

# Summer 2021 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](http://www.utsi.edu)**

 **SPACE INSTITUTE**

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**DATES ARE SUBJECT TO CHANGE**

<https://registrar.utk.edu/calendar/>

**CALENDAR - SUMMER SEMESTER 2021**

Priority Registration.....	March 22, 2021
Admission to Candidacy Forms for Summer 2021 Commencement.....	April 26, 2021
Summer 2021 Graduation Application Deadline submit online at MyUTK.....	April 26, 2021
Graduation Fee Payment Deadline (MS \$30, PhD \$75).....	April 26, 2021
Memorial Day Holiday .....	May 31, 2021
Priority Registration Payment Deadline 4:30 p.m. EST .....	TBD
<b>Late Registration and late fees (\$100 Late Fee) .....</b>	<b>TBD</b>
Classes begin.....	June 1, 2021
Last Day to Final Register, Add, Change Grading Options or Drop Without a “W” .....	TBD
<b>Late Registration and late fees after 14<sup>th</sup> day (\$200 Late Fee).....</b>	<b>TBD</b>
Independence Day Holiday.....	July 5, 2021
Preliminary Thesis/Dissertation Review Deadline .....	June 11 2021
Last day to schedule final exam (dissertation students).....	July 2, 2021
Last day to Defend (thesis/dissertation).....	July 9, 2021
Drop with a “W” .....	TBD
Electronic Thesis/Dissertation to TRACE (5:00 P.M. Eastern Time) .....	July 23, 2021
Submit report of final examination (Pass/Fail) form .....	July 23, 2021
Deadline for Submission of Admission to Candidacy for students	
Graduating Fall 2021 and Graduation Application.....	July 29, 2021
Classes End .....	July 29 2021
Exam Period (Exams are given during the regularly scheduled class meeting times.)	
Total Withdraw from the University Deadline .....	TBD
Deadline for removing "INCOMPLETE" grades .....	July 30, 2021
No Commencement Ceremony or Graduate Hooding – Graduation Date.....	July 31, 2021
Second thesis/dissertation deadlines	
Defense Completed by July 30, 2021	
Second Deadline Application Submitted by July 30, 2021	
<a href="https://gradschool.utk.edu/forms-central/">https://gradschool.utk.edu/forms-central/</a>	
and submit a new graduation application for Fall graduation	
Thesis/Dissertation Submitted and Accepted by August 17, 2021 (5:00 P.M. Eastern Time)	
(Student will receive diploma fall 2020 semester, but will not be required to register for thesis/dissertation credits)	

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**FALL SEMESTER 2021**

Priority Registration.....	April 5, 2021
Late Registration .....	TBD
Classes Begin .....	August 18, 2021
Labor Day Holiday.....	September 6, 2021
Fall Break.....	September 30 – October 1, 2021
No Class Day .....	November 24, 2021
Thanksgiving Break.....	November 25 – 26, 2021
Classes End .....	December 1, 2021
Study Period.....	December 2, 2021
Exam Period.....	December 3, 6 & 7, 2021
Graduate Hooding Ceremony (UTK).....	TBD
Commencement (UTK).....	TBD

Official Graduation Date.....December 11, 2021

**Dates may be revised without notice. Please refer to the following sites for updates:**

[http://registrar.tennessee.edu/academic\\_calendar/index.shtml](http://registrar.tennessee.edu/academic_calendar/index.shtml)

<https://gradschool.utk.edu/graduation/>

**SUMMER SEMESTER 2021**

**EXAM SCHEDULE**

LAST DAY OF CLASSES ..... July 29, 2021

FINAL EXAMS FOR SUMMER 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 2021

### REGISTRATION PROCEDURE

#### GRADUATE ACADEMIC ADVISING

Graduate students should contact your departmental faculty to arrange an advising appointment. If you're not accepted into a specific program, the assistant to the dean of graduate studies or the designee may act as your advisor. When the web registration system asks if you've discussed your program with your advisor, you must answer yes to continue with the registration process.

#### 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://onestop.utk.edu/your-classes/registering-for-classes/>.

\*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 Registration 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](mailto:chane@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)-37228  
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 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 completed online at <https://www.applyweb.com/utg> and accompanied by a \$60.00 non-refundable application fee made payable to The University of Tennessee Space Institute. All applicants are required to

provide one official transcript of all undergraduate and graduate records, GRE test scores and three letters of recommendation when applying. International applicants will also need to include TOEFL scores. GRE scores are a requirement of all departments at UTSI except the Master of Science degree in Industrial Engineering/Engineering Management concentration. Please select UT Space Institute if you plan to attend the Tullahoma campus location. All applications need to be submitted online to the office of Graduate Admissions Knoxville, TN.

Graduate Research Assistantship applications need to be submitted to Charlene Hane, Student Affairs, University of Tennessee Space Institute, MS-7, Tullahoma, TN 37388-9700. Assistantship applications must include GRE test scores and three letters of recommendation. All International applicants will need to provide TOEFL test scores in addition to GRE's. Official transcripts and test scores should be sent to College Code 1843, Graduate Admissions Office, 201 Student Services Building, Knoxville, TN 37996-0221. Once admitted, a full admission will not be granted until all official test scores and degree confirmation are received in the Graduate Admissions Office in Knoxville. Please contact Charlene Hane at (931) 393-7228 or 888-822-8874 ext. 37228 if you have questions.

### **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 Affairs, 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 Affairs, 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 Affairs 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**

Nine credit hours are considered full-time for graduate students. Graduate Research Assistants (GRAs) with one-half assistantship are required to register for at least 6 credit hours during the fall/spring semesters and 3 credit hours during the summer semester. GRAs must also register in one of the MABE 595 seminars or a Phys 599 seminar each semester in which seminars are offered, unless a waiver is granted by the Associate Executive Director.

The residency requirement for doctoral students is 9 credit hours for two consecutive semesters or 6 credit hours for three consecutive semesters.

## **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 Summer Semester 2020 must remove all INCOMPLETE GRADES by July 30, 2021. Contact Charlene Hane, Student Affairs, to remove an Incomplete Grade.

## **REPEATING A COURSE**

A graduate student may repeat up to two courses in which they earned a grade of D or F.

- The decision to repeat a course is made between the student and the advisor / major professor.
- Each course may only be repeated once.
- The original and repeat grades will be included in the calculation of the cumulative grade point average (GPA).
- Credit hours will only be counted once towards meeting degree/program requirements.

Programs may prohibit students from repeating courses.

Approval Process: To re-enroll in a class in order to improve an earned grade, the graduate student must complete a petition for consideration by the Dean of the Graduate School.

## **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 ENROLLMENT**

All degree-seeking graduate students are expected to make a full commitment to their graduate and professional study in order to ensure that they can complete all degree requirements without unnecessary delay. Graduate students are therefore required to maintain an active status through continuous enrollment from the time of first enrollment until graduation.



Continuous enrollment is maintained by registering for a minimum of one graduate credit hour per semester (excluding the summer, unless stipulated otherwise by the program or department). However, students who have started taking dissertation hours (course 600) must maintain a minimum of three credit hours per semester during all semesters, including the summer, as stipulated in the policy on "Registration for Course 600 (Doctoral Research and Dissertation)" in order to comply with the Continuous Enrollment requirement (see under Doctoral Programs for details).

The minimum enrollment for international students may be different, and international students always need to check with the Center for International Education (CIE) in order to determine what minimum enrollment they need to maintain in order to satisfy all enrollment requirements attached to their specific visa.

### **CONSEQUENCES OF NON-ENROLLMENT WITHOUT LEAVE OF ABSENCE**

Graduate students who do not maintain continuous enrollment as stipulated in the "Continuous Enrollment" policy will lose their active student status. A student who has lost his or her active status without having been granted a Leave of Absence for the period of non-enrollment ahead of time will not be allowed to continue in his/her graduate program until readmitted. (see policy on "Readmission" in the Graduate Catalog for more details).

Non-enrollment other than during an approved Leave of Absence (LOA) does not alter or affect any of the milestone deadlines, such as admission to candidacy, time to degree, and other milestones depending upon the program.

Upon approval for readmission to complete the interrupted degree program, students will be retroactively enrolled in every semester of missed enrollment for one graduate credit hour of Course 502 or for three graduate credit hours of Course 600 (whichever is appropriate). Students will be responsible for paying the past tuition charges and fees as well as the current university per semester late registration penalty. All past due charges will need to be paid before the Graduate School will approve the student for any future enrollment. For more information, go to: [https://catalog.utk.edu/content.php?catoid=27&navoid=3506#leave\\_absence\\_reinstate](https://catalog.utk.edu/content.php?catoid=27&navoid=3506#leave_absence_reinstate)

### **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 2021-2022 academic year is provided by United HealthCare Student Resources. The premium must be paid before registration. Contact the Student Affairs Office (room D-100 ext. 37228) 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**

Final exams for summer are given during the regularly scheduled class meeting time.

## **FINANCIAL CALENDAR, FEES, REFUNDS, AND TUITION**

Please click <http://onestop.utk.edu/tuition-fees/> link to the most current information.

The UTSI Budget and Finance Accounts Receivable Office will no longer accept payment for tuition and fees by credit card. All students will need to login to MyUTK One Stop to make secure payments online.

Please see One Stop - Paying Tuition and Fees webpage for more details <http://onestop.utk.edu/pay/> .

## **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 online at <https://hilltopics.utk.edu/>

**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 1988 (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  
Summer 2021 Course Listings**

**AEROSPACE ENGINEERING**

AE	500	Thesis (1-15)	
	002	CRN 81540	Abedi
	003	CRN 81541	Kreth
	004	CRN 81542	Moeller
	005	CRN 81543	Schmisser
	009	CRN 81547	Solies
	010	CRN 81548	Zhang

*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.	003	CRN 81555	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	590	Selected Engineering Problems (2-6)	
SEC.	001	CRN 81556	Abedi
	002	CRN 81557	Kreth
	003	CRN 81558	Moeller
	004	CRN 81808	Schmisser
	005	CRN 81809	Solies
	006	CRN 81810	Zhang

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

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

*Registration Permission: Consent of advisor.*

AE	600	Doctoral Research and Dissertation (3-15)	
SEC.	002	CRN 81560	Abedi
	003	CRN 81561	Kreth
	004	CRN 81562	Moeller
	005	CRN 81563	Schmisser

011 CRN 81569 Solies  
012 CRN 81570 Zhang

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

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

## **BIOMEDICAL ENGINEERING**

BME 500 Thesis (1-15)  
SEC. 010 CRN 82345 Johnson

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

*Credit Level Restriction: Graduate credit only.*

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

BME 502 Registration for Use of Facilities (1-15)  
SEC. 002 CRN 83605 Johnson

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.*

BME 529 Applications of Linear Algebra in Engineering Systems (3)  
SEC. 001 CRN 81586 (Video Recorded)  
TEXT: *Advanced Linear Algebra for Engineers with MATLAB*; Sohail A. Dianat and Eli S. Saber;  
CRC Press; Latest Edition; ISBN 978-1-4200-9523-4  
TIME: Monday, Wednesday & Friday 9:30 – 10:45 E-111  
PROF: Dr. Monty Smith

Fundamental concepts of linear algebra to problems in engineering systems: steady state and dynamic systems. Geometric and physical interpretations of relevant concepts: least square problems, LU, QR, and SVD decompositions of system matrix, eigenvalue problems, and similarity transformations in solving difference and differential equations; numerical stability aspects of various algorithms; application of linear algebra concepts in control and optimization studies; introduction to linear programming. Computer projects.

Methods of linear algebra with application to engineering problems. Systems of linear equations: matrix-vector notation, solutions to linear equations, determinants, matrix inversion, LU decomposition. Vector spaces: spanning sets, orthogonality, QR factorization, linear transformations. Eigenvalues and eigenvectors: characteristic polynomials, singular value decomposition. The Cayley-Hamilton theorem: matrix polynomials, functions of matrices. Optimization: least-squares and weighted least-squares methods.

*Cross-listed: (Same as Chemical and Biomolecular Engineering 529; Civil Engineering 529, Electrical and Computer Engineering 529; Environmental Engineering 529; Industrial Engineering 529; Materials Science and Engineering 529; Mechanical Engineering 529; Nuclear Engineering 529).*

*Comment(s): Graduate standing or consent of instructor required.*

BME 600 Doctoral Research and Dissertation (3-15)  
SEC. 009 CRN 82346 Johnson

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

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

## **INDUSTRIAL ENGINEERING**

IE 529 Applications of Linear Algebra in Engineering Systems (3)  
SEC. 001 CRN 80097 UT Space Institute Campus (Video Recorded)  
002 CRN 84727 UT Knoxville Campus  
003 CRN 84886 Distance Education Campus  
TEXT: *Advanced Linear Algebra for Engineers with MATLAB*; Sohail A. Dianat and Eli S. Saber;  
CRC Press; Latest Edition; ISBN 978-1-4200-9523-4  
TIME: Monday, Wednesday & Friday 9:30 – 10:45 E-111  
PROF: Dr. Monty Smith

Fundamental concepts of linear algebra to problems in engineering systems: steady state and dynamic systems. Geometric and physical interpretations of relevant concepts: least square problems, LU, QR, and SVD decompositions of system matrix, eigenvalue problems, and similarity transformations in solving difference and differential equations; numerical stability aspects of various algorithms; application of linear algebra concepts in control and optimization studies; introduction to linear programming. Computer projects.

Methods of linear algebra with application to engineering problems. Systems of linear equations: matrix-vector notation, solutions to linear equations, determinants, matrix inversion, LU decomposition. Vector spaces: spanning sets, orthogonality, QR factorization, linear transformations. Eigenvalues and eigenvectors: characteristic polynomials, singular value decomposition. The Cayley-Hamilton theorem: matrix polynomials, functions of matrices. Optimization: least-squares and weighted least-squares methods.

*Cross-listed: (Same as Chemical and Biomolecular Engineering 529; Biomedical Engineering 529; Civil Engineering 529, Electrical and Computer Engineering 529; Environmental Engineering 529; Materials Science and Engineering 529; Mechanical Engineering 529; Nuclear Engineering 529).*

*Comment(s): Graduate standing or consent of instructor required.*

IE 536 Project Management (3)  
SEC. 001 CRN 85108 UT Space Institute Campus  
003 CRN 85410 UT Knoxville Campus  
002 CRN 85409 Distance Education Campus  
TEXT: *Project Management: A Managerial Approach*, Jack R. Meredith, Samuel J. Mantel, Jr., Scott M. Shafer, John Wiley & Sons, Inc., 10th Edition, ISBN: 978-1119369097  
TIME: TBD Zoom

PROF: Dr. Lynn Reed

Development and management of engineering and technology projects. Project proposal preparation; resource and cost estimating; and project planning, organizing, and controlling: network diagrams and other techniques. Role of project manager: team building, conflict resolution, and contract negotiations. Discussion of typical problems and alternative solutions. Case studies and student projects.

*Recommended Background: Graduate standing in Engineering or Business.*

IE	600	Doctoral Research and Dissertation (3-15)		
SEC.	010	CRN 82887	Simonton	UT Space Institute Campus
	011	CRN 82888	Simonton	UT Distance Education Campus
	012	CRN 83098	Yu	UT Space Institute Campus
	014	CRN 83286	Yu	UT Distance Education Campus
	013	CRN 83131	Shi	UT Space Institute Campus
	015	CRN 84977	Shi	UT Distance Education Campus

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

*Registration Restriction(s): Minimum student*

## **MECHANICAL ENGINEERING**

ME	500	Thesis (1-15)		
SEC.	002	CRN 80164	Abedi	
	004	CRN 80165	Kreth	
	023	CRN 80190	Moeller	
	024	CRN 80191	Schmisser	
	027	CRN 80194	Solies	
	028	CRN 80195	Zhang	

*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 80197	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 529 Applications of Linear Algebra in Engineering Systems (3)  
 SEC. 001 CRN 80199 (Video Recorded)  
 TEXT: *Advanced Linear Algebra for Engineers with MATLAB*; Sohail A. Dianat and Eli S. Saber;  
 CRC Press; Latest Edition; ISBN 978-1-4200-9523-4  
 TIME: Monday, Wednesday & Friday 9:30 – 10:45 E-111  
 PROF: Dr. Monty Smith

Fundamental concepts of linear algebra to problems in engineering systems: steady state and dynamic systems. Geometric and physical interpretations of relevant concepts: least square problems, LU, QR, and SVD decompositions of system matrix, eigenvalue problems, and similarity transformations in solving difference and differential equations; numerical stability aspects of various algorithms; application of linear algebra concepts in control and optimization studies; introduction to linear programming. Computer projects.

Methods of linear algebra with application to engineering problems. Systems of linear equations: matrix-vector notation, solutions to linear equations, determinants, matrix inversion, LU decomposition. Vector spaces: spanning sets, orthogonality, QR factorization, linear transformations. Eigenvalues and eigenvectors: characteristic polynomials, singular value decomposition. The Cayley-Hamilton theorem: matrix polynomials, functions of matrices. Optimization: least-squares and weighted least-squares methods.

*Cross-listed: (Same as Chemical and Biomolecular Engineering 529; Biomedical Engineering 529; Civil Engineering 529, Electrical and Computer Engineering 529; Environmental Engineering 529; Industrial Engineering 529; Materials Science and Engineering 529; Nuclear Engineering 529).*

*Comment(s): Graduate standing or consent of instructor required.*

ME 590 Selected Engineering Problems (2-6)  
 SEC. 001 CRN 80211 Abedi  
 002 CRN 80212 Kreth  
 003 CRN 80213 Moeller  
 004 CRN 81936 Schmisser  
 005 CRN 81937 Solies  
 006 CRN 81938 Zhang

*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 600 Doctoral Research and Dissertation (3-15)  
 SEC. 002 CRN 80222 Abedi  
 003 CRN 80223 Kreth  
 004 CRN 80224 Moeller  
 005 CRN 80225 Schmisser  
 020 CRN 80240 Solies  
 025 CRN 80246 Zhang

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

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



## PHYSICS

Phys 500 Thesis (1-15)  
SEC. 001 CRN 81139 Parigger

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

*Credit Level Restriction: Graduate credit only.*

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

Phys 600 Doctoral Research and Dissertation (3-15)  
SEC. 003 CRN 81153 Parigger

*Grading Restriction: P/NP only.*

*Repeatability: May be repeated.*

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