Aerospace Communication
MECH 4364, CRN: 26838
(Spring-2024): Credit: 3

Professor
Arifur R. Khan, Ph.D., Associate Prof. AME (arkhan@utep.edu)
Office hours: TR: 12-1 pm (A-317) or MS Team

TA
TBD

Class Schedule
TR 10:30-11:50 am, Classroom Build: C-201 (Jan. 16 to May. 02)

Course Prerequisite
MECH 2342 with a C or better.

Course Description
This course will deliver fundamentals on designing, implementing, and testing communication systems in Aerospace Applications. The course will provide the participants with fundamentals on digital and analog signal processing, signal loss, and attenuation and will prepare the students to design flight communication systems and ground stations using a variety of instruments.

Learning Outcome
Upon completion of this course, students will be able to understand the fundamentals of analog and digital signals, how the environment affects signal propagation, and specify, design, and implement communication systems for onboard and ground stations; the students will also be able to design and implement systems with common communication instruments, such as GPS and Radars.

Course Topics
- Fundamental on Waves and Signals
- Wave Propagation
- Environmental losses
- Antenna Design and MATLAB (RF Antenna Design)
- Modulation and MATLAB (RF Modulation)
- Link Budgets and MATLAB (RF Link Budget Calculation)
- Ground Stations
- Mobile Service and Instrumentations: GPS and Radars
- STK software

Reference

Software in class
iClicker (Attendance, quiz, etc.), System Tool-Kit (STK), online/download.

Student’s assessment
1. Class Performance: 20% [Attendance, Class quiz, and attention]
2. Midterm-1: 20%
3. Midterm-2: 20%
4. Final Exam: 20%
5. Project (2): (20+20) %, Antenna Design and Satellite Simulation

Final exam will replace the worst midterm.

Students grading
A= ≥ 90%; B= < 90% and ≥ 80%; C= < 80% and ≥ 70%; D= < 70% and ≥ 60%; F= < 60% (UTEP Standard)

Tools in Class/Lab
1. Scientific calculator, Laptop, Pad, and e-book can be used as problem-solving tools in class.
2. MATLAB and STK software
<table>
<thead>
<tr>
<th>Institution</th>
<th>The University of Texas at El Paso</th>
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<tbody>
<tr>
<td>Course Name</td>
<td>Aerospace Communication</td>
</tr>
<tr>
<td>Start Date</td>
<td>1/16/2024</td>
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<tr>
<td>End Date</td>
<td>5/2/2024</td>
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<tr>
<td>Enrollment</td>
<td>Students can search for and self-enroll in this course.</td>
</tr>
<tr>
<td>Optional</td>
<td>Course ID: AERO 4364</td>
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<td>Optional</td>
<td>Term: CRN 26838</td>
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<td>Meeting Times</td>
<td>Optional</td>
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<tr>
<td>Monday</td>
<td>Optional</td>
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<tr>
<td>Tuesday</td>
<td>10:30 AM</td>
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<td>Wednesday</td>
<td>Optional</td>
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Please note, University Name, Course Name, Course ID, Term (CRN) and Date.

Link: [https://app.reef-education.com/#/courses/add](https://app.reef-education.com/#/courses/add)
Training and Tutorials
https://help.agi.com/stk/12.7.1/index.htm#training/manuals.htm

For beginners
https://help.agi.com/stk/12.7.1/index.htm#training/L1_BuildScenarios.htm

Midterm-1 Exam: Date: 2/20 (in the classroom): On Black Board (Take your computer)
Midterm-2 Exam: Date: 3/26 (in the classroom): On Black Board (Take your computer)
Final Exam (Optional) Date: 4/30 (in the classroom): On Black Board (Take your computer)
**Calculation (Example)**

**Class performance (20%): iClicker Quiz and Attendance**
- Points for each quiz: 1.5 (random)
- Points for each attendance: 0.5 (random)

Student’s score (for example): \[
\frac{72 \text{(Student's score)} \times 20}{85 \text{ (out of total score)}} = 16.94\%
\]

**Midterm-1 (20%) = 19 (student’s score)/20 (out of total score)**

**Midterm-2 (20%) = 16 (student’s score)/20 (out of total score)**

**Projects (Midterm and Final, 40%) = 36 out of 40.**

Total Score without final exam:
- Class performance= 16.94 out of 20
- Midterm-1 = 18 out of 20
- Midterm-2= 16 out of 20
- Projects= 36 out of 40

Total= 86.94 (Grade B)

*If any student likes to improve the grade, it can be done by joining the final exam.*

Score in the final exam (for example): 19 out of 20.

*Between the two midterms, the worst will be dropped or ignored if the Final exam score is higher than any midterm score. If not, the final exam score will be ignored.*

**New score calculation after the Final Exam completed**

Total Score after final exam:
- Class performance= 16.94 out of 20
- Midterm-1 = 18 out of 20
- Midterm-2= 16 of 20 (dropped/ignored)
- Final exam: 19 out of 20
- Projects= 36 out of 40

Total= 89.94 (Grade A)
IMPORTANT DATES: Spring 2024

Oct 23rd
Spring Registration Begins

Jan 4th
Last Day to Clear Students on Suspension/Probation as well as those with Insufficient Prerequisites

Jan 5th
Drops for Students with Unsatisfactory Academic Standing, Insufficient Prerequisites, and Prior Grades of C in the Course

Jan 8th
Financial Aid is Disbursed

Jan 15th
Dr. Martin Luther King, Jr. Holiday – University Closed

Jan 16th
Spring classes begin

Jan 16th-19th
Late Registration (Fees are incurred)

Jan 31st
Spring Census Day

Note: This is the last day to register for classes. Payments are due by 5:00 pm.

Feb 12th
20th Class Day

Note: Students who were given a payment deadline extension will be dropped at 5:00 pm if payment arrangements have not been made.

Feb 16th
Graduation application deadline for degree conferral

Mar 11th-15th
Spring Break

Mar 20th
Freshman midterm grades are due

Mar 28th
Spring Drop/Withdrawal Deadline

Note: Student-initiated drops are permitted after this date, but the student is not guaranteed a grade of W. The faculty member of record will issue a grade of either W or F.

Mar 29th
Cesar Chavez Holiday - No classes; Spring Study Day

Apr 12th
Deadline to submit candidates' names for commencement program

May 2nd
Spring – Last day of classes

May 3rd
Dead day

May 6-10th
Spring Final Exams

May 11-12th
Spring Commencement

May 15th
Grades are Due
NETIQUETTE

As we know, sometimes communication online can be challenging. It’s possible to miscommunicate what we mean or to misunderstand what our classmates mean, given the lack of body language and immediate feedback. Therefore, please keep these netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always consider the audience. This is a college-level course; therefore, all communication should reflect polite consideration of others’ ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
- When reacting to someone else’s message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

Class Attendance

The student is expected to attend all classes and laboratory sessions and attendance is mandatory for all freshman-level courses (1XXX). It is the responsibility of the student to inform each instructor of extended absences. When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor can drop the student from the class with a grade of W before the course drop deadline and with a grade of F after the course drop deadline.

Excused Absences for University-Recognized Activities

Students who will be absent while representing the University in officially recognized University activities (sports, band, professional conferences, etc.) must notify the Dean of Students not less than ten (10) days prior to the absence. The Dean of Students will provide the student with a letter of excuse for the professors. It is the student’s responsibility to give the letter to the professors prior to the official recognized activity. Students following these procedures will be permitted to make up both assignments and examinations in consultation with faculty.
Military Leave

Section 51.9111, Texas Education Code, and 19 Texas Administrative Code 4.9 provides that students be excused from scheduled classes or other required activities if the student is called to and participates in active military service for a reasonably brief period and that the student shall be allowed to complete an assignment or exam within a reasonable time after the absence. The excused absence is permitted only if the student will not miss more than 25% of the total number of class meetings or the contact-hour equivalent (not including the final examination period) for the specific course or courses in which the student is enrolled at the beginning of the period of active military service.

Students called to active military service must provide a copy of their military orders to the instructor of each course. Further information is available under Complete Withdrawal Due to Active Military Service.

Absence From Examinations

A student absent from a test during the semester is graded zero (0) unless another policy is set by the instructor.

Dead Day

This specific day will be scheduled one day after the last day of classes during the fall and spring semesters. The following policy will be observed:

1. No classes will be held on this day, except classes which meet once a week on that day.
2. Make-up exams should be left to the discretion of each individual instructor.
3. All student work (e.g., research papers, lab reports, term paper, etc.) should be due prior to this day.
4. If a comprehensive final is given, no new material, quizzes, or exams should be given two calendar days prior to Dead Day, and attention should be given to review of semester material. Implementation of this recommendation is to be left to the discretion of the individual instructor.

Absence for Religious Holy Days

Religious holy day means a day observed by a religion whose places of worship are exempt from property taxation under Section 11.20, Tax Code. Section 51,911 of the Texas Education Code and 19 Texas Administrative Code 4.4 related to absences by students for observance of religious holy days states that the institution shall excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection cannot be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. The student must provide written notice to the instructor of each course that he or she will be absent for a religious holy day not less than ten days prior to the absence. If a student and an instructor disagree about the nature of the absence being for the observance of a religious holy day as defined therein, or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor can request a ruling from the Provost or the Provost's designee. The student and the instructor shall abide by the decision of the Provost or designee.

Academic Integrity

The University of Texas at El Paso prides itself on its standards of academic excellence. In all matters of intellectual pursuit, UTEP faculty and students must strive to achieve excellence based on the quality of work produced by the individual. In the classroom and in all other academic activities, students are expected to uphold the highest standards of academic integrity. Any form of academic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. It is imperative, therefore, that the members of this academic community understand the regulations pertaining to academic integrity and that all faculty insist on adherence to these standards.

Any student who commits an act of academic dishonesty is subject to discipline. Academic dishonesty includes, and is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP) can result in sanctions ranging from disciplinary probation, to a failing grade on the work in question, to a failing grade in the course, to suspension or dismissal, among others.

More detail: http://catalog.utep.edu/policies-regulations/attendance-grading/
EXCUSED ABSENCES AND/OR COURSE DROP POLICY

According to UTEP Curriculum and Classroom Policies, “When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of “W” before the course drop deadline and with a grade of “F” after the course drop deadline.” See academic regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I will drop you from the course. I will provide 24-hour advance notice via email.

OR

I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please let me know and then contact the Registrar’s Office to initiate the drop process. If you do not, you risk receiving an “F” for the course.

MAKE-UP WORK

Make-up work will be given only in the case of a documented emergency. Note that makeup work may be in a different format than the original, require more intensive preparation, and may be graded with penalty points. If you miss an assignment and the reason is not considered excusable, you will receive a zero. It is, therefore, important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

ALTERNATIVE MEANS OF SUBMITTING WORK IN CASE OF TECHNICAL ISSUES

I suggest that you submit your work with plenty of time to spare if you have a technical issue with the course website, network, and/or your computer. I also suggest you save all your work (answers to discussion points, quizzes, exams, and essays) in a separate Word document as a backup. This way, you will have evidence that you completed the work and will not lose credit. If you are experiencing difficulties submitting your work through the course website, don’t hesitate to contact the UTEP Help Desk. You can email me your backup document as a last resort.

INCOMPLETE GRADE POLICY

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

ACCOMMODATIONS POLICY

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services, and activities with documented disabilities to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodation will be made unless it is determined that doing so would cause undue hardship for the University. Students requesting an accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the CASS portal.
SCHOLASTIC INTEGRITY

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as one’s own. Collusion involves collaborating with another person to commit any academically dishonest act. Any academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

CLASS RECORDINGS

The use of recordings will enable you to have access to class lectures, group discussions, and so on in the event you miss a synchronous or in-person class meeting due to illness or other extenuating circumstances. Using such technology is governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP’s acceptable-use policy. A recording of class sessions will be kept and stored by UTEP following FERPA and UTEP policies. Your instructor will not share the recordings of your class activities outside of course participants, which include your fellow students, teaching assistants, or graduate assistants, and any guest faculty or community-based learning partners with whom we may engage during a class session. You may not share recordings outside of this course. Doing so may result in disciplinary action.

TEST PROCTORING SOFTWARE

Course assessments (the midterms and final exam) will use Respondus Lockdown Browser and Respondus Monitor inside Blackboard to promote academic integrity. You are encouraged to learn more about using these programs before the first test.

Please review the following guidelines:

- The assessments will only be available at the times identified on the course calendar.
- You may take the test at any time during the 24-hour window.
- A reliable Internet connection is essential to completing the exam. If you must go to a location to take the exam (such as the library), follow their health and safety requirements.
- You have 2 attempts to take the test. Once the window closes, your answers will be saved, and no changes can be made. The higher score will be recorded.
- Respondus Lockdown Browser will require that all internet tabs are closed before the start of the test.
- Respondus Monitor requires a webcam and microphone.
- You will be required to show your student ID to the webcam before the start of the test.
- Your face should be completely visible during the test. Blocking the camera will disable the test.
- No notes or textbook materials are permitted during the test. Respondus Monitor requires you to take a video of your surrounding area (desk, chair, walls, etc.)
- You should not converse with others and/or leave and return to the area during the test.
PLAGIARISM DETECTING SOFTWARE

Some of your coursework and assessments may be submitted to SafeAssign, a plagiarism-detecting software. SafeAssign is used to review assignment submissions for originality and will help you learn how to attribute sources rather than paraphrase properly.

COPYRIGHT STATEMENT FOR COURSE MATERIALS

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for this course. They may not be further disseminated.

COVID-19 PRECAUTIONS

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible so that we can work on appropriate accommodation. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu so that the Dean of Students Office can support and help communicate with your professors. The Student Health Center is equipped to provide COVID-19 testing.

The Centers for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can care for Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org

Course Resources: Where you can go for assistance.

UTEP provides a variety of student services and support:

Technology Resources
- **Help Desk**: Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

Academic Resources
- **UTEP Library**: Access a wide range of resources, including online, full-text access to thousands of journals and eBooks, plus reference service and librarian assistance for enrolled students.
- **University Writing Center (UWC)**: Submit papers here for assistance with writing style and formatting, ask a tutor for help, and explore other writing resources.
- **Math Tutoring Center (MaRCS)**: Ask a tutor for help and explore other available math resources.
- **History Tutoring Center (HTC)**: Receive assistance with writing history papers, get help from a tutor, and explore other history resources.
- **RefWorks**: A bibliographic citation tool; check out the RefWorks tutorial, Fact Sheet, and Quick-Start Guide.
Individual Resources

- **Military Student Success Center**: Assists personnel in any branch of service to reach their educational goals.
- **Center for Accommodations and Support Services**: Assists students with ADA-related accommodations for coursework, housing, and internships.
- **Counseling and Psychological Services**: Provides various counseling services, including individual, couples, and group sessions and career and disability assessments.

Directions for Filing a Student Grievance

The University of Texas at El Paso
(Last Revised August 2020)

The following is a summary of what you must do before filing a grade complaint with the Student Grievance Committee.

A challenge to a grade may be pursued only on the basis of:

1. **Malice**: The intent, without cause or reason, to commit a wrongful act that will result in harm to another.
2. **Bias**: An unfair act or policy stemming from prejudice.
3. **Arbitrariness**: Being determined by chance, inadvertent score or grade mistakes, whim, or impulse, and not by necessity, reason, or principle.
4. **Negligent Determination of a Grade**: An impulsive change of mind or a sudden unpredictable action, change, or series of actions or changes.
5. **Impermissible Discrimination**: Not permitted treatment or consideration based on class or category rather than individual merit.

You will be asked to provide evidence that supports your claim of malice, bias, arbitrariness, negligent determination, or impermissible discrimination.

Examples of evidence include your grades along with the course syllabus and course policies that show you were not graded according to what was stated in those documents.

All grade complaints must be filed within one year after the final grade has been issued in the course. For a student who has graduated, the filing deadline is three months following the semester in which the degree was awarded.

Prior to filing a complaint, you must complete the following steps:

A. Meet directly with the faculty member who issued the grade and discuss your concern.

B. If you are unable to resolve the difference, it is encouraged that you seek assistance from the Department Chair or other appropriate academic administrator in attempts to resolve the grading dispute.

After you have completed the above steps and are still unable to resolve the situation, you should prepare and submit the online complaint form.

https://www.utep.edu/student-affairs/dean-of-students-office/resources/grade-grievance.html
Addendum to Syllabi (Subject to Change)

Class Attendance Policy
Attendance is mandatory. **Anyone with 5 or more absences will be dropped from the class.** A drop for not attending will count toward the State Allowed Six Drop Limit. If you fail the class at the time of the drop, you may also be given a WF designation. A drop could adversely impact visa status, financial aid, and other programs.

As per UTEP rules, you may be asked to show a UTEP ID anytime during class. Anyone present and not registered in the class will be subject to disciplinary action unless the instructor gives prior approval.

Class quiz retaken policy
Missing class quizzes and attendance can be retaken if it is a **UTEP-approved absence** (Seminar, Sports, COVID-19 or physical illness with medical proof, etc.)

**Phone and personal computer usage in the classroom**
Students should only use a phone or personal computer if it is asked (by the professor) to use it. It can be used during the i-clicker quiz or solving numerical problems. If it is used without the permission of the professor or TA, the first warning will be given by Oral or Email notification, the second warning will deduct 5 points, and the last (the 3rd) warning will curtail 10 points from the class performance.

Excused Absence for Exams
The UTEP catalog allows Exam Absence to be excused ONLY for University-Recognized Activities and specific situations. Medical absence is NOT allowed in the UTEP catalog. For consistency with the catalog, students will NOT be excused from exams due to illness.

Harassment Policy
The University (see Handbook of Operating Procedures 1.2.2.4) has a zero-tolerance policy for harassment. Engagement in any behavior considered harassment will be reported to the proper authorities. In addition to generally understood forms of harassment, the department also treats the following behavior as harassment:

- **Repeated emails and/or calls** regarding subjects that have already been addressed. Once a decision has been made or a question answered, a student who continues to ask the same question will be given a warning by the recipient of the email/call. If the student continues, the behavior will be reported. Questions that seek understanding of course material are not harassment, but repeated questions about a grade or an administrative decision are.
- **Grades are NOT negotiable,** ever. If you believe a grading mistake has been made, you must follow the process described in the UTEP catalog. Any request for a grade elevation NOT based on a mistake is considered harassment and will be reported immediately.
- **Remaining in an office after the occupant requests you leave is considered harassment and potentially threatening.** You will be reported immediately without warning and, depending on the severity, may be reported to law enforcement.

Similar behavior towards department staff and student advisors will also be treated as harassment, including persistent phone calls, emails, and badgering. Department staff and student advisors are there to help students and should be treated with due respect.