

# AE 6372 Aerospace Systems Engineering Syllabus

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## Catalog Description

Introduction to aerospace systems engineering. Systems engineering and quality engineering methods and tools. Top-down design decision support processes, computer integrated environments, Integrated Product/Process Development (IPPD).

## Class Topics

- Systems Engineering Definitions and Need
- Integrated Product and Process Development
- Project Scoping
- Quality Function Deployment
- Requirements Definition and Analysis
- Model Based Systems Engineering
- Morphological Analysis
- Trade studies
- Sensitivity Analysis
- Risk Identification and Management
- Design Under Uncertainty, Robust Design and Six Sigma
- Product Life-cycle Management

## Class Structure

This class is being offered both in person and through distance learning

- Weekly quizzes, homework and projects will be asynchronous and turned in online through canvas
- A semester long group project will provide an opportunity to apply techniques learned in class and to bring together all elements of the course. There will be no final exam.
- Lectures will be on Tuesdays and Thursdays at 9.30AM - 11.40AM in Clough 102. The lectures will be recorded and can be joined virtually through a link in the Canvas Media Gallery.
- Participation will be part of your grade. You can participate either during lectures (in person or through zoom) or asynchronously through the discussion board.

## Office Hours

### Instructor:

Thursdays at 2PM in Weber 311 or via Teams [https://teams.microsoft.com/l/meetup-join/19%3ameeting\\_NTdhZmUzNzYtNjNkMS00NzhmLWFjZmYtZWFKODRmMjY2YmE1%40tHread.v2/0?context=%7b%22Tid%22%3a%22482198bb-ae7b-4b25-8b7a-6d7f32faa083%22%2c%22Oid%22%3a%221d680547-db0a-4825-82df-3f8be34c830b%22%7d](https://teams.microsoft.com/l/meetup-join/19%3ameeting_NTdhZmUzNzYtNjNkMS00NzhmLWFjZmYtZWFKODRmMjY2YmE1%40tHread.v2/0?context=%7b%22Tid%22%3a%22482198bb-ae7b-4b25-8b7a-6d7f32faa083%22%2c%22Oid%22%3a%221d680547-db0a-4825-82df-3f8be34c830b%22%7d) Note that the Teams meeting will initially put you into a waiting room.

### TAs:

Tuesdays 1-2PM in Weber Atrium (above AE maker space) or via Teams [https://teams.microsoft.com/l/meetup-join/19%3ameeting\\_NjBmMWNkZGEMDMxNy00YmE3LThkZTAyZ4A4NjdmMDUxNjE4%40thread.v2/0?context=%7b%22Tid%22%3a%22482198bb-ae7b-4b25-8b7a-6d7f32faa083%22%2c%22Oid%22%3a%221d680547-db0a-4825-82df-3f8be34c830b%22%7d](https://teams.microsoft.com/l/meetup-join/19%3ameeting_NjBmMWNkZGEMDMxNy00YmE3LThkZTAyZ4A4NjdmMDUxNjE4%40thread.v2/0?context=%7b%22Tid%22%3a%22482198bb-ae7b-4b25-8b7a-6d7f32faa083%22%2c%22Oid%22%3a%221d680547-db0a-4825-82df-3f8be34c830b%22%7d)

Please do not hesitate to reach out with any questions, struggles, thoughts or concerns via e-mail as needed.

## Communication

Canvas will be the primary mode of communication for this course. **Please make sure your Canvas is set up so that you receive announcements to your e-mail.** You will be responsible for keeping track of all information disseminated over Canvas.

The Canvas website will provide all official lecture material, important announcements, assignments and relevant information <https://gatech.instructure.com/courses/286298> Please use the Canvas inbox as much as possible when e-mailing, it will help keep your e-mails from getting lost.

## Grade Breakdown

Homework	20%
Participation and progress reports	15%
Weekly Quizzes	30%
Team Project	35%

## Tentative Dates

May 24 <sup>th</sup>	Team Project Assignment
July 21 <sup>st</sup>	Team Project Due (intermediate elements due earlier)
Aug 1 <sup>st</sup>	Project peer review and reflection due in place of final exam
Tuesdays	Weekly Homework, Quizzes, Participation and Progress Reports

## Expectations of Students

Students are expected to attend class or review course material online. Students are expected to participate in discussions, complete assignments, actively contribute to groups, and make every effort to understand the course material. Students are expected to show respect to the instructor and their peers.

## Expectations of the Instructor

I care about you learning the course material. I will provide instructional materials for your reference. I will happily answer questions regarding the material, projects or homework. If you find yourself struggling after giving it your best effort, *seek assistance*. I will respect you and will do my best to provide an inclusive environment for everyone.

## Other Course Policies

- No late assignments will be accepted. All assignments will have at least a week available for their completion. Do not leave them until the last minute!
  - Extensions may be granted in cases where extenuating circumstances prevented the student from reasonably completing an assignment on time. Examples include illness, emergencies, family situations, and institute excused absences. For simple matters, you may request these extensions **before the due date** (or in extraordinary circumstances as soon as feasible) by directly contacting the instructor. If you have a more complex situation or one which you wish to keep private, you should work with the Office of the Vice President and Dean of Students. They can assist students with documented emergencies by contacting professors on behalf of the student. You can get more information on this process here: <https://studentlife.gatech.edu/content/class-attendance>
- I value honesty and integrity. All assignments are expected to be your own work not copied from anywhere or anyone else (including solution manuals or previous semesters) unless explicitly stated otherwise.
- Attendance is encouraged for on-campus students, however, **if you are ill, please do not come to class**. Your health takes priority and your fellow students will thank you for not exposing them. Please e-mail me as soon as possible to arrange to learn what you missed and come up with a plan to get back on track.
- **If you ever find yourself in any situation in which an unexpected personal challenge is preventing you from performing your best in the course, please reach out so we can come up with a plan for you.**

## Honor Code Statement

Students are expected to abide by the Honor Code of the Georgia Institute of Technology. Information on the Honor Code can be found at: <https://osi.gatech.edu/content/honor-code>

It is the student's responsibility to become familiar with the Honor Code of the Institute. When in doubt about rules or specific situations students should contact the class assistants or an Honor Advisory Council member. Violations to the Honor Code have serious consequences and will be enforced at all times. Suspected violations will be reported to the Office of Student Integrity for further investigation.

## Health and Well-Being

I understand that in these uncertain and unsettled times you may be experiencing additional stress. I want to make you aware of resources available to you, should you need them, and to encourage you to reach out. **Your well-being and mental health are important, my door and my e-mail are always open.**

Center for Assessment, Referral and Education (CARE)	<a href="https://care.gatech.edu/">https://care.gatech.edu/</a>
Campus Police (any emergency): 404-894-2500	<a href="http://www.police.gatech.edu/">http://www.police.gatech.edu/</a>
Counseling Center: 404-894-2575	<a href="https://counseling.gatech.edu/">https://counseling.gatech.edu/</a>
Dean of Students Office: 404- 894-6367	<a href="https://studentlife.gatech.edu/">https://studentlife.gatech.edu/</a>
Georgia Crisis and Access Line: 800-715-4225	
National Suicide Prevention Lifeline:800-273-TALK (8255)	<a href="https://suicidepreventionlifeline.org/">https://suicidepreventionlifeline.org/</a>
Crisis Text Line: Text HOME to 741741	
VOICE: Victims Survivor Support: (404) 385-4464 (or 4451)	<a href="http://healthinitiatives.gatech.edu/well-being/voice">http://healthinitiatives.gatech.edu/well-being/voice</a>
Stamps Health Services	<a href="https://health.gatech.edu/contact">https://health.gatech.edu/contact</a>

Note that most of these resources are also available through the “Well-Being Connect” link on our Canvas page.

## Access and Accommodations

Your experience in this class is important to me. If you have established accommodations with the Offices of Disability Services, please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through Disability Services, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), please contact the **Office of Disability Services at 404.894.2563 or dsinfo@gatech.edu or disabilityservices.gatech.edu.**

Disability Services offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Disability Services. It is important to the Georgia Institute of Technology and to me specifically to create inclusive and accessible learning environments consistent with federal and state law.

## Georgia Tech School of Aerospace Engineering Values



### Integrity

I achieve excellence by embodying the highest ethical standards and communicating openly, authentically, and with humility.



### Respect

I extend courtesy to everyone and promote a culture of inclusion, fairness, and equity.



### Community

I am a global citizen and celebrate our collective achievements and contributions to the world around us.



### Accountability

I take ownership of my actions and value the responsibility to honor public trust.



### Adaptability

I embrace change as a path to progress, success, and innovation.

## Social Justice:

The School of Aerospace Engineering values social justice for all members of the Georgia Tech community and the larger society. Social justice means that everyone's human rights are respected and protected. We stand committed in the fight against racism, discrimination, racial bias, and racial injustice. Our shared vision is one of social justice, opportunity, community, and equity. We believe that the diversity and contributions from all of our members are essential and make us who we are. We believe that our impact must reach beyond the classroom, research labs, our campus, and the technology we create, but must also improve the human condition where injustice lives. We will continue to work to understand, value, and celebrate all people and create an inclusive educational and work environment that welcomes all.

As a matter of policy, Georgia Tech is committed to equal opportunity, a culture of inclusion, and an environment free from discrimination and harassment in its educational programs and employment. Georgia Tech prohibits discrimination, including discriminatory harassment, on the basis of race, ethnicity, ancestry, color, religion, sex (including pregnancy), sexual orientation, gender identity, national origin, age, disability, genetics, or veteran status in its programs, activities, employment, and admissions.

<http://policylibrary.gatech.edu/equal-opportunity-nondiscrimination-and-anti-harassment-policy>