting and improving product reliability through a comprehensive maintenance program.

Reliability Engineering

Techniques for predicting and improving product reliability through the product life-cycle.

Configuration Systems Engineering Management and Analysis

Design, implementation and improvement techniques of business, production and engineering systems.

Total Preventative Maintenance (TPM)

Proactive techniques to minimize production downtime.

Basics of Supply Chain Management

An introduction to basic definitions and concepts for planning and controlling the flow of materials into, through and out of an organization.

Quality Auditing

Techniques for reviewing quality assurance systems.

Quality Tools and Methods for Continuous Improvement

Specific tools for the identification and correction of quality defects in any operation are covered.

Quality Engineering Statistics

Application of Statistical Tools to identify root causes of defects and correct them.

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ISO 9001:2000 Quality Management and Quality Assurance

Implementation strategies for establishing a comprehensive Quality Assurance System and successfully completing the registration process.

ISO 9001: 2000 For Top Management

Techniques for improving your management effectiveness through the use of the ISO 9000 system.

ISO 14000 for Managers

Techniques for improving your management effectiveness through the use of the ISO 14000 system.

ISO 14000 Environment Management Systems

Implementation strategies for establishing a comprehensive Environmental Assurance System and successfully completing the registration process.

Statistical Process Control

Applied statistical techniques to monitor and correct manufacturing processes producing defective products.

TECHNICAL REPORT WRITING

Course Fee: $149
Course Date: December 14, 2009

This course can be tailored to meet your company needs. Course overview includes, but is not limited to: Working in Teams, Audience Analysis, Cultural Backgrounds, Technical Backgrounds, Target Information, Generating Ideas, Persuasive Purpose, Report Types, and Gathering Information. Then, the outlining format consists of paragraphs and transitions, the sequencing of information, designing pages, definitions/tables/visuals and appendices. Next, how you achieve clarity through sentence variety, tone, and editing. Your levels of presentation come into play with abstract, summary, and layering information.

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COMPUTER TRAINING

THE FOLLOWING HANDS-ON CLASSES ARE LIMITED TO 12 STUDENTS.

ELECTRONIC FORMS WITH ADOBE DESIGNER 8

Adobe Designer, a separate program than Acrobat 8.0, used to sell for over $1700 but is now packaged with Acrobat 8.0 Professional. Designer is a more robust tool than the traditional AcroForm tools and allows the user to dynamically design a form from scratch or import previously designed forms to make adjustments. Master creating electronic PDF forms with Adobe Designer 8 by participating in this intensive course. Two levels are offered:

Designer Basics (Static Forms)

Learn the Designer environment - Create master pages and body pages - Work with the various fields - Use some basic scripting - Add images to your form - How to collect electronic data - Manipulate electronic data in Spreadsheets.

Advanced Designer (Dynamic Forms)

Learn about subforms - More scripting - Make your form expand with user input - Allow user to determine the flow of form - Place expanding tables in your form.

ADOBE ACROBAT 8.0

Adobe Acrobat can do more than send a file you don't want changed to someone.

- Imagine an electronic owner's manual for your plant with all drawings, manual, forms and even electronic interactive training materials. All this searchable and accessible in seconds.
- Imagine completing the entire design and construction project electronically. No bulky plans being shipped all over the country.
- Imagine all the minutes of your government online and searchable. Imagine plan review and permitting electronic and automated.
- Imagine the tons of drawings and records that must be saved forever in a quick to find electronic format.
- Imagine all the time saved when the RFI and Submittal processes are electronic and automated. In this hand-on training you will be:

Creating and combining PDF files from numerous formats

CALL US TODAY AT (931) 393-7276 TO REGISTER

Adding navigation features for ease of use
File security
Developing forms
Searching collections of a document
Project management strategies

MICROSOFT CLASSES

Class Fee: $149.00 / attendee / day

Word Level I

Topics covered include creating and editing documents, formatting short and long documents, use of spell check and the Thesaurus. Lab exercises and projects will provide experience in use of tables, adding graphics and merging.

Word Level II

Learn formatting techniques, template setups, automating tools, customization, document merging and how to integrate with other applications. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

Word Level III

Advanced topics include collaboration tools, creating forms, working with form fields, protecting and testing forms, as well as, advanced mail merge functions. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

Excel Level I

This newly updated spreadsheet class will cover creating, modifying, visual enhancement and printing of spreadsheets. Generate templates, enter formulas, work with charts, and other productivity tools. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

Excel Level II

This workshop covers creating special effects, protecting the worksheet, data validation, using filters and use of pivot tables. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

Excel Level III

Learn how to design onscreen forms, automatic tasks with macros, use simulation and statistical functions, utilize other advanced functions, analysis and auditing tools. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

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Access Level I

Learn how to create databases, enter and edit data, query your database, create and use forms, reports, customization and data management. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

Access Level II

Learn easier and more accurate data entry, use of related tables, forms, advance reporting techniques, use of macros, better management of your database, accessing database on the web, and linking to other documents. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

PowerPoint I

Learn to use PowerPoint to enhance your presentations. This computer lab instruction and exercises include creating and modifying presentations, formatting texts and bullets and working with charts, changing the overall appearance of your presentation, running the electronic slide show, and sharing information with other programs. Course material includes tips on creating speaker notes, handouts, and automating the slide show. This class will improve your presentation.

PowerPoint II

A continuation of PowerPoint I, participants will further enhance their knowledge of electronic presentation. Class exercises include formatting, preparing the presentation for delivery, customizing and animating, printing and exporting their presentations. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

Microsoft Project

This course introduces users to Microsoft Project as a project management tool. Topics include: the fundamentals of project management, the planning process, inputting of project information, linking tasks, setting constraints, and resolving conflicts. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

Outlook

This workshop will introduce Outlook for e-mail and time management. Learn to use e-mail tools, such as address book, e-mail options and read receipt, calendar, appointments, generate tasks, to do lists, and reminders. *Prerequisite: basic computer skills necessary, Intro to Windows is strongly recommended.*

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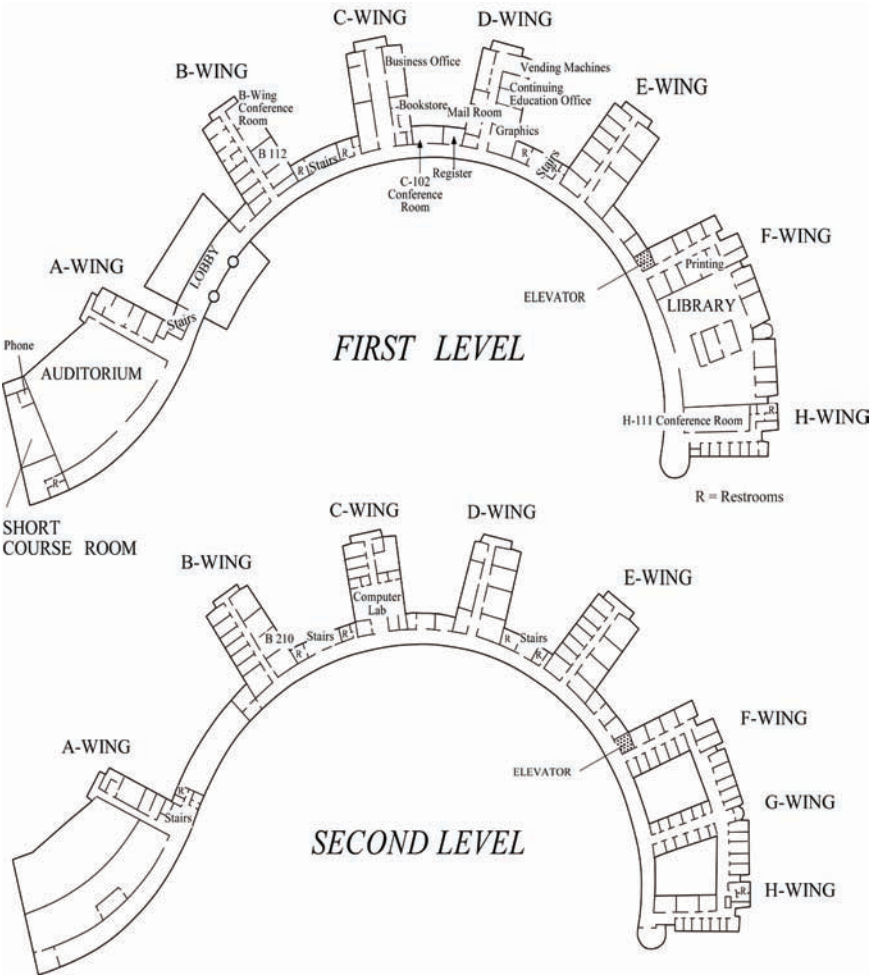
NOTE: *Dates, location, and fees are subject to change as circumstances warrant.*

Web site: http://www.utsi.edu

A quick reference for all courses may be found on pages 2 - 4.

If you wish to be added to our mailing list see page 27.



Academic Building

GENERAL INFORMATION ABOUT UTSI

The University of Tennessee Space Institute offers a graduate education second to none in the areas of aeronautics and propulsion, computational mechanics, energy conversion technology, and laser applications. The Space Institute has evolved into a premier research center and an internationally recognized catalyst for the stimulation and growth of high-technology industry in Tennessee. Its graduates include award-winning scientists, leaders in the aerospace industry, and space pioneers.

The Space Institute offers only graduate programs, which encompass 11 academic fields in engineering and applied science. Some major areas of research interest include: aerospace propulsion and aeronautics, aircraft design, aviation systems, computational mechanics, energy conversion and environmental science, engineering management, high temperature power plants, laser applications, laser assisted manufacturing, material processing and superconducting materials. Nearly 300 students come from 28 states and 11 foreign countries to work closely with professors of national repute.

The mission of The University of Tennessee Space Institute is to serve the state of Tennessee and the nation as a resource for the professional development of engineers and scientists through graduate education, interdisciplinary research, and the transfer of technology, particularly as related to the space and aerospace sciences. The Institute is committed both to providing a high quality learning and research experience leading to Master of Science and Doctor of Philosophy degrees in selected areas of engineering and science, and to continuing professional education.

The University of Tennessee Space Institute occupies a 365-acre wooded campus beside Woods Reservoir in a peaceful setting ideally suited for study and research. The main building complex, which has won several architectural awards for its design, houses classrooms, conference rooms, and administrative, faculty, and graduate student offices. The complex also has a 700-seat auditorium, a research library, computer facilities, and twelve additional buildings dedicated primarily to laboratory work.

The Andy Holt Industry/Student Center at the edge of the lake provides housing for some students and guests of the Institute as well as recreational facilities, and dining room. A nearby swimming beach, dock, and boathouse provide access to the lake; tennis courts and hiking trails add to the campus' recreational assets.

The Space Institute's location in Middle Tennessee is the center of a triangle formed by Nashville, Chattanooga, and the NASA Marshall Space Flight Center at Huntsville, Alabama. Its central location provides city cultural, entertainment, and shopping activities. The beauty of the setting and the mild, four-season climate provide an ideal environment for advanced study and creative research.

ARNOLD ENGINEERING DEVELOPMENT CENTER

The Institute is located approximately five miles from Arnold Engineering Development Center (AEDC) an Air Force installation of sophisticated test facilities and laboratories in which the varied conditions of atmospheric, orbital, and space flight can be simulated. This proximity to AEDC provides a stimulating environment for graduate study and research. Over the years a very close working relationship has developed between the Institute and AEDC and its major contractors, ATA, Inc. Each year a large number of engineers and scientists from AEDC continue their education through part-time study at the Institute and many have earned advanced degrees. Through appropriate contractual arrangements, several U.S. students of the Institute, serving as Graduate Research Assistants, are selected annually to join with faculty members and groups to participate in development testing and research in the unique aerospace facilities of the Center. In addition, contractor specialists often serve as adjunct professors at the Institute, enriching the UTSI educational program through teaching and research supervision in their chosen fields.

Tour of Arnold Engineering Development Center

During some continuing education courses, a tour of the Air Force's Arnold Engineering Development Center is scheduled for those attendees interested in the facilities and mission of the Center. AEDC is one of the most modern test and development centers, at which a large complex of aerospace test facilities are located. Some of these facilities are of a unique nature including wind tunnels, airbreathing, and rocket, test facilities, space simulation chambers, and ballistic ranges.

In order to visit AEDC one must meet the Center's security clearance regulations as follows:

1. American Born Citizens must provide name, date of birth, and place of birth.

2. Foreign Born of American Parents must provide name, date, and place of birth, and evidence of citizenship, such as naturalization number or number of certificate of citizenship.

3. Naturalized American Citizens must provide name, date and place of birth, and naturalization number.

4. Visits to AEDC by foreign nationals from NATO, allied, and friendly countries generally can tour. Foreign nationals or American citizens representing foreign governments in cooperative military research and development with the government of the United States may be permitted to visit AEDC. Arrangements to visit on a government-to-government basis should be made by making application through their embassy in Washington, D.C., with the U.S. Air Force, requesting a visit during the time period of the course. This must be done in time for the clearance to reach AEDC, preferably 30 days in advance. Upon arrival at UTSI, provide your name, date of birth, and place of birth.

Please send detailed announcements on the Continuing Education courses listed below.

Title of Course _____

Other _____

Indicate number of copies of each announcement desired.

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Continuing Education Office
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B.H. Goethert Parkway
Tullahoma, Tennessee 37388-9700
Ph: (931) 393-7277
FAX: (931) 393-7433
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