Spring 2013
Registration Announcement

The University of Tennessee
Space Institute

411 B. H. Goethert Parkway
Tullahoma, TN  37388-9700
888-822-8874 ext. 37228
www.utsi.edu
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CALENDAR --- SPRING SEMESTER 2013

Priority Registration ................................................................. October 8, 2012 – January 7, 2013
Spring 2013 Graduation Application Deadline (submit online) ........................................ December 4, 2012
Admission to Candidacy Forms due for Spring 2013 Commencement ................ December 4, 2012
Late Registration and late fees begin ........................................................................ January 9 – 18, 2013

Classes begin ................................................................. January 9, 2013

Last Day to final register, add, change grading options or drop without a “W” ........ January 18, 2013
Martin Luther King Holiday ........................................................................ January 21, 2013
Graduation Fee Payment Deadline (MS $30, PhD $75) ................................................ March 1, 2013
Last day to meet with consultant for Thesis/Dissertation Preliminary Review ........ March 1, 2013
Last day to schedule final exam (non-thesis/thesis/dissertation) ....................... March 21, 2013
Register to attend the Graduate Hooding Ceremony (http://gradschool.utk.edu) ... March 21, 2013
Purchase cap and gown and order hood ................................................................. March 21, 2013

Spring Break (No Classes) ........................................................................ March 22 – 28, 2013
Spring Recess (No Classes) ........................................................................ March 29, 2013
Drop with a “W” ....................................................................................... April 2, 2013

Thesis/Dissertation Deadline 5:00 p.m. EST ............................................. April 19, 2013
Deadline for submission of Admission to Candidacy for students graduating Summer 2013 ................................................................................ April 26, 2013
All “INCOMPLETES” must be removed for Graduation ........................................ April 26, 2013
Classes End ................................................................................................ April 26, 2013
Total withdrawal from the University Deadline ..................... April 26, 2013
Study Period ................................................................................................ April 29, 2013
Exam Period ................................................................................................ April 30, May 1, 2, 2013
Graduate Hooding Ceremony (UTK) ............................................................... May 9, 2013
COMMENCEMENT (UTK) ........................................................................ May 8 – 11, 2013
Official Graduation Date .................................................................................. May 11, 2013

Second thesis/dissertation deadline (Student will receive diploma August 2013 but will not be required to register for Summer 2013) ........................................ May 24, 2013
(Defense Completed by April 26, 2013)

SUMMER SEMESTER 2013

Priority Registration for Spring Semester 2013 ...................................................... TBD
Final Registration .................................................................................................... TBD
Memorial Day Holiday ......................................................................................... May 27, 2013
Classes begin ........................................................................................................ May 30, 2013
July 4th Holiday .................................................................................................. July 4, 2013
Classes End ............................................................................................................ August 9, 2013

Dates may be revised without notice. Please refer to the following sites for updates:
http://gradschool.utk.edu/ddategraduation.shtml
http://registrar.tennessee.edu/academic_calendar/index.shtml
SPRING SEMESTER 2013
FINAL STUDY DAY AND EXAM SCHEDULE

LAST DAY OF CLASSES ................................. April 26, 2013
STUDY DAY .................................................. April 29, 2013

FINAL EXAMS - - - April 30, 2013 – May 1 - 2, 2013

<table>
<thead>
<tr>
<th>REGULAR CLASS TIME</th>
<th>(Same Classroom)</th>
<th>EXAM TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Day - Tuesday, April 30, 2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:45 – 9:00</td>
<td>M/Th</td>
<td>7:45 – 9:45</td>
</tr>
<tr>
<td>10:45 – 12:00</td>
<td>M/Th</td>
<td>10:15 – 12:15</td>
</tr>
<tr>
<td>9:15 – 10:30</td>
<td>M/Th</td>
<td>1:00 – 3:00</td>
</tr>
<tr>
<td>2:30 – 3:45</td>
<td>M/Th</td>
<td>3:30 – 5:30</td>
</tr>
<tr>
<td>2nd Day - Wednesday, May 1, 2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:15 – 10:30</td>
<td>Tu/Fri</td>
<td>7:45 – 9:45</td>
</tr>
<tr>
<td>10:45 – 12:00</td>
<td>Tu/Fri</td>
<td>10:15 – 12:15</td>
</tr>
<tr>
<td>1:00 – 2:15</td>
<td>Tu/Fri</td>
<td>1:00 – 3:00</td>
</tr>
<tr>
<td>2:30 – 3:45</td>
<td>Tu/Fri</td>
<td>3:30 – 5:30</td>
</tr>
<tr>
<td>3rd Day - Thursday, May 2, 2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:45 - 9:00</td>
<td>Tu/Fri</td>
<td>7:45 - 9:45</td>
</tr>
<tr>
<td>1:00 - 2:15</td>
<td>M/Th</td>
<td>10:15 - 12:15</td>
</tr>
</tbody>
</table>

**** ATTENTION ****

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

NO CLASSES WILL BE IN SESSION
AT THIS TIME
REGISTRATION ANNOUNCEMENT
SPRING SEMESTER 2013

REGISTRATION PROCEDURE

ADVISING

Graduate students should contact their departmental faculty to arrange an advising appointment. For students not accepted into specific programs, the Assistant to the Dean of Graduate Studies or his/her designee may act as advisor. The web registration system will ask if you have discussed your program with your advisor. Answer ‘yes’ if you have; otherwise, you cannot continue with the registration process. Graduate School Web Page: http://gradschool.utk.edu.

REGISTRATION

Students will register at http://my.utk.edu. You will need to log in using your NetID and your NetID password. If you do not know your NetID and NetID password, go to http://registrar.utk.edu/registration.shtml.

*Log in to MyUTK. You can find a link by looking under “M” on the A-Z index (http://www.utk.edu/alpha) or by typing myutk.utk.edu directly into your browser. You will need to log in by typing utk\your NetID in the “username” field and then your NetID password in the “password” field.

*Before you attempt to register, clear and pay any financial holds (parking tickets, library fines, fees, etc.).

*Look under the “For Your Review” heading on the MyUTK portal page (located in the upper right-hand corner) for notification of any holds you may have.

*Once you are logged into “My UTK,” scroll down to “UTK Student Links.” Click on “Search for Classes” to look up sections and then register.

*Print a copy of your schedule when you are finished registering.

If you have any questions, call the Office of the University Registrar at 865-974-2101 or contact Charlene Hane in Student Services room D-100, phone 931-393-7228, email chane@utsi.edu.

FINANCIAL CALENDAR

Statement information available on MyUTK…………………………………..December 17, 2012

Spring 2013 Fees Due for Priority Registered Student by 4:30 p.m. (EST)………January 7, 2013

Late Registration/Late Fees Begin……………………………………………....January 9, 2013

Spring 2013 Late/Final Regisration Fees Due by 4:30 p.m. (EST)………………January 18, 2013

NOTE: PAYMENT AND THE CONFIRMATION OF ATTENDANCE FORM MUST BE RECEIVED BY THESE DEADLINES WHETHER OR NOT YOU HAVE RECEIVED A VolxPress e-STATEMENT. You may view your account at MyUTK.
FINAL/LATE REGISTRATION PERIOD

January 9 – 15, 2013    $20    Fee
January 16 – 22, 2013    $40    Fee
January 23 – 29, 2013    $60    Fee
January 30 – February 5, 2013 $80    Fee
February 6, 2013 – forward $100 Fee

CREDIT CARD PAYMENTS

NOTE: If you pay your fees using MyUTK with a credit/debit card (Discover, VISA, Mastercard) you will be accessed a 2.5% service fee. To avoid this service fee you will need to make payment to the UTSI Budget and Finance Office.

SPECIAL BILLING – THIRD PARTY BILLING:

The Budget and Finance 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 Budget and Finance Office, MS#12, 411 B.H. Goethert Parkway, Tullahoma, TN 37388-9700 or email it to 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. 37297 or by email jboyles@utsi.edu

TOLL-FREE NUMBERS

For a specific office: 1-888-822-UTSI (8874) and the extension number.
For general information: 1-888-822-UTSI (8874)
Admissions Office: 1-888-822-UTSI (8874)-37213
Budget and Finance Office: 1-888-822-UTSI (8874)-37297
Student Services 1-888-822-UTSI (8874)-37228

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 $60.00 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]. Send Applications for Admission, transcripts, GRE scores (if required); and if international application, TOEFL scores to the Admissions Office, A-200, Mail Stop 1, UTSI, Tullahoma, TN 37388-9700.
FEES

Late fees will begin on January 9, 2013. The only credit/debit cards The University of Tennessee Space Institute accepts are Visa, MasterCard and Discover.

NEW FOR FALL 2011

In February 2011, a new fee structure for students who are enrolled in dual campus locations was approved beginning Fall 2011. The University of Tennessee, Knoxville allows students to enroll in multiple campuses which include the following: Knoxville, UTSI, Distance Education, Nashville School of Social Work and off-campus locations. Students enrolling in dual campus locations will be assessed all fees for each campus they are enrolled. For example, students enrolled in classes on the Knoxville campus and also taking Distance Education courses will be assessed the per hour rate of all the fees for the Knoxville campus (Maintenance, Out-of-State Tuition, Programs and Service, Health, Technology, Facilities, Transportation, and any course fees that may be associated with a particular class) and the per hour rate of all the fees for the Distance Education courses (Maintenance, Out-of-State Tuition, the Distance Education Course Fee, and any course fees that may be associated with a particular course). The Out-of-State Tuition will be charged only to students who are classified as out-of-state per the appropriate Admissions Office.

UTSI students are assessed the per hour rate for the following: Maintenance, Tuition (if out-of-state), the UTSI Activity Fee, and any course fees that may be associated with a particular class. UTSI students taking mixed campus courses will follow the same fee assessment rules as above. The total per hour fee assessment will not exceed the Full-Time rate of 9 hours for Graduate students.

FEES OF DISTANCE STUDENTS

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

Aviation Systems Peter Solies 931-393-7289 psolies@utsi.edu
Engineering Mgt. Charlotte Henley 931-393-7293 chenley@utsi.edu

TUITION AND/OR MAINTENANCE FEES

Full Fees for In-State Students (per semester)

Maintenance Fee ................................................................. $4,500.00*
Programs and Services Fee ...................................................... 90.00
Total ................................................................................. $4,590.00

Full Fees for Out-Of-State Students (per semester)

Maintenance Fee ................................................................. $4,500.00*
Programs and Services Fee ...................................................... 90.00
Tuition .............................................................................. $9,094.00*
Total ............................................................................. $13,684.00

An additional $54.00 per credit hour with no cap will be charged to ALL ENGINEERING COURSES (including courses that are cross-referenced).

*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:

<table>
<thead>
<tr>
<th></th>
<th>IN-STATE</th>
<th>OUT-OF-STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$501.00 per semester hour</td>
<td>$1,512.00 per semester hour</td>
</tr>
<tr>
<td>3 hours</td>
<td>$1,503.00</td>
<td>$4,536.00</td>
</tr>
</tbody>
</table>

ENGINEERING FEE

On July 1, 2007, the Computer Science Department merged with the Engineering Department. Beginning Fall 2008, a special per credit hour fee will be assessed on engineering and computer science courses offered through the College of Engineering and the College of Agricultural Sciences and Natural Resources. The additional funds will be used to acquire state-of-the-art equipment, expand first-year programs for Engineering students, and provide faculty with professional development opportunities to bring the latest knowledge into the classroom. The Colleges will retain the funds generated from this fee for their use.

PROGRAMS AND SERVICES FEE

All students enrolled in nine semester hours or more for the semester are assessed an activity fee of $90.00 per semester. Part-time students taking fewer than nine 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 re-deposited. 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 remaining balance for the term is due approximately 45 days after the first due date. 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):

<table>
<thead>
<tr>
<th>DROP DATE</th>
<th>CHARGE</th>
<th>REFUND</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 9 – 13, 2013</td>
<td>NO CHARGE</td>
<td>100%</td>
</tr>
<tr>
<td>January 14 – 19, 2013</td>
<td>20% CHARGE</td>
<td>80%</td>
</tr>
<tr>
<td>January 20 – 24, 2013</td>
<td>40% CHARGE</td>
<td>60%</td>
</tr>
<tr>
<td>January 25 – 29, 2013</td>
<td>60% CHARGE</td>
<td>40%</td>
</tr>
<tr>
<td>January 30, 2013 – End of Term</td>
<td>100% CHARGE</td>
<td>0%</td>
</tr>
</tbody>
</table>

TUITION/FEES 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 Charlene Hane,
Student Services. Any questions concerning registration, please contact Charlene Hane, UTSI, Office D-100, 931-393-7228.

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.

**REPAYMENTS**

Repayments are defined as that portion of aid, received by a student after the University direct charges have been paid by that aid, which 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.

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.

**TOTAL WITHDRAWAL 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 Charlene Hane, Student Services, 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 MyUTK or contact Charlene Hane, Student Services, Office D-100, (931) 393-7228.

**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 Charlene Hane, Student Services 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 DEADLINE 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 MABE 595 seminars or a PHYS 599 seminar each term, unless a waiver is granted by the Associate Executive Director.
REMOVAL OF INCOMPLETE GRADES

All Incomplete Grades (I) must be removed prior to graduation. The instructor, in consultation with the student, decides the terms for the removal of the I, including the time limit for removal. If the I is not removed within one calendar year, the grade will be changed to an F. The course will not be counted in the cumulative grade point average until a final grade is assigned. No student may graduate with an I on the record. Students planning to graduate Fall Semester 2012 must remove all INCOMPLETE GRADES by April 26, 2013. Contact Charlene Hane, Student Services, to remove an Incomplete Grade.

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 a completed and signed Admission to Candidacy Application at least one semester prior to receiving the degree.

Candidacy committee changes or course changes must be submitted to the committee chairman using a Revision form. If changing from a thesis option to a non-thesis option or vice versa, a new Admission to Candidacy Application must be submitted. All forms must be processed through Student Services.

DOCTORAL DEGREE:

A Doctoral Committee should be formed during the student's first year of doctoral study. Any changes to the doctoral committee (deletions or additions) must be submitted to the Committee Chairman using a Revision form for approval. Each doctoral student is responsible for submitting a completed Admission to Candidacy form signed by the doctoral committee at least one semester prior to receiving the degree. All forms must be processed through Student Services.

CONTINUOUS REGISTRATION OF DOCTORAL STUDENTS

Course 600 is reserved for doctoral research and dissertation hours. Initial registration for 600 should be determined by each department and generally corresponds to the time at which a student begins work actively on dissertation research. From this time on, students are required to register continuously for at least 3 hours of 600 each semester, including summer term. A minimum total of 24 hours of course 600 is required.

A student who will not be using faculty services and/or university facilities for a period of time may request leaves of absence from dissertation research up to a maximum of six terms (including summer terms). The request (form found online at http://gradschool.utk.edu/forms/leaveofabsence_reader.pdf) should be completed by the student and then sent to the major professor (advisor) for endorsement. The completed form is then submitted to Graduate School for review and processing.
FINAL EXAM 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 Student Services. Failure to notify Student Services 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 2012-2013 academic year is provided by Aetna. The premium must be paid before registration. Contact the Human Resources Office (A-104 ext. 37267) for further information.

GENERAL SEMINAR

A number of seminars of interest to all UTSI students and general public will be offered throughout the semester.

FINAL EXAM DATES

STUDY PERIOD – April 29, 2013
FINAL EXAMS – April 30, 2013 – May 1 and 2, 2013

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 at http://catalog.utk.edu. The student handbook “Hilltopics” is available in Student Services, D-100 or online at http://dos.utk.edu/files/HT2011revised.pdf.

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 OF TENNESSEE POLICY ON A DRUG-FREE CAMPUS AND WORKPLACE

In support of the Drug-Free Workplace Act of 1998 (Public Law 100-690) and the Drug-Free Schools and communities Act of 1989, the University of Tennessee is notifying all students, faculty, and staff of the following university policy approved by the UT Board of Trustees on 21 June 1990.

It is the policy of the University of Tennessee to maintain a safe and healthful environment for its students and employees. Therefore, university policy prohibits the unlawful use, manufacture, possession, distribution, or dispensing of drugs ("controlled substances" as defined in the Controlled Substances Act, 21 U.S.C. 812) and alcohol on university property or during university activities.

Violation of this policy is grounds for disciplinary action--up to and including immediate discharge for an employee and permanent dismissal of a student. Federal and state laws provide additional penalties for such unlawful activities, including fines and imprisonment (21 U.S.C. 841 et seq.; T.C.A. 39-6-401 et seq.). Local ordinances also provide various penalties for drug- and alcohol-related offenses. The university is bound to take all appropriate actions against violators, which may include referral for legal prosecution or requiring the individual to participate satisfactorily in an approved drug use or alcohol abuse assistance or rehabilitation program.
THE UNIVERSITY RESERVES THE RIGHT TO REVISE
ANY INFORMATION LISTED IN THIS TIMETABLE OF CLASSES

The University of Tennessee Space Institute
Spring 2013 Course Listings

AEROSPACE ENGINEERING

AE  500  Thesis (1-15)
009 CRN 24863  Antar
011 CRN 24864  Corda
012 CRN 24865  Flandro
013 CRN 24866  Majdalani
014 CRN 24867  Moeller
015 CRN 24868  Solies
021 CRN 24874  Steinhoff
022 CRN 26352  Vakili

Grading Restriction: P/NP only.
Repeatability: May be repeated.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

AE  502  Registration for Use of Facilities (1-15)
SEC. 002 CRN 24876  Moeller

Required for the student not otherwise registered during any semester when student uses university
facilities and/or faculty time before degree is completed.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated.
Credit Restriction: May not be used toward degree requirements.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

AE  512  Viscous Flow (3)
SEC. 001 CRN 24877
TEXT: Viscous Flow; Frank M. White; 3rd Edition
TIME: Tuesday & Thursday 2:40 – 3:55  E-110
PROFESSORS: Dr. Ahmad Vakili & Dr. Feng-Yuan Zhang

Derivation of fundamental equations of compressible viscous flow; boundary conditions for viscous heat-
conducting flow; exact solutions for Newtonian viscous flow (Navier-Stokes) equations for special cases;
similarity solutions. Thermal boundary layers, stability of laminar flows, transition to turbulence, 2-D
turbulent boundary layer equations. Incompressible-turbulent mean flow, and compressible boundary
layer flow.
Registration Permission: Consent of instructor.
AE  522 Aerodynamics of Compressible Fluids II (3)
SEC.  001 CRN  27019
TIME: Tuesday & Thursday 10:10 – 11:25 E-110
PROFESSOR: Dr. Trevor Moeller

One-dimensional internal and external flow; waves; small perturbation theory; slender body theory; similarity rules; method of characteristics.
*(DE) Prerequisite(s): 521.*

*AE  542 Fluid Mechanics II (3) CANCELLED
SEC.  001 CRN  24880
TEXT: TBD
TIME: TBD
PROFESSOR: TBD

Equations of viscous fluid flows. Basic concepts and equations of turbulent flow. Separation, stability and transition. Laminar and turbulent boundary-layer flows. Exact, approximate, and numerical solutions. Cross-listed: *(Same as Engineering Science 542; Mechanical Engineering 542.)* *(DE) Prerequisite(s): 541.*

AE  562 Fundamentals of Aeroacoustics (3)
SEC.  001 CRN  26137
TEXT: TBD
TIME: Monday & Wednesday 1:10 – 2:25 E-110
PROFESSOR: Dr. Joseph Majdalani

Generation, propagation and absorption of sound in static and moving media.

The purpose of this course is to provide a broad coverage of the fundamentals of the theory and measurement of acoustics and noise ranging from the production of sound from vibrations and waves, acoustical devices, aeroacoustics, sound in enclosed spaces, etc.
*Registration Permission: Consent of instructor.*

AE  590 Selected Engineering Problems (3)
SEC.  001 CRN  24882 Antar
003 CRN  24883 Corda
004 CRN  27022 Flandro
005 CRN  27023 Majdalani
006 CRN  27024 Moeller
007 CRN  27025 Solies
008 CRN  27026 Steinhoff
009 CRN  27027 Vakili

*Repeatability: May be repeated. Maximum 6 hours.*
*Comment(s): Enrollment limited to students in problems option.*
*Registration Permission: Consent of advisor.*
**Repeatability:** May be repeated. Maximum 6 hours.

**Comment(s):** Enrollment limited to students in problems option.

**Registration Permission:** Consent of advisor.

AE 595 Aerospace Engineering Seminar (1)
SEC. 001 CRN 24884
TEXT: None
TIME: Will be announced through email
PROFESSOR: Dr. Ahmad Vakili

All phases of aerospace engineering, reports on current research at the University of Tennessee, Knoxville, and UTSI.

**Grading Restriction:** Satisfactory/No Credit grading only.

**Repeatability:** May be repeated. Maximum 20 hours.

AE 599 Special Topics in AE: Aircraft Design (Same as AS 506 001 CRN 24968) (3)
SEC. 001 CRN 24886 (Video Recorded)
TIME: Tuesday & Friday 1:00 – 2:15 E-111
PROFESSOR: Dr. Peter Solies

Design process, compromise of conflicting requirements, economical, industrial, and legal aspects. Definition of mission requirements, synthesis and optimization techniques, safety and reliability, systems integration, standards and regulations, teamwork, and decision-making process.

**Repeatability:** May be repeated. Maximum 6 hours.

AE 599 Special Topics in AE: Aircraft Flight Controls (Same as AS 516 001 CRN 24971) (3)
SEC. 005 CRN 26806 (Video Recorded)
TIME: Thursday 2:30 – 5:05 E-113
PROFESSOR: Dr. Peter Solies

Static and dynamic longitudinal, directional, and lateral stability of aerospace vehicles will be investigated. Topics include contribution of vehicle components to stability and control, motion with fixed and free control surfaces, steady flight and maneuvering flight, flight test techniques, and introduction to control theory and design of automatic controls.

**Repeatability:** May be repeated. Maximum 6 hours.
AE  599 Special Topics in AE: Contemporary Optics (3)
SEC.  006 CRN 26542
(Same as BME 599 005 CRN 28111, ME 599 005 CRN 29334, PHYS507 001 CRN 28912)
TEXT:  *Modern Optics*; B.D. Guenther; Wiley
http://www.amazon.com/Modern-Optics-B-D-Guenther/dp/0471605387/ref=cm_cr_pr_product_top
TIME:  Monday & Thursday 9:15 – 10:30 F-252
PROFESSOR:  Dr. Lloyd Davis

Topics in geometrical, physical, Fourier, and nonlinear optics and introductory laser physics. Extensive use of computer calculations and design of practical and sophisticated optical systems.

AE  599 Special Topics in AE: Applied Computational Fluid Dynamics II (3)
SEC.  008 CRN 28052  (Same as ME 599 006 CRN 27773)
TEXT:  No required text
TIME:  Monday & Wednesday 1:10 – 2:25 E-110
PROFESSOR:  Dr. Greg Power

This course incorporates fundamental application of CFD, grid generation and post-processing codes that are widely accepted and used in industry and government labs as a hands-on introduction to computational fluid dynamics. The course will build on the knowledge and experience gained during the 1st semester (Part-I) to develop skills for simulating more complex problems using advanced physical/turbulence models. The student will be expected to complete at least one complex CFD project and prepare a detailed report and presentation of the project efforts and results. Potential topics that will be covered include: Grid generation on (for) complex geometries; Development of custom routines/subroutines; Verification and Validation of CFD results; Advanced thermodynamic models; Chemical kinetics; Time dependent flows; Advanced turbulence modeling; Advanced post-processing techniques; Parallel processing; Other topics as may be helpful by the instructor.

AE  600 Doctoral Research and Dissertation (3-15)
SEC.  006 CRN 24839  Corda
007 CRN 24894  Flandro
008 CRN 24895  Majdalani
010 CRN 24897  Moeller
015 CRN 27029  Steinhoff
017 CRN 24902  Vakili
018 CRN 26678  Antar

*Grading Restriction: P/NP only.*
*Repeatability: May be repeated.*
*Registration Restriction(s): Minimum student level – graduate.*

AE  690 Advanced Topics in AE: Advanced Perturbation Methods (3)
SEC.  001 CRN 29299
TEXT:  Class Notes
TIME:  Monday & Wednesday 4:00 – 5:15 E-111
PROFESSOR:  Dr. Joseph Majdalani
The purpose of this course is to advance students through real life problems requiring the subtle use of asymptotic methods. The goal is to solve problems that arise in propulsion related applications or other fields of science. By the end of the course students will be able to:

~ understand the use of several advanced perturbation techniques; these include:
  1) WKB Method (Type I and Type II) with Multiple Distinguished Limits
  2) Latta’s Method of Composite Expansions
  3) Method of Averaging (van der Pol’s Method/ Krylov-Bogoliubov Method)
  4) Asymptotic Expansion of Integrals (Watson’s Lemma)
  5) Laplace’s Method
  6) Rayleigh Janzen Expansion
  7) Adomian Decomposition
  8) Homotopy Analysis Method (HAM)
  9) The Expansion of Functions in Infinite Series

~ obtain perturbation solutions to complex physical settings involving small or large parameters;
~ understand how to model highly oscillatory solutions
~ treat partial differential equations;
~ treat problems exhibiting a nonlinear scaling structure;
~ treat compressible flow problems.

Repeatability: May be repeated. Maximum 9 hours.
Registration Restriction(s): Minimum student level – graduate.
Registration Permission: Consent of instructor and ME 540.

AE  690  Special Topics in Aerospace Engineering: Hydrodynamic Instability (3)
SEC.  004 CRN 29560
TEXT: TBD
TIME: Monday & Thursday 10:45 – 12:00 E-210
PROFESSOR: Dr. Gary Flandro

Registration Restriction(s): Minimum student level – graduate.

AVIATION SYSTEMS

AVSY  500  Thesis (1-15)
SEC.  001 CRN 24958  Corda
  003 CRN 24959  Martos
  004 CRN 24960  Pujol
  005 CRN 24961  Solies

Grading Restriction: P/NP only.
Repeatability: May be repeated.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

AVSY  502  Registration for Use of Facilities (1-15)
SEC.  001 CRN 24963  Corda
  003 CRN 24964  Martos
Required for the student not otherwise registered during any semester when student uses university facilities and/or faculty time before degree is completed.

Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated.
Credit Restriction: May not be used toward degree requirements.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

AVSY 506 Aircraft Design (Same as AE 599 001 CRN 24886) (3)
SEC. 001 CRN 24968 (Video Recorded)
TIME: Tuesday & Friday 1:00 – 2:15 E-111
PROFESSOR: Dr. Peter Solies

Design process, compromise of conflicting requirements, economical, industrial, and legal aspects. Definition of mission requirements, synthesis and optimization techniques, safety and reliability, systems integration, standards and regulations, teamwork, and decision-making process.

AVSY 510 Special Topics in Aviation Systems: Introduction in Avionics II (3)
SEC. 001 CRN 24969 (Video Recorded)
TIME: Tuesday & Friday 9:15 – 10:30 E-113
PROFESSOR: Dr. Monty Smith

Electronic instrumentation, navigation, communication, guidance and control systems used in aviation. The primary topics to be covered in the second semester include: surveillance systems, airborne communication systems, onboard communications, indicators, air data sensors, and flight control systems. Repeatability: May be repeated. Maximum 15 hours.
Credit Restriction: Maximum of 12 hours may be applied toward degree requirements.
Registration Permission: Consent of instructor.

AVSY 510 Special Topics in Aviation Systems: Aerospace Vehicle Modeling and Simulation (3)
SEC. 002 CRN 24970 (Video Recorded)
TEXT: TBD
TIME: Wednesday 1:00 – 3:30 E-111
PROFESSOR: Borja Martos

Derivation of equations of motion for a six degrees of freedom aerospace vehicle, solving of the equations with numerical integration methods in MATLAB® / SIMULINK® software, developing a physical understanding of equations of motion and stability derivatives, modeling of simple and complex subsystems, pilot in the loop simulation, fly by wire flight controls, and flight test engineering problems. Students will be provided with a pilot in the loop simulation that integrates a joystick and is connected to FlightGear® software on their personal computer. A joystick is required.
Repeatability: May be repeated. Maximum 15 hours.
Credit Restriction: Maximum of 12 hours may be applied toward degree requirements.
Registration Permission: Consent of instructor.

AVSY 516 Aircraft Flight Controls (Stability and Control) (Same as AE 599 005 CRN 26806) (3)
SEC. 001 CRN 24971 (Video Recorded)
TIME: Thursday 2:30 – 5:05 E-113
PROFESSOR: Dr. Peter Solies

Static and dynamic longitudinal, directional, and lateral stability of aerospace vehicles will be investigated. Topics include contribution of vehicle components to stability and control, motion with fixed and free control surfaces, steady flight and maneuvering flight, flight test techniques, and introduction to control theory and design of automatic controls.

AVSY 521 Experimental Flight Mechanics: Fixed Wing Performance (3)
SEC. 001 CRN 24972
TIME: Tuesday & Friday 10:30 – 11:45 E-111
PROFESSOR: Devon Simmons

Course covers fundamental theories, flight test techniques, data collection and analyses for fixed wing aircraft performance. Topics include aid data system calibration, takeoff and landing performance, turn performance, cruise performance, energy concepts, and aerodynamic modeling. Courses combines classroom academics with 4-6 flight labs. Distance learning students must make arrangements with the instructor to participate on campus in a one-week lab course toward the end of the semester.
(RE) Prerequisite(s): 503.

AVSY 550 Project in Aviation Systems (3)
SEC. 001 CRN 24973 Corda
003 CRN 24974 Martos
004 CRN 24975 Pujol
005 CRN 24976 Solies

Repeatability: May be repeated. Maximum 15 hours.
Credit Restriction: Maximum of 3 hours may be applied toward degree requirements.
Comment(s): Non-thesis aviation systems majors only.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level - graduate.

BIOMEDICAL ENGINEERING

BME 500 Thesis (1-15)
SEC. 012 CRN 27866 Johnson
Grading Restriction: P/NP only.
Repeatability: May be repeated.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

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<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Text Information</th>
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<tbody>
<tr>
<td>BME 590</td>
<td>Selected Biomedical Engineering Problems (3)</td>
<td>001</td>
<td>29384</td>
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<td>Dr. Jackie Johnson</td>
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<td>Comment(s): Enrollment is limited to students in the non-thesis option.</td>
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<tbody>
<tr>
<td>BME 595</td>
<td>Seminar (1)</td>
<td>002</td>
<td>28091</td>
<td>None</td>
<td>Will be announced through email</td>
<td>Dr. Jackie Johnson</td>
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<td></td>
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<td>All phases of biomedical engineering, reports on current research at UTK and UTSI.</td>
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<tr>
<td>BME 599</td>
<td>Special Topics in Biomedical Engineering: Contemporary Optics (3)</td>
<td>005</td>
<td>28111</td>
<td>Modern Optics; B.D. Guenther; Wiley <a href="http://www.amazon.com/Modern-Optics-B-D-Guenther/dp/0471605387/ref=cm_cr_pr_product_top">http://www.amazon.com/Modern-Optics-B-D-Guenther/dp/0471605387/ref=cm_cr_pr_product_top</a></td>
<td>Monday &amp; Thursday 9:15 – 10:30, F-252</td>
<td>Dr. Lloyd Davis</td>
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<td>Topics in geometrical, physical, Fourier, and nonlinear optics and introductory laser physics. Extensive use of computer calculations and design of practical and sophisticated optical systems.</td>
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<th>Professor</th>
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<tr>
<td>BME 600</td>
<td>Doctoral Research and Dissertation (3-15)</td>
<td>011</td>
<td>27867</td>
<td>Johnson</td>
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<td>Grading Restriction: P/NP only.</td>
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<td>Repeatability: May be repeated.</td>
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<td>Mechanical testing; Rheology; Surfaces; Corrosion; Casting; Mechanics; More mechanical testing</td>
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</table>
**COMPUTER SCIENCE**

*CS 472 Numerical Algebra (3) CANCELLED*

SEC. 001 CRN 22279 (Video Recorded)


TIME: Monday & Thursday 10:00 – 11:15 E-111

PROFESSOR: Dr. Charles Limbaugh


Cross-listed: *(Same as Math 472.)*

(RE) Prerequisite(s): 231; 200 or 251 or 257.

(DE) Prerequisite(s): 371.

Comment(s): Knowledge of a high-level programming language required.

**ELECTRICAL ENGINEERING AND COMPUTER SCIENCE**

ECE 500 Thesis (1-15)

SEC. 027 CRN 28707 Bomar

028 CRN 28708 Pujol

029 CRN 28709 Smith

Grading Restriction: P/NP only.

Repeatability: May be repeated.

Credit Level Restriction: Graduate credit only.

Registration Restriction(s): Minimum student level – graduate.

ECE 501 Project in Lieu of Thesis (3)

SEC. 002 CRN 22225 Smith

Capstone course taken under supervision of student’s major professor and master’s committee. Individual project involving literature survey, development of some software or hardware, testing, writing a white paper or journal paper, or other suitable project.

Repeatability: May be repeated. Maximum 6 hours.

Credit Level Restriction: Graduate credit only.

Registration Restriction(s): Minimum student level – graduate.

Registration Permission: Consent of graduate committee.

ECE 502 Registration for Use of Facilities (1-15)

SEC. 002 CRN 22230 Smith

Required for the student not otherwise registered during any semester when student uses university facilities and/or faculty time before degree is completed.

Grading Restriction: Satisfactory/No Credit grading only.

Repeatability: May be repeated.

Credit Restriction: May not be used toward degree requirements.

Credit Level Restriction: Graduate credit only.

Registration Restriction(s): Minimum student level – graduate.

ECE 600 Doctoral Research and Dissertation (3-15)
ENGLISH MANAGEMENT

EM  501 Capstone Project (3-6)
SEC. 001 CRN  22489 Simonton

Application-oriented project to show competence in major academic area.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 6 hours.
Comment(s): Requires enrollment in engineering management.
Registration Restriction(s): Minimum student level – graduate.

EM  502 Registration for Use of Facilities (1-15)
SEC. 001 CRN  22491 Simonton

Required for the student not otherwise registered during any semester when student uses university facilities and/or faculty time before degree is completed.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated.
Credit Restriction: May not be used toward degree requirements.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

EM  533 Theory and Practice of Engineering Management (3) (Video Recorded)
SEC. 001 CRN  22492 UTSI students participating at Tullahoma or Oak Ridge
002 CRN  22493 UTSI students participating elsewhere
003 CRN  22494 UTK students participating at Knoxville DE classrooms
004 CRN  22495 UTK students participating elsewhere


TIME: Wednesday 4:00 - 6:35 E-113

EM  534 Financial Management for Engineering Managers (3) (Video Recorded)
SEC. 001 CRN  22496 UTSI students participating at Tullahoma or Oak Ridge
002 CRN  22497 UTSI students participating elsewhere
003 CRN  22498 UTK students participating at Knoxville DE classrooms
004 CRN  22499 UTK students participating elsewhere

TEXT: Introduction to Management Accounting, C. T. Horngren, G.L. Sundem, W.O. Stratton,
Financial and managerial accounting in engineering and technology management. Transaction recording, financial statements, ratios and analysis, activity-based accounting, and standard practices for costing, budgeting, assessment, and control.

EM 541 Managing Change and Improvement in Technical Organizations (3) (Video Recorded)
SEC. 001 CRN 22500 UTSI students participating at Tullahoma or Oak Ridge
002 CRN 22501 UTSI students participating elsewhere
003 CRN 22502 UTK students participating at Knoxville DE classrooms
004 CRN 22503 UTK students participating elsewhere


TIME: Monday 4:00 – 6:35 E-113
PROFESSOR: Dr. Denise Jackson


*(RE) Prerequisite(s): Industrial Engineering 516*

EM 600 Doctoral Research and Dissertation (3-15)
SEC. 001 CRN 26639 Simonton

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

*Registration Restriction(s): Minimum student level – graduate.*

**INDUSTRIAL ENGINEERING**

IE 518 Advanced Engineering Economic Analysis (3) (Video Recorded)
SEC. 001 CRN 22156 UTK Students participating at Knoxville DE Classrooms
002 CRN 22157 UTK Students participating elsewhere
003 CRN 22158 UTSI Students participating elsewhere


TIME: Wednesday 5:00 – 7:15 (EST) MediaSite Server UTK
PROFESSOR: Dr. Reid Kress

Application of engineering economic analysis in complex decision situations. Inflation and price changes; uncertainty evaluation using non-probabilistic techniques; capital financing and project allocation; evaluations involving equipment replacement, investor-owned utilities, and public works projects; probabilistic risk analysis including computer simulation and decision trees; multi-attribute decision analysis; and other advanced topics.
(RE) Prerequisite(s): 405.
Recommended Background: Statistics 251.

IE  522 Optimization Methods in Industrial Engineering (3)  (Video Recorded)
SEC. 001 CRN 22160  UTK Students participating at Knoxville DE Classrooms
      002 CRN 22161  UTK Students participating elsewhere
TIME:  TBD  
PROFESSOR: Dr. Mingzhou Jin

Classical optimization applied to constrained and unconstrained, non-linear, multi-variable functions; search techniques; decision making under uncertainty; game theory; and dynamic programming. 
(RE) Prerequisite(s): Engineering Management 537. 
Recommended Background: 301.

MATERIAL SCIENCE AND ENGINEERING

MSE  500 Thesis (1-15)
      002 CRN 21987  Hofmeister
Grading Restriction: P/NP only.
Repeatability: May be repeated.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

MSE  600 Doctoral Research and Dissertation (3, 6, 9)
SEC. 002 CRN 21999  Hofmeister
Grading Restriction: P/NP only.
Repeatability: May be repeated.
Registration Restriction(s): Minimum student level – graduate.

MATHEMATICS

MATH  435 Partial Differential Equations (3)
SEC. 002 CRN 20456
TIME:  Monday & Thursday      3:00 – 4:15       F-252
PROFESSOR: Dr. Jan Zijlstra

Separation of variables, Fourier series, solution of Laplace, wave, and heat equations.
(RE) Prerequisite(s): 231; 241 or 247.

*MATH  472 Numerical Algebra (3)  CANCELLED
SEC. 001 CRN 20462  (Video Recorded)

TIME:  Monday & Thursday 10:00 – 11:15  E-111

PROFESSOR:  Dr. Charles Limbaugh


*Cross-listed: (Same as Computer Science 472.)*

(Re) Prerequisite(s): 231; 200 or 251 or 257.

(De) Prerequisite(s): 371.

Comment(s): Knowledge of a high-level programming language required

MATH  518  Mathematical Methods in Physics II (3)

SEC.  002  CRN 26365

TEXT:  Arfken et al. 7th Edition; Arfken reference; [http://www.amazon.com/Mathematical-Methods-Physicists-Seventh-Comprehensive/dp/0123846544/ref=sr_1_1?s=books&ie=UTF8&qid=1328812143&sr=1-1](http://www.amazon.com/Mathematical-Methods-Physicists-Seventh-Comprehensive/dp/0123846544/ref=sr_1_1?s=books&ie=UTF8&qid=1328812143&sr=1-1)

Boas 3rd Edition; Boas reference; [http://www.amazon.com/Mathematical-Methods-Physical-Sciences-Mary/dp/0471198269/ref=pd_vtp_b_1](http://www.amazon.com/Mathematical-Methods-Physical-Sciences-Mary/dp/0471198269/ref=pd_vtp_b_1)

TIME:  Monday & Thursday 1:00 – 2:15  E-111

PROFESSOR:  Dr. Christian Parigger

Advanced Problems. Topics may vary according to interests of students and instructor.

*Cross-listed: (Same as PHYS572.)*

(De) Prerequisite(s): 571.

**MECHANICAL ENGINEERING**

ME  500  Thesis (1-15)

SEC.  001  CRN 22038  Antar

021  CRN 22058  Corda

022  CRN 22059  Flandro

023  CRN 22060  Majdalani

024  CRN 22061  Moeller

025  CRN 22062  Solies

026  CRN 22063  Steinhoff

034  CRN 27334  Vakili

Grading Restriction: P/NP only.

Repeatability: May be repeated.

Credit Level Restriction: Graduate credit only.

Registration Restriction(s): Minimum student level – graduate.

ME  502  Registration for Use of Facilities (1-15)

SEC.  002  CRN 26705  Moeller

Required for the student not otherwise registered during any semester when student uses university facilities and/or faculty time before degree is completed.

Grading Restriction: Satisfactory/No Credit grading only.

Repeatability: May be repeated.

Credit Restriction: May not be used toward degree requirements.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

*ME  512  Heat Transfer II (3)  (Video Recorded)  CANCELLED
SEC.  001  CRN  22569
TEXT:  TBD

TIME:  Monday & Wednesday  4:00 – 5:15  E-111
PROFESSOR:  Dr. Joseph Majdalani

Analysis of steady-state and time-dependent heat conduction by numerical methods. Analysis of laminar and turbulent convection heat transfer in internal and external flows, forced and buoyancy driven flows.  
(DE) Prerequisite(s): 541.

ME  522  Thermodynamics II (3)
SEC.  001  CRN  22571
TEXT:  TBD

TIME:  Monday & Wednesday  2:40 – 3:55  E-110
PROFESSOR:  Dr. Joseph Wehrmeyer

Macroscopic thermodynamics, including First and Second Law analyses, availability, phase and chemical equilibrium criteria, combustion, gas mixtures, and property relations, determination of thermodynamic properties from molecular structure, spectroscopic data, kinetic theory, statistical mechanics, quantum physics, Schroedinger equation.  
Recommended Background: Undergraduate thermodynamics.

*ME  542  Fluid Mechanics II (3)  CANCELLED
SEC.  001  CRN  22577
TEXT:  TBD

TIME:  Tuesday & Thursday  1:10 – 2:25  E-110
PROFESSOR:  TBD

Cross-listed: (Same as Aerospace Engineering 542.)
(DE) Prerequisite(s): 541.

ME  585  Turbomachinery II (3)  (Video Recorded)
SEC.  001  CRN  22083
TEXT:  Jack D. Mattingly;  Elements of Propulsion: Gas Turbines and Rockets; 2006;
ISBN 1-56347-779-3
TIME:  Tuesday & Thursday  4:00 – 5:15  E-111
PROFESSOR:  Dr. Milt Davis

Ideal cycle analysis of turbine engines, real cycle analysis, component performance analysis, component design and systems integration (inlets, nozzles, combustors, compressors, turbines), flowthrough theory, turbine engine component matching, transient operation, surge and rotating stall, engine control systems, structural considerations.  
Comment(s): First-year graduate standing required.  
Registration Permission: Consent of instructor.
ME  590  Selected Engineering Problems (3)
SEC.  002 CRN 22084  Antar
       003 CRN 27316  Corda
       005 CRN 27317  Flandro
       006 CRN 27318  Majdalani
       007 CRN 27319  Moeller
       008 CRN 27320  Smith
       009 CRN 27321  Solies
       010 CRN 27322  Steinhoff
       011 CRN 27323  Vakili

Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 6 hours.
Comment(s): Enrollment limited to students in the problems option.
Registration Permission: Consent of advisor.

ME  595  Mechanical Engineering Seminar (1)
SEC.  001 CRN 22085
TEXT: None
TIME: Will be announced through email
PROFESSOR: Dr. Ahmad Vakili
All phases of mechanical engineering, reports on current research at the University of Tennessee, Knoxville, and the University of Tennessee Space Institute.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 20 hours.

ME  599  Special Topics in AE: Introduction to Electric Propulsion (3)
SEC.  002 CRN 29260  (Same as AE 599 003 CRN 29249)  (Video Recorded)
TEXT: Physics of Electric Propulsion (textbook is available from Amazon.com); Robert G. Jahn;
TIME:  Tuesday & Friday       1:00 – 2:15      E-113
PROFESSOR: Dr. Trevor Moeller
The objective of this course is to provide students with specific physical background and engineering
concepts underlying electric propulsion and its application to modern satellites. Topics will include the
physical principles, the practical designs, and the performance levels of electrically-powered space
propulsion thrusters. Systems covered include: ion engines; pulsed and steady-state (fixed field) plasma
and MHD thrusters, including Hall Thrusters, and others.
Prereq: Consent of Instructors.

ME  599  Special Topics in ME: Contemporary Optics (3)
SEC.  005 CRN 29334  (Same as AE 599 006 CRN 26542, BME 599 005 CRN 28111, PHYS507 001 CRN 28912)
TEXT: Modern Optics; B.D. Guenther; Wiley
       http://www.amazon.com/Modern-Optics-B-D-Guenther/dp/0471605387/ref=cm_cr_pr_product_top
TIME:  Monday & Thursday                              9:15 – 10:30                            F-252
PROFESSOR: Dr. Lloyd Davis
Topics in geometrical, physical, Fourier, and nonlinear optics and introductory laser physics. Extensive use of computer calculations and design of practical and sophisticated optical systems.

ME  599 Special Topics in AE: Applied Computational Fluid Dynamics II (3)
SEC.  006 CRN  27773  (Same as AE 599 008 CRN 28052)
TEXT:  No required text
TIME:  Monday & Wednesday  1:10 – 2:25  E-110
PROFESSOR:  Dr. Greg Power

This course incorporates fundamental application of CFD, grid generation and post-processing codes that are widely accepted and used in industry and government labs as a hands-on introduction to computational fluid dynamics. The course will build on the knowledge and experience gained during the 1st semester (Part-I) to develop skills for simulating more complex problems using advanced physical/turbulence models. The student will be expected to complete at least one complex CFD project and prepare a detailed report and presentation of the project efforts and results. Potential topics that will be covered include: Grid generation on (for) complex geometries; Development of custom routines/subroutines; Verification and Validation of CFD results; Advanced thermodynamic models; Chemical kinetics; Time dependent flows; Advanced turbulence modeling; Advanced post-processing techniques; Parallel processing; Other topics as may be helpful by the instructor.

ME  600 Doctoral Research and Dissertation (3-15)
SEC.  015 CRN  22103  Antar
016 CRN  22104  Corda
018 CRN  22106  Flandro
019 CRN  22107  Majdalani
027 CRN  22115  Moeller
029 CRN  27325  Steinhoff
030 CRN  27326  Vakili

All phases of mechanical engineering, reports on current research at the University of Tennessee, Knoxville, and the University of Tennessee Space Institute.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 20 hours.

PHYSICS

PHYS  500 Thesis (1-15)
SEC.  002 CRN  24342  Chen
003 CRN  24343  Crater
004 CRN  24344  Davis
005 CRN  24345  Lewis
006 CRN  24346  Parigger

Grading Restriction: P/NP only.
Repeatability: May be repeated.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

PHYS 503 Physics Colloquium (1)
SEC. 002 CRN 24351
TEXT: None
TIME: 2nd & 4th Thursday 3:30 – 5:00 H-111
PROFESSOR: Dr. Ying-Ling Chen

Lectures and discussion on current research topics. Continuous registration required for current graduate students.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 6 hours.

PHYS 507 Contemporary Optics (3)
SEC. 001 CRN 28912
(TEXT: Modern Optics; B.D. Guenther; Wiley
http://www.amazon.com/Modern-Optics-B-D-Guenther/dp/0471605387/ref=cm_cr_pr_product_top
TIME: Monday & Thursday 9:15 – 10:30 F-252
PROFESSOR: Dr. Lloyd Davis

Topics in geometrical, physical, Fourier, and nonlinear optics and introductory laser physics. Extensive use of computer calculations and design of practical and sophisticated optical systems.

PHYS 512 Theoretical Physics II (3)
SEC. 002 CRN 24352 (Video Recorded)
TEXT: Constant; Theoretical Physics; Addison Wesley
TIME: Monday & Thursday 1:00 – 2:15 E-113
PROFESSOR: Dr. Horace Crater

Concepts and applications in applied physics. Topics: electrostatic and magneto-static problems, EM waves, duality and quantization, absorption and emission, statistical ensemble and thermal equilibrium, and other modern applications of current interest, in areas of quantum chemistry, biophysics, optics, spectroscopy, and astrophysics.
Recommended Background: Familiarity with computational methods.

PHYS 514 Problems in Theoretical Physics II (3)
SEC. 002 CRN 29316
TEXT: TBD
TIME: Wednesday 10:15 – 12:00 E-113
PROFESSOR: Dr. M. Breinig

Fundamentals of physics: electrodynamics, relativity, and quantum mechanics.

PHYS 522 Quantum Mechanics (3)
SEC. 002 CRN 27327
TEXT:  *Modern Quantum Mechanics*; J.J. Sakarai and Jim Napolitano; Pearson; 2nd Edition
TIME:  Monday & Thursday  10:45 – 12:00  F-252
PROFESSOR:  Dr. Lloyd Davis

Fundamental principles of quantum mechanics, angular momentum, electron spin, particles in electric and magnetic fields, perturbation theory, variational methods, scattering theory; second quantization, quantization of electromagnetic field, emission, absorption, and scattering of light, bremsstrahlung, pair creation and annihilation. Application of quantum mechanics to problems of atomic, molecular, nuclear, and solid state physics.

*(DE) Prerequisite(s): 521.*

PHYS  541  Electromagnetic Theory (3)
SEC.  002  CRN  26141
TIME:  Monday & Thursday  10:45 – 12:00  E-111
PROFESSOR:  Dr. Horace Crater

Review of electrostatics, magnetostatics, and quasi-static problems; Maxwell’s field equations and their solutions in dielectric and conducting media; electrodynamics and relativity, retarded potentials and gauge transformations, radiation produced by accelerating charges.

*(DE) Prerequisite(s): 571.*

PHYS  572  Mathematical Methods in Physics II (3)
SEC.  002  CRN  26354
TEXT:  Arfken et al. 7th Edition; Arfken reference; http://www.amazon.com/Mathematical-Methods-Physicists-Seventh-Comprehensive/dp/0123846544/ref=sr_1_1?s=books&ie=UTF8&qid=1328812143&sr=1-1
Boas 3rd Edition; Boas reference; http://www.amazon.com/Mathematical-Methods-Physical-Sciences-Mary/dp/0471198269/ref=pd_vtp_b_1
TIME:  Monday & Thursday  1:00 – 2:15  E-111
PROFESSOR:  Dr. Christian Parigger

Advanced Problems. Topics may vary according to interests of students and instructor.
Cross-listed:  (Same as Mathematics 518.)

*(DE) Prerequisite(s): 571.*

PHYS  573  Numerical Methods in Physics (3)
SEC.  002  CRN  24359
TEXT:  *Survey of Computational Physics*; R.H. Landau et al.; Princeton:
TIME:  Monday & Thursday  2:30 - 3:45  E-111
PROFESSOR:  Dr. Christian Parigger
Numerical methods for solution of physical problems, use of digital computers, analysis of errors.

(DE) Prerequisite(s): 571 or consent of instructor.

PHYS 599 Physics Seminar (1)
SEC. 007 CRN 24369
TEXT: None
TIME: 2nd & 4th Thursday 3:30 – 5:00 H-111
PROFESSOR: TBD
(a) Mechanics; (b) Radiation; (c) Heat and Thermodynamics; (d) Electricity and Magnetism; (e) Modern Physics.
Repeatability: May be repeated with consent of department. Maximum 18 hours.

PHYS 600 Doctoral Research and Dissertation (3-15)
SEC. 002 CRN 24372 Chen
003 CRN 24373 Crater
004 CRN 24374 Davis
005 CRN 24375 Lewis
006 CRN 24376 Parigger

Grading Restriction: P/NP only.
Repeatability: May be repeated.
Registration Restriction(s): Minimum student level – graduate.

PHYS 642 Advanced Topics in Modern Physics (3)
SEC. 001 CRN 29543
TEXT: None
TIME: Monday & Thursday 1:00 – 2:15 TBD
PROFESSOR: Dr. Christian Parigger

Advanced theoretical or experimental topics not covered in other courses.
Repeatability: May be repeated with consent of department. Maximum 9 hours.
Registration Restriction(s): Minimum student level – graduate.

PHYS 643 Computational Physics (3)
SEC. 001 CRN 28913
TEXT: Survey of Computational Physics; R.H. Landau et al.; Princeton:
TIME: Monday & Thursday 2:30 - 3:45 E-111
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.
(DE) Prerequisite(s): 521, 531, and 571.
Registration Restriction(s): Minimum student level – graduate.