

**UNIVERSITY OF NORTH TEXAS SYLLABUS  
MEEN 4120 AEROSPACE FUNDAMENTALS  
SPRING 2020. 3 Credit hours**

**Instructor:** Dr. Mark Wasikowski

**Office Hours & Email:** F101L by appointment or via Zoom, [mark.wasikowski@unt.edu](mailto:mark.wasikowski@unt.edu)

**Lectures:** NTDP F185, TR 10:00 – 11:20 am

**Teaching Assistant:** TBD

**Format:** in-person only

**CATALOG DESCRIPTION:** Introduction to fundamental knowledge used in aerospace industry. Topics include orbital mechanics, basic aerodynamics, guidance and control methods, flight dynamics, and 6 Degree of Freedom (6-DoF) motion and simulation for aircraft and missiles.

**PREREQUISITES:** NOT be pre-engineering major and passed the following “C” or better:

- 1) MEEN 2240 Programming for Mechanical Engineers (MATLAB)
- 2) MATH 2700 Linear Algebra and Vector Calculus
- 3) MEEN 3120 Fluid Mechanics
- 4) MEEN 3230 System Dynamics and Control

**TEXTS:** None required. Lecture notes provided, based on many references. Recommended are:

1. “Introduction to Flight”, Anderson, 8<sup>th</sup>, McGraw-Hill, ISBN 9780078027673.
2. “Fundamentals of Aerodynamics”, Anderson, 6<sup>th</sup>, McGraw-Hill, ISBN 9781259129919.
3. “Fundamentals of Astrodynamics”, 2<sup>nd</sup>, Bate, Dover, 978-0486497044.
4. “Fundamentals of Aerospace Engineering”, Baghchehsara, CreateSpace, 978-1508587590
5. “Fundamentals of Aerospace Engineering”, 1<sup>st</sup>, Soler, CreateSpace, 978-1493727759
6. “Introduction to Aircraft Design”, 1<sup>st</sup>, Fielding, Cambridge, 9780521657228

**ABET OUTCOMES:** This course addresses the following ABET program outcome(s):

1. Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

**COURSE OBJECTIVES:** Apply ABET outcomes to following topics, schedule permitting. Atmosphere, aerodynamics, airfoils and wings, airplane performance, stability and control, propulsion, rotorcraft, rockets, missiles, structures, aero-elasticity, 6 DOF simulation, guidance, navigation, orbit mechanics, space flight, aircraft design.

**GRADING RUBRIC:** standard 90/80/70/60 scale.

1. 30%: **Lecture Attendance Quiz:** Attendance is student responsibility. No make-ups. Can occur anytime. May be unannounced. Covers attendance, participation, short-term topics. May include in-class MATLAB work on the computer.
2. 50%: **Homework:** weekly via CANVAS due Sunday evenings. Includes MATLAB projects. Solutions available immediately. No late work accepted.
3. 20%: **Final Exam:** Comprehensive during final exam week.

**REGRADE REQUESTS:** must be made day assignment is returned/discussed. Once class over, requests not accepted. Entire assignment will be regraded, which may result in lower score.

**PROJECT COLLABORATION:** No copying MATLAB projects. MATLAB/SIMULINK or other codes run to verify results. Codes submitted to Turnitin to check for copying. Codes showing > 75% similarity receive 0 score.

**SOLUTION MANUALS/ON-LINE RESOURCES:** It is common knowledge that solution manuals (i.e. Chegg) to textbooks are online. If you utilize them, use correctly. Simply copying solution not beneficial. It is detrimental to learning and grade. To use them properly, attempt all problems on your own. If you get stuck, work more. Check work and find mistakes. The only way to do this is to work problems. This not only improves understanding but leads to better problem-solving skills.

**ACCEPTABLE BEHAVIOR:** I consider this room to be place where you will be treated with respect. All are expected to contribute to respectful and inclusive environment. Students engaging in unacceptable behavior will be directed to leave classroom and instructor may refer student to Dean of Students to consider whether conduct violated Code of Student Conduct. We enforce Code of Student Conduct at [deanofstudents.unt.edu/conduct](http://deanofstudents.unt.edu/conduct).

**ACADEMIC INTEGRITY STANDARDS AND SANCTIONS FOR VIOLATIONS:** According to UNT Policy 06.003, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. Academic dishonesty will not be tolerated and will result in zero assignment score and reported to Office of Academic Integrity. No exceptions.

**ADA STATEMENT:** UNT makes reasonable academic accommodation for students with disabilities. For additional information see the ODA website at [disability.unt.edu](http://disability.unt.edu)

**STUDENT PERCEPTIONS OF TEACHING EFFECTIVENESS (SPOT):** Course participates in SPOT evaluations (<http://spot.unt.edu/> or email [spot@unt.edu](mailto:spot@unt.edu)).

**RETENTION OF STUDENT RECORDS:** Course follows Family Educational Rights and Privacy Act (FERPA) laws and UNT Policy 10.10, Records Management and Retention.

**SYLLABUS CHANGES** Instructor reserves right change syllabus. Any changes announced in class and posted to CANVAS with an accompanying email to student's UNT email address.