

## TABLE OF CONTENTS

<b>Calendar for Summer Semester 2007</b> .....	<b>1</b>
<b>Final Exam schedule for Summer 2007</b> .....	<b>2</b>
<b>Registration</b> .....	<b>3</b>
<b>Financial Calendar</b> .....	<b>4</b>
<b>Credit Card Payments</b> .....	<b>4</b>
<b>Special Billing/Third-party Billing</b> .....	<b>4</b>
<b>Bookstore Hours</b> .....	<b>4</b>
<b>Application for Admission</b> .....	<b>5</b>
<b>Fees</b> .....	<b>5</b>
<b>Late Registration Fees</b> .....	<b>6</b>
<b>Fees for Change of Registration/Dropped Courses/Withdrawal</b> .....	<b>7</b>
<b>Full Time Student Hours</b> .....	<b>8</b>
<b>Removal of “Incomplete” Grade</b> .....	<b>8</b>
<b>Admission to Candidacy (MS and PhD)</b> .....	<b>8</b>
<b>Non-Thesis/Thesis/Dissertation Final Exams</b> .....	<b>9</b>
<b>Insurance for International Students</b> .....	<b>9</b>
<b>Honor Statement</b> .....	<b>9</b>
<b>Summer Semester 2007 Course Listings &amp; Descriptions</b> .....	<b>10-16</b>
<b>Catalog Cover</b> .....	<b>17</b>

CALENDAR --- SUMMER SEMESTER 2007

Registration.....	March 5 – May 29
Submit Admission to Candidacy Forms for Summer 2007 Graduation.....	April 27
Submit Graduation Application .....	April 27
Late Registration and late fees begin .....	May 30 – June 12
Memorial Day (Holiday) .....	May 28
Classes begin .....	June 4
Last Day to drop without “W” on the transcript, change to/from audit, add a course without the instructor’s signature .....	June 12
Pay Graduation Fee .....	June 22
Last day to add/change credit with signatures .....	June 28
Preliminary/Thesis/Dissertation Review Deadline .....	June 29
Last day to schedule final exam (thesis) .....	July 3
Independence Day Holiday .....	July 4
Last day to schedule final exam (non-thesis/capstone students).....	July 6
Last day to schedule final exam (dissertation) .....	July 13
Last day to take final exam (thesis/dissertation students).....	July 20
Last day to take final exam (non-thesis/capstone students) .....	July 20
Last day to defend dissertation .....	July 20
Drop with a “W” .....	July 24
Final paper or electronic thesis/dissertation must be approved and accepted in Knoxville By (5:00 P.M. EST).....	August 3
Submit Pass/Fail form to UTSI Registrar’s Office.....	August 3
Deadline for submission of Admission to Candidacy for students graduating Fall 2007 .....	August 10
Deadline for removing "INCOMPLETE" grades.....	August 10
Classes End .....	August 10
Withdraw from all classes .....	August 10
Exam Period (Summer exams are given during the regularly scheduled class meeting times. Second thesis/dissertation deadline (Student will receive diploma December 2007 but do not have to register for Fall 2007) (Defense completed by August 10).....	August 17
No Graduate Hooding or Summer Commencement – Graduation Date .....	August 17

FALL SEMESTER 2007

Priority Registration for FALL Semester 2007 on CPO.....	March 19 – August 14
Late Registration .....	August 15 – August 31
Classes begin .....	August 22
Labor Day (Holiday) .....	September 3
Fall Break.....	October 11 - 12
Thanksgiving Break .....	November 22 - 23
Classes End .....	December 4
Study Period .....	December 5, 8, & 9
Exam Period.....	December 6 & 7, 10-13
Doctoral Hooding Ceremony (UTK) .....	December 14
Commencement (UTK).....	December 15

**SUMMER SEMESTER 2007  
FINAL STUDY DAY AND EXAM SCHEDULE**

**LAST DAY OF CLASSES.....August 10, 2007**

**FINAL EXAMS FOR SUMMER EXAMS ARE GIVEN DURING THE REGULARLY SCHEDULED  
CLASS MEETING TIMES.**

**\*\*\*\* ATTENTION \*\*\*\***

**ALL STUDENTS TAKING RECORDED COURSES  
CONTACT INSTRUCTOR FOR DATE AND TIME OF FINAL EXAM**

**REGISTRATION ANNOUNCEMENT  
SUMMER SEMESTER 2007**

**REGISTRATION PROCEDURE**

**ADVISING**

Graduate students should contact their departmental faculty to arrange an advising appointment. The Graduate Studies Web Page is <http://gradstudies.utk.edu/default.shtml>

**REGISTRATION**

UTSI students **MUST** register on the web at Circle Park Online. The registration system will be available Monday through Saturday, 6:00 AM - 11:00 PM (CST) and Sundays 12:00 PM - 5:00 PM (CST). Registration will be March 5, 2007 – May 29, 2007. Late registration will be May 30 - June 12, 2007. Classes begin June 4, 2007.

**Plan your schedule. Here's a table to help with this process:**

<b>Department Number</b>	<b>Course Number</b>	<b>Section Number</b>	<b>Spec.Credit/Grading</b>	<b>Credit Hours</b>	<b>Hours/Days</b>	<b>Place</b>

Students log on to CPO using their Net ID and password. If you do not know your Net ID and Password, please visit the University Registrar's website at [http://registrar.tennessee.edu/student\\_id.shtml](http://registrar.tennessee.edu/student_id.shtml). Scroll down the page to "What is a Net ID and Net ID password?" You will find helpful information about obtaining Net IDs and Net ID passwords.

**CPO Technical Support:** Send email including your return email address in the text of your message to [cpo@utk.edu](mailto:cpo@utk.edu)

Web address for Circle Park Online <https://cpo.utk.edu/CPOWeb/>

**Days of the Week**

**M-Monday      T-Tuesday      W-Wednesday      R-Thursday      F-Friday      S-Saturday**

## **FINANCIAL CALENDAR**

<b>Last Registration Day for Receiving Statements by Mail</b>	<b>May 20, 2007</b>
<b>Statement Information Available in Bursar Areas or at CPO.UTK.EDU</b>	<b>May 21, 2007</b>
<b>Priority Registration Payment/Confirmation Deadline</b>	<b>May 30, 2007 (3:30 pm CDT)</b>
<b>Late Registration/Late Fees Begin</b>	<b>May 31, 2007</b>
<b>Late Registration Payment/Confirmation Deadline</b>	<b>June 13, 2007 (3:30 pm CDT)</b>

## **CREDIT CARD PAYMENTS:**

**NOTE:** If you pay your fees using Circle Park Online (CPO) using a credit/debit card (Discover, VISA, Mastercard) you will be assessed a 2.5% service fee. **To avoid this service fee you will need to make payment to the UTSI Business Office.**

## **SPECIAL BILLING – THIRD PARTY BILLING:**

The Business Office will generate a billing after the student has provided a letter of authorization from the third party sponsor. Authorization must include the sponsor's name and address as well as the maximum amount which will be paid for each specific term. The authorization can be mailed to UTSI Business Office, MS#12, 411 B.H. Goethert Parkway, Tullahoma, TN 37388-9700 or email it to [jboyles@utsi.edu](mailto:jboyles@utsi.edu). Since students are responsible for all University fees and charges, use of the third-party address as the student's billing address is strongly discouraged.

**STUDENTS ARE ULTIMATELY RESPONSIBLE FOR ALL CHARGES. THEY MUST COMPLETE A CONFIRMATION OF ATTENDANCE FORM AND MAKE CERTAIN MINIMUM PAYMENT AMOUNTS CREDITED OR AUTHORIZED ON OR BEFORE THE PAYMENT DUE DATE IN ORDER TO AVOID LATE PAYMENT FEE ASSESSMENT AND SCHEDULE CANCELLATION.**

If you have any questions concerning third-party billing please call Jennifer Boyles at 931-393-7297 or 888-822-8874 ext 297 or by email [jboyles@utsi.edu](mailto:jboyles@utsi.edu)

## **TOLL-FREE NUMBER**

<b>For a specific office:</b>	<b>1-888-822-UTSI (8874) and the extension number.</b>
<b>For general information:</b>	<b>1-888-822-UTSI (8874)</b>
<b>Admissions Office:</b>	<b>1-888-822-UTSI (8874)-432</b>
<b>Bookstore:</b>	<b>1-888-822-UTSI (8874)-204</b>
<b>Business Office:</b>	<b>1-888-822-UTSI (8874)-204</b>
<b>Registrar's Office:</b>	<b>1-888-822-UTSI (8874)-228</b>

## **BOOKSTORE HOURS**

The Bookstore is located in Lower C-Wing Business Office. The Bookstore hours are 8:00 a.m. - 4:00 p.m. All textbooks will be returned to the publisher one week after midterm. For further information concerning books contact the Bookstore, ext. 204 or 314 or by email Robin Nee at [rnee@utsi.edu](mailto:rnee@utsi.edu); or Vicki Carr at [vcarr@utsi.edu](mailto:vcarr@utsi.edu)

**APPLICATION FOR ADMISSION**

No student will be allowed to register unless a completed Application for Admission to the Graduate School of the University of Tennessee, Knoxville (UTK) is on file in the Registrar's Office. An Application for Admission to the UTK Graduate School must be accompanied by a \$35.00 non-refundable application fee, payable to The University of Tennessee Space Institute. Applicants are required to provide one official transcript of all undergraduate and graduate records. Students may apply on-line at <http://admissions.utk.edu/graduate/apply.shtml> [click on APPLY ONLINE and Follow Directions]. Applications for Admission and Transcripts from part-time students should be sent to the Registrar's Office, A102, Mail Stop 7, UTSI, Tullahoma, TN 37388-9700. Full-time students send Application for Admission, transcripts, GRE scores (if required); and if international application, TOEFL scores to the Admissions Office, A104, Mail Stop 5, UTSI, Tullahoma, TN 37388-9700.

**PAYMENT OF FEES**

Payment of fees is due at time of registration. Late fees will begin on May 31. The University of Tennessee Space Institute accepts Visa, MasterCard and Discover.

**FEES OF DISTANCE STUDENTS**

Distance students should contact their departmental coordinator to determine the amount of the access fee.

<b>Aviation Systems</b>	<b>Stephen Corda</b>	<b>931-393-7413</b>	<b><a href="mailto:scorda@utsi.edu">scorda@utsi.edu</a></b>
<b>Engineering Mgt.</b>	<b>Penny Morris</b>	<b>931-393-7293</b>	<b><a href="mailto:pmorris@utsi.edu">pmorris@utsi.edu</a></b>

**TUITION AND/OR MAINTENANCE FEES\***

**Full Fees For In-State Students (per semester)**

Maintenance Fee .....	\$2,787.00*
Programs and Services Fee .....	90.00
<b>Total .....</b>	<b>\$2,862.00</b>

**Full Fees For Out-Of-State Students (per semester)\***

Maintenance Fee .....	\$2,787.00*
Programs and Services Fee .....	90.00
Tuition .....	5,633.00
<b>Total .....</b>	<b>\$8,495.00</b>

**\*All fees are subject to changes approved by the Board of Trustees prior to the beginning of the term.**

**TUITION FOR PART TIME STUDENTS**

Part-time students may elect to pay fees computed by the semester hour credit as follows:

<b>IN-STATE</b>	<b>\$310.00 per semester hour</b>
3 hrs.	<b>\$930.00</b>
 <b>OUT-OF-STATE</b>	 <b>\$947.00 per semester hour</b>
3 hrs.	<b>\$2,841.00</b>

## **PROGRAMS AND SERVICES FEE**

All students enrolled in eight semester hours or more for Summer Semester are assessed an activity fee of \$75.00 per semester. Part-time students taking fewer than eight hours will be assessed at the rate of \$10.00 per semester hour. The Programs and Services Fee is non-refundable. Research assistants and fellowship/scholarship students, who may have a waiver of fees (tuition), must pay appropriate University Programs and Services Fee.

Part-time students enrolled for Recorded classes at off campus centers and students residing out of state are not required to pay the programs and services fee.

## **RETURNED CHECK POLICY**

All checks are deposited the day they are received. A \$30.00 service charge will be assessed when checks fail to clear the bank on which drawn. In addition, if the returned check is in payment of initial fees and charges, the late payment fee in effect at the time the check is redeemed will be added to the returned check service fee. Returned checks will not be redeposited. Cash or a cashier's check is required for payment of a returned check, late fee, and service charges. Failure to clear returned checks will result in the forfeiture of all University services including the receipt of grades, transcripts, and schedules of classes.

## **DEFERRED PAYMENT PLAN**

Although fees, rent and other University expenses are due and payable at the beginning of each term, a full-time student in good financial standing with a definite anticipated source of funds may request the deferment of up to 50% of the total charges at registration. The deferred payment may be divided into two equal payments with the second payment due on the 45th (July 12, 2007) day of the semester. All financial aid monies must be applied to fees before a deferment will be considered. A deferred payment service fee of \$20.00 is assessed when any portion of tuition, fees, and other charges are deferred with the approval of the Business Office. An additional \$35.00 late payment charge will be assessed if the second installment is not paid on or before the due date. For more details, contact the Business Office.

## **Late Payment Fees**

A **Late Payment Fee** of \$35.00 will be added to each VOLXpress account if the minimum payment amount which is printed on the statement is not received by the Bursar's Office on or before the published due date. This does not include beginning of term registration statements which will result in cancellation of schedules if the minimum payment is not met. Late payment fees are exclusive of all other charges and are due when assessed whether or not the student receives a VOLXpress statement. Accounts are subject to a late fee of \$45.00 if there is an account balance at mid-semester. The fee is assessed in addition to the unpaid fees and charges and the account balance must be paid in order to access registration services, receive a transcript, grades, or a diploma.

## **TUITION/FEES POLICY FOR DROPPED COURSES OR WITHDRAWAL**

THE PERCENTAGE TUITION REFUNDS SPECIFIED ON THE FOLLOWING PAGE ARE APPLICABLE WHEN A STUDENT DROPS ONE OR MORE COURSES (INCLUDING TOTAL WITHDRAWAL). Students who drop courses and continue with a reduced course load are eligible for a refund only if the total charges at the semester hour rate for the courses continued plus the percentage assessed at the semester hour rate for the courses dropped results in an amount less than that paid. The Programs and Service Fee is non-refundable.

**A COURSE IS NOT OFFICIALLY DROPPED UNTIL A CHANGE OF REGISTRATION FORM HAS BEEN PROCESSED BY THE REGISTRAR'S OFFICE. CANCELED COURSES OR FAILURE TO ATTEND CLASS DOES NOT AUTOMATICALLY WITHDRAW OR DROP A STUDENT FROM THE UNIVERSITY OR CLASS --- A CHANGE OF REGISTRATION FORM MUST BE COMPLETED.**

The following percentage assessments are applicable for courses dropped (if fees are assessed at the semester hour rate):

<b>DROP DATE</b>	<b>CHARGE</b>	<b>REFUND</b>
<b>May 31 - June 4</b>	<b>NO CHARGE</b>	<b>100%</b>
<b>June 5 – 10</b>	<b>20% CHARGE</b>	<b>80%</b>
<b>June 12 – 15</b>	<b>40% CHARGE</b>	<b>60%</b>
<b>June 16 - 20</b>	<b>60% CHARGE</b>	<b>40%</b>
<b>June 21 - End of Term</b>	<b>100% CHARGE</b>	<b>NO REFUND</b>

### **TUITION/FEE REFUND POLICY FOR WITHDRAWALS**

Withdrawal from school for the term after registration has been processed, even though classes have not been attended or fees paid, must be by official notification to the Registrar's office. The effective date of withdrawal is the date the Registrar's office is notified by completion of the Change of Registration request form. FAILURE TO ATTEND CLASS DOES NOT AUTOMATICALLY CANCEL ENROLLMENT. The appropriate percentage of fees will be charged unless the Registrar's Office is notified by the close of the last day designated for registration and before the first official day of classes for the semester or term. WITHDRAWAL DOES NOT CANCEL FEES AND CHARGES ALREADY INCURRED. THE DROP/ADD PROCEDURE CAN NOT BE USED TO WITHDRAW FROM SCHOOL FOR THE SEMESTER OR TERM. When a course is canceled by UTSI administration, the students who have registered for the course will be notified by either the instructor and/or the Registrar's Office and required to file a Change of Registration form with the Registrar's Office, UTSI, Room A102, 393-7228.

The University of Tennessee Space Institute, in accordance with federal regulations, follows the policy and procedures below for calculating refunds and repayments for financial aid.

### **REFUNDS**

Refunds are defined as the portion of maintenance and/or tuition and University housing charges due as rebate when a student withdraws or is expelled from the University. The amount of a refund is determined by the Drop Date Charge fee table on the previous page.

### **REPAYMENTS**

Repayments are defined as that portion of aid, received by a student after the University direct charges have been paid by that aid that must be repaid by a student when a student withdraws or is expelled. The amount of the repayment is determined by the Drop Date Charge fee table on the previous page.

Refunds and repayments to the Title IV programs are determined according to the formula published in the current Federal Student Financial Aid Handbook. The Business and Admissions Offices are responsible for determining the amount of the refund and/or repayment and distributing the correct amount back to the financial aid programs according to the Refund/Repayment Allocation Policy.

### **WITHDRAWAL (TOTAL) FROM THE UNIVERSITY**

If, after registering for classes and either returning your fee payment or your Confirmation of Attendance form to the Bursar's Office, you decide not to enroll for this term, you must immediately notify the Registrar's Office at UTSI. If you withdraw officially on or before a Change of Registration deadline, but after the no "W" deadline for a particular session, the grade of "W" will be issued.



## **GRADES**

Students may obtain their grades through the web at <http://cpo.utk.edu> or by calling 865-656-2527. Grades will not be mailed unless a printed copy is requested through the web address. Students will be prompted to enter their ID number and their Personal Security Code. There is a limit of 8 telephone calls per student, per semester. Unlimited access is available via the Internet. Grades may also be obtained through the Registrar's Office at UTSI.

## **GRADUATE STUDENTS CHANGE OF REGISTRATION AFTER THE DEADLINE**

To change registration in any way after the deadline, a graduate student must present a request, signed by the instructor(s) and adviser as evidence of their knowledge of the request to the Registrar's Office at UTSI. Graduate students must verify that ALL changes have been approved by their academic adviser. If the Office of Graduate Student Services approves the change of registration, the change will be noted on the student's permanent record. THE DROP DEADLINE FOR GRADES AND THE DROP DEADLINES FOR FEE REFUNDS ARE NOT THE SAME.

## **FULL-TIME STUDENTS**

Students enrolled in at least 9 semester hours during the Fall/Spring semesters or 6 hours in the Summer Term are considered full-time students. Research Assistants must be full-time students and also enroll in one of the MAES 595 seminars or a PHYS 503 seminar each term, unless a waiver is granted by the Dean for Academic Affairs.

## **REMOVAL OF INCOMPLETE GRADES**

All Incomplete Grades (I) must be removed within one semester, excluding the Summer Term. If a supplementary grade report has not been received in the Registrar's Office at the end of the following semester, the I will be changed to an F. The course will not be counted in the cumulative grade point average until a final grade is assigned. Students wishing to graduate Summer Semester 2007 must remove all INCOMPLETE GRADES by August 10, 2007.

It is the responsibility of the student to contact the instructor and the instructor's responsibility to complete a Grade Change form. The Registrar's Office cannot change a grade on verbal instructions only.

## **REPEATING A COURSE**

No graduate student may repeat a course for the purpose of raising a grade already received, with the exception of a NC course. A graduate student cannot do additional work nor repeat an examination to raise a final grade.

## **ADMISSION TO CANDIDACY**

### **MASTER OF SCIENCE DEGREE:**

Each M.S. student, including IE Capstone Project students, is responsible for submitting to the Registrar's Office a completed and signed Application for Admission to Candidacy form at least one semester prior to receiving the degree.

Candidacy committee changes or course changes must be submitted to the Committee Chairman using a Change of Committee/Course for approval. This form is available in the UTSI Registrar's Office.

## **ADMISSION TO CANDIDACY**

### **DOCTOR OF PHILOSOPHY DEGREE:**

A Doctoral Committee should be formed during the student's first year of doctoral study and submitted to the Registrar's Office for approval. The form is available in the UTSI Registrar's Office. Any changes to the doctoral committee (deletions or additions) must be done through the Registrar's Office. Each Ph.D. student is responsible for submitting to the Registrar's Office a completed Admission to Candidacy form signed by the Doctoral Committee at least one semester prior to receiving the degree. The Candidacy form must be approved by the UTK Graduate School before a student will be admitted to candidacy.

## **CONTINUOUS REGISTRATION OF DOCTORAL STUDENTS**

All doctoral students must be registered for doctoral dissertation research course 600 (minimum of 3 hrs.) on a continuous basis starting when the doctoral research proposal is approved, admission to candidacy is accepted, or registration for course 600 is begun, whichever comes first, including ALL Summer terms and the semester in which the dissertation is approved and accepted by The Graduate School. A leave of absence may be requested for extenuating circumstances. The procedure can be found in the UTK Graduate catalog.

## **FINAL EXAMINATION FOR NON-THESIS, CAPSTONE PROJECT STUDENTS, THESIS AND DISSERTATION STUDENTS**

A candidate presenting a thesis or dissertation must pass a final oral examination on all work offered for the degree. The examination is scheduled through the Registrar's Office. **Failure to notify the Registrar's Office of the examination date will put the student at risk for graduating that semester.** Final examinations not properly scheduled MUST be repeated. The final draft of the thesis must be distributed to the committee members at least two weeks prior to the date of the final examination. In case of a grade of "Fail", the candidate may not apply for re-examination until the following semester. The result of the second examination is final.

## **UT POLICY ON INSURANCE FOR INTERNATIONAL STUDENTS**

All foreign national students registered with the University of Tennessee, Knoxville, are required to have comprehensive medical insurance. The policy for the 2007 academic year is provided by Connecticut General Life Insurance Company. The premium must be paid before registration. Contact The Admission and Student Affairs Office (A104 ext. 432) for further information.

## **GENERAL SEMINAR**

A number of seminars of interest to all UTSI students and general public will be offered throughout the semester. Dr. John Steinhoff will be the coordinator. Please contact him at ext. 215 for information and times.

## **FINAL EXAM DATES FOR SUMMER SEMESTER 2007**

FINAL EXAMS ARE GIVEN DURING THE REGULARLY SCHEDULED CLASS MEETING TIMES.

## **HONOR STATEMENT**

**The following Honor Statement is signed by all students applying to The Graduate School:**

**"An essential feature of The University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."**

**For official information on all UTK Graduate School policies, refer to the current UTK Graduate Catalog available in the Registrar's Office, A102.**

**The University of Tennessee Space Institute reserves the right to cancel any class with an insufficient number of students, or for other reasons.**

**THE UNIVERSITY RESERVES THE RIGHT TO REVISE  
ANY INFORMATION LISTED IN THIS TIMETABLE OF CLASSES**

**THE UNIVERSITY OF TENNESSEE  
SPACE INSTITUTE  
SUMMER TERM 2007 COURSE LISTINGS**

**AEROSPACE ENGINEERING**

AE 422 AERODYNAMICS (3)

SEC.

TEXT: Fundamentals of Aerodynamics; 4<sup>th</sup> Ed. 2005; John D. Anderson, Jr.; McGraw-Hill;  
ISBN#13-9780072950465

TIME: Tuesday & Thursday 1:00 – 3:30 E113

PROFESSOR: Dr. U. Peter Solies

Introduction to fluid properties with emphasis on air. Theory of pressure and shear forces generated by air interacting with solid bodies. Potential flow theory for two-and three-dimensional flow, sources, sinks, vortices, circulation, aerodynamic lift; compressibility, shock and expansion waves, Mach number, wave drag; viscosity, boundary layers, friction drag. Design of aerodynamic bodies for desired characteristics, laminar and turbulent subsonic, transonic, and supersonic airfoils and surface contours.

AE 500 MASTER'S THESIS (3, 6, 9)

SEC. 001 Schulz

003 Antar

004 Flandro

005 Majdalani

006 Steinhoff

007 Vakili

AE 502 USE OF FACILITIES (1-15)

SEC. 001 Schulz

AE 513 EXPERIMENTAL METHODS IN FLUID MECHANICS (3)

SEC. 001

TEXT: J. R. Goldstein: Fluid Mechanics Measurements; 2<sup>nd</sup> Ed; Taylor and Francis;  
ISBN# 1-56032-306-X

TIME: Mon & Thurs 1:00 - 3:00 E211

PROFESSOR: Dr. Ahmad Vakili

Experimental techniques with lab experiments; representative experiments; hot wire anemometry and turbulence measurements, flow visualization, wind tunnel tests, water table experiments, supersonic flow experiments, boundary layer measurements, laser-optical measurements. Prereq: AE 423 or ME 531 or consent of instructor.

AE 600 DOCTORAL AND RESEARCH DISSERTATION (3, 6, 9)

SEC. 001 Schulz

003 Antar

004 Flandro

005 Majdalani

006 Steinhoff

007 Vakili

AE 681 ADVANCED VISCOUS FLOW THEORY (3)  
SEC. 001  
TIME: Monday and Thursday 9:00 – 11:00 E211  
TEXT: Course Notes and Handouts  
PROFESSOR: Dr. Gary Flandro

Critical review of significance to governing equations. Nature of boundary layer approximation as singular perturbation problem. Uniqueness and existence of solutions. Application of group theory. Special problem areas of interest to students. The Navier Stokes Equations and their mathematical properties. Preq: With consent of instructor.

### **AVIATION SYSTEMS**

AS 500 MASTER'S THESIS (1 - 15)  
SEC. 001 Corda  
002 Allison  
003 Collins  
004 Ranaudo  
005 Solies

AS 502 REGISTRATION USE OF FAILITIES (1-15)  
SEC. 001 Corda

AS 510 SPECIAL TOPICS: AVIATION METEOROLOGY (3)  
SEC. 001 (Recorded from UTSI)  
TEXT: J. M. Wallace and P.V. Hobbs; Atmospheric Science: An Introductory Survey; 2nd Ed.; 2006  
Academic Press; ISBN# 13:978-0-12-732951-2  
TIME: Monday & Friday 10:30 – 12:00 E113  
PROFESSOR: Dr. Basil Antar

This course is intended as an introductory course in the area of Meteorology with the intention of introducing the student to the basic concepts of meteorology. The course will enable the student to read and comprehend weather forecasting and weather maps, types and movement of fronts, physics of clouds, etc. The following topics will be covered: Survey of the Atmosphere: Origin and Composition of the Atmosphere, Distribution of Mass and Gaseous Constituents, Charged Particles, Temperature Distribution, Winds in the Atmosphere, Precipitation. Atmospheric Thermodynamics, Synoptic Scale Disturbances: The 500mb Flow, Surface Weather Elements, Interpretation of Synoptic Surface Reports, Upper Level Structure, Thickness and Its Relationship to Vertical Structure. Atmospheric Aerosol and Cloud Microphysical Processes: Atmospheric Aerosol, Nucleation of Water Vapor Condensation, Microphysics of Cold Clouds, Thunderstorms. Clouds and Storms: Cloud Morphology, The Air Mass Thunderstorm, Hurricanes, Severe Storms, Extratropical Cyclonic Storms, Artificial Modification of Clouds and Precipitation.

AS 550 PROJECT IN AVIATION SYSTEMS (3)  
SEC. 001 Corda

Enrollment limited to Aviation Systems students in non-thesis program. May be repeated. Maximum 3 hours allowed toward degree.

### **CHEMICAL ENGINEERING**

ChemE 500 MASTER'S THESIS (3, 6, 9)  
SEC. 002 Sheth

## **COMPUTER SCIENCE**

CS 500 MASTER'S THESIS (3, 6, 9)  
SEC. 002 Whitehead

CS 502 USE OF FACILITIES  
SEC. 002 Whitehead

## **ELECTRICAL and COMPUTER ENGINEERING**

ECE 500 MASTER'S THESIS (3, 6, or 9)  
SEC. 001

ECE 501 PROJECT IN LIEU OF THESIS (3)  
SEC. 001

ECE 599 SPECIAL TOPICS: FIBER OPTICS COMMUNICATION SYSTEMS (3)  
SEC.

TEXT: Optical Fiber Communications; Gerd Keiser; McGraw-Hill; 3<sup>rd</sup> Ed.; ISBN# 0-07-232101-6

TIME: Monday - Wednesday - Friday 9:15 – 10:30 F-253

PROFESSOR: Dr. L. Montgomery Smith

Basic Principles of Fiber Optics: ray and wave propagation of light, types of fibers, and light mode structures in fibers. Signal Degradation in Fibers: attenuation, distortion, and coupling losses. Light Sources Used in Fiber Optic Systems: light-emitting diodes (LEDs) and laser diodes. Fiber Optic Launching and Coupling Methods: configurations and loss mechanisms. Photodetectors Used in Fiber Optic Systems: photodiode operation, noise performance, and time response. Optical Receiver Circuits: error sources, signal-to-noise ratios, and probability of bit errors.

## **ENGINEERING SCIENCE**

ES 500 MASTER'S THESIS (3, 6, or 9)  
SEC. 001 Schulz  
003 Flandro  
004 Majdalani  
005 Steinhoff  
006 Vakili

ES 600 DOCTORAL AND RESEARCH DISSERTATION (3, 6, 9)  
SEC. 001 Schulz  
003 Flandro  
004 Majdalani  
005 Steinhoff  
006 Vakili

## **INDUSTRIAL ENGINEERING:**

IE 405 ENGINEERING ECONOMIC ANALYSES (3)  
SEC. 003 UTSI Students on Campus (CENTRA) Web Based From UTK  
SEC. 004 UTSI off Campus Students Use This Number  
TEXT: Sullivan: Engineering Economy; 12<sup>th</sup> Ed.; Prentice Hall; ISBN# 0-13-067338-2  
TIME: Thursday 9:45 – 11:30 EST Knoxville  
PROFESSOR: Dr. Corkie Ford

Engineering economy and application in engineering practice. Time-value of money and discounted cash flow techniques. Decisions among engineering alternatives: design options, equipment selection, break-even points, and similar situations. Cost estimating and consideration of taxes and inflation. Analyzing uncertainty in economic estimates using non-probabilistic techniques. Prereq: Junior standing or consent of instructor.

## **ENGINEERING MANAGEMENT COURSES:**

EM 501 CAPSTONE PROJECT IN ENGINEERING MANAGEMENT (3)  
SEC. 001 UTSI On Campus Students Use This Number  
SEC. 002 UTSI Off Campus Students

Application-oriented project to show competence in major academic area. Enrollment limited to Engineering Management students in non-thesis program. May be repeated. Maximum 6 hours.

EM 502 REGISTRATION FOR USE OF FACILITIES for EM STUDENTS (3)  
SEC. 001 UTSI On Campus Students Use this Number  
SEC. 002 UTSI Off Campus Students

Required for the student not otherwise registered during any semester when student uses University facilities and /or faculty time before a degree in Industrial Engineering (Engineering Management) is completed. May not be used toward degree requirements.

EM 536 PROJECT MANAGEMENT (3)  
SEC. 001 On Campus UTSI Students (This is an Interactive Course)  
SEC. 002 (UTSI Off Campus Students receiving tapes/CD/interactive use this number)  
TEXT: Harold Kerzner: Project Management: A System Approach to Planning, Scheduling, and Controlling; John Wiley; 8<sup>th</sup> Ed; ISBN# 047122577-0  
TIME: Tuesday & Thursday 9:00 – 11:30 E113  
PROFESSOR: Dr. George Garrison

A graduate level course in technical project management. It will cover the basics of organizing, planning, scheduling and controlling projects. Real case studies will be used to illustrate concepts covered in the course. Prereq: 537 or consent of instructor.

EM 538 NEW VENTURE FORMATION (3)  
SEC. 001 UTSI on Campus Students (This is an Interactive Course)  
SEC. 002 UTSI off Campus Students receiving tapes/CD/interactive use this number  
TEXT: TBD  
TIME: Tuesday & Thursday 5:00 – 7:30 E113  
PROFESSOR: Dr. Gregory Sedrick

Factors other than mechanical or chemical which enter into successful establishment of manufacturing or service enterprise. Organizational and financial planning and evaluation. Cost and location studies and market analysis to determine commercial feasibility of new ventures. Preq: 539

EM 543 LEGAL AND ETHICAL ASPECTS OF ENGINEERING MANAGEMENT (3)  
 SEC. 001 UTSI on Campus Students (This is an Interactive Course)  
 SEC. 002 UTSI off Campus Students receiving tapes/CD/interactive use this number  
 TEXT: TBD  
 TIME: Monday & Wednesday 4:30 – 7:00 E113  
 PROFESSOR: Dr. Frank W. Steinle, Jr.

Legal aspects imposed by government and ethical considerations in engineering practice. Selected readings, lecture, discussion, and student presentations. Current topics from government and industry.

### **MATERIALS SCIENCE & ENGINEERING**

MS&E 500 MASTER'S THESIS (3, 6 or 9)  
 SEC. 001 Hofmeister  
 MS&E 600 DISSERTATION AND RESEARCH (3, 6, or 9)  
 SEC. 001 Hofmeister

### **MATHEMATICS**

MATH 443 COMPLEX VARIABLES (3)  
 SEC. 001 Recorded from UTSI  
 TEXT: M. Spiegel: Complex Variables Schaum's Outline; Mc-Graw Hill; 29<sup>th</sup> Ed.; ISBN#07-060230-1  
 TIME: Monday & Thursday 1:30 – 3:30 E112  
 PROFESSOR: Dr. Horace Crater

Theory of functions of complex variable (arithmetic, algebra, and trigonometry); complex differentiation and analytic functions with applications to solutions of Laplace equations; complex integration, residue theory and contour integrals with applications to Fourier and Laplace transforms, Fourier Series, and the summation of infinite series; conformal mapping and applications to solving boundary value problems in physics and engineering including applications to fluid and heat flows and electrostatics.

MATH 500 MASTER'S THESIS (3, 6, 9)  
 SEC. 001 Kupersmidt  
 MATH 571 NUMERICAL MATHEMATICS (3)  
 SEC. 001  
 TEXT: TBD  
 TIME: Monday & Thursday 1:00 – 3:00 B210  
 PROFESSOR: Dr. K. C. Reddy

Direct and iterative methods for linear systems. The algebraic eigenvalue problem and the singular decomposition theorem. Newton and quasi-Newton methods for systems of nonlinear equations. Numerical techniques for initial value problems of ordinary differential equations. Numerical techniques for initial value problems of ordinary differential equations. Two-point boundary value problems. Finite difference and finite element methods for selected partial differential equations. Fast Poisson solvers. (Same as Computer Science 571). Prereqs: 445, 446, 453, 471 and 472.

## MECHANICAL ENGINEERING

ME 500 MASTER'S THESIS (3, 6, 9)  
SEC. 001 Schulz  
003 Flandro  
004 Majdalani  
005 Steinhoff  
006 Vakili

ME 525 COMBUSTION AND CHEMICALLY REACTING FLOWS I (3)  
SEC. 001  
TEXT: TBD  
TIME: TBD  
PROFESSOR: Dr. Gary Flandro

Fundamentals: thermo chemistry, chemical kinetics and conservation equations; phenomenological approach to laminar flames; diffusion and premixed flame theory; single droplet combustion; deflagration and detonation theory; stabilization of combustion waves in laminar streams; flammability limits of premixed laminar flames; introduction to turbulent flames. Preq: 522 and 541 or consent of instructor.

ME 599 Special Topics in Mechanical Engineering  
SEC. 004  
TEXT: Engineering Power Cycles; R.W. Haywood; 4<sup>th</sup> Ed. or later; Pergamon Press;  
ISBN# 0-08-040738  
TIME: Tuesday & Friday 9:30 – 10:45 E211  
PROFESSOR: Dr. Roy Schulz

Course covers the fundamentals of gas, steam and nuclear power cycles, both ideal and real.

ME 599 SPECIAL TOPICS IN ME: ENGINE INLET INTEGRATION (3)  
SEC.  
TEXT: Practical Intake Aerodynamic Design, El L. Goldsmith and J. J. Seddon; AIAA Education Series;  
ISBN-10: 1-56347-064-0, ISBN-13: 978-1-56347-064-6  
OPTIONAL TEXT: Intake Aerodynamics; 2<sup>nd</sup> Ed.; J.J. Seddon and E. L. Goldsmith; AIAA Education Series,  
ISBN-10: 1-56347-361-5, ISBN-13: 978-1-56347-361-6.  
TIME: Tuesday & Friday 10:45 – 12:00 B112  
PROFESSOR: Dr. Donald J. Malloy

This course will cover fundamental theories, ground and flight test techniques, and data collection and analyses for engine inlet performance and operability. Engine inlet compatibility and integration are addressed for missiles with air-breathing engines, strike and fighter aircraft, and short takeoff and vertical landing aircraft. Topics will include aerodynamic modeling, viscous effects, operational characteristics, performance estimation, installation effects, variable geometry, stability margin loss estimation due to pressure and temperature distortion, and proof of capability.

ME 600 DISSERTATION AND RESEARCH (3, 6, or 9)  
SEC. 001 Schulz  
003 Flandro  
004 Majdalani  
005 Steinhoff  
006 Vakili  
021 Antar



## PHYSICS

PHYS 500 MASTER'S THESIS (3, 6, or 9)

SEC. 001 Crater  
003 Davis  
004 Parigger  
005 Chen  
006 Lewis

PHYS 593 INDEPENDENT STUDY (3)

SEC. 001

TEXT: To Be Selected

TIME: Monday & Thursday 10:00 - 12:00 B210

PROFESSOR: Dr. Horace Crater

This course will cover a variety of materials not normally offered in the academic year and will be tailored to individual student needs. Included would be a self-paced course involving intermediate level topics in classical physics, advanced topics in quantum theory, and preparation for the physics preliminary exam.

PHYS 600 DISSERTATION (3, 6, or 9)

SEC. 001 Crater  
003 Davis  
004 Parigger  
005 Chen  
006 Lewis

PHYS 605 ADVANCED TOPICS: LASER SPECTROSCOPY (3)

SEC.

TEXT: Classic books, on-line references, lecture and lab notes: (1) several textbooks will be used to review classical laser spectroscopy: "[Laser Spectroscopy](#)," Demtröder; "[Atomic and Laser Spectroscopy](#)," Corney; "[Introduction to Nonlinear Laser Spectroscopy](#)," Levenson; "[Aux Frontieres de la Spectroscopie Laser](#)," Les Houches, Vol. 1, 2 ed. Balian, Haroche, Liberman; "[Laser Spectroscopy](#)," ed. Brewer, Mooradian, "[Physics Reports: High resolution spectroscopy with lasers](#)," Demtröder; (2) current topics by use of on-line journals, including "[Applied spectroscopy](#)," "[Journal of quantitative spectroscopy & radiative transfer](#)," "[Optics and spectroscopy](#)," "[Spectrochimica Acta Part A: Molecular Spectroscopy](#)," "[Spectrochimica acta. Part A \(Molecular and biomolecular spectroscopy\) and B \(Atomic spectroscopy\)](#)," "[Journal of Physics B. Atomic, molecular and optical physics](#)," "[Review of Modern Physics](#)," e.g. "[Laser Spectroscopy and Quantum Optics](#)," Hänsch and Walther, OSA publications, and PROLA (Physical Review Online Archive) <http://prola.aps.org>; (3) selected lecture notes and laboratory notes.

TIME: Tuesday & Friday 1:00 – 3:00 CLA Laboratories

PROFESSOR: Dr. Christian Parigger

Applications of lasers to spectroscopy of atomic and molecular systems; absorption, laser-induced fluorescence, and Raman spectroscopy; molecular and atomic coherence, quantum beats, resonance fluorescence, photon echoes, self-induced transparency; saturation and Doppler-free spectroscopy; laser cooling and trapping. Prereq: 521, 541.

PHYS 643 COMPUTATIONAL PHYSICS (3)

SEC.

TEXT: [Numerical Recipes. The Art of Scientific Computing](#); S.A. Teukolsky, W.T. Vetterling and B.P. Flannery, with references to parallel computing; W.H. Press; ISBN# 0-521-57439-0 (vol 2) and 0-521-43064-X (vol 1).

TIME: Monday & Thursday 1:00 – 3:00 F-253

PROFESSOR: Dr. Christian Parigger

Developing computer algorithms for solving representative problems in various fields of physics, celestial dynamics in astrophysics, boundary value problems in electromagnetism, atomic and nuclear structures, band structure in solid state physics, transport problems in statistical mechanics, Monte Carlo simulation of liquids, fitting and interpolation of data, correlation analysis, or optimization strategy. Prereqs: 521, 531 and 571.

# Summer 2007



## Registration Announcement

The University of Tennessee  
Space Institute



411 B.H. Goethert Parkway  
Tullahoma, TN 37388-9700  
888-822-8874 x228  
[www.utsi.edu](http://www.utsi.edu)

On-Line Registration  
Instructions Inside  
<http://cpo.utk.edu>

