AAE 532 — Orbit Mechanics
Fall Semester 2018

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3. Course Description: The course is an introduction to orbital and trajectory design. Topics include: Newton’s law of gravity; relative equations of motion; conic sections; orbits in three dimensions; impulsive maneuvers; transfer orbits; patched conics; Lambert’s theorem.

4. Prerequisites: AAE 340 or equivalent; Senior level or above

5. Textbook: None (extensive class notes will be available on the 532 Blackboard Learn site)
   Software: A software package (General Mission Analysis Tool) developed originally for astrodynamics applications will be introduced. However, you will also be required to develop your own scripts/programs in Matlab.

6. Problem Sets:
   a. Approximately one assignment per week
      Submitted at the beginning of class on due date
   b. Use of calculator and computer required during semester
   c. Absolutely NO late homework will be accepted for any reason

7. Exams:
   Three in-class exams during the semester → 9/28, 10/26, 11/28

8. Grades:
   HW (including a final assignment) 65%
   Exams 35%
AAE 532 Course Policies

1. Problem Sets-
   (a) Students are encouraged to visit with the TA or Professor Howell in office hours for
discussion of the lecture material or homework assignments. Office hours will be
determined as soon as possible and posted on Blackboard.
(b) All homework assignments, i.e., problem sets, are due at the beginning of class. A ten-
minute grace period is allowed for students who may be detained. Once class has started,
the papers are submitted directly to the TA in the back of the classroom. Tardy papers are
marked. Although late papers are graded for the benefit of the student, these late papers
receive a score of zero.
(c) Graded papers are returned with a score and the solutions are available in Blackboard. If
a student has a question about the score, please write the question on a separate sheet of
paper; submit both the questions and the original marked problem set to the TA. We will
assess the question and return the paper to the student with a response as soon as
possible.

2. Exams
   (a) All students are expected to participate in the in-class exams to pass the class. If you are
ill, the TA or instructor must be notified prior to the scheduled exam time. Professor
Howell should receive a signed medical excuse before any make-up opportunity. Please
see her as soon as you are recovered.
(b) It is expected that each student follows the exam procedures as detailed in class.
(c) For use of calculators on the exams, a TI-30XIIS, TI-30XIIB and TI-30XA are the only
calculators allowed.

3. Academic Integrity
   "Purdue University values intellectual integrity and the highest standards of academic
conduct. To be prepared to meet societal needs as leaders and role models, students must be
educated in an ethical learning environment that promotes a high standard of honor in
scholastic work. Academic dishonesty undermines institutional integrity and threatens the
academic fabric of Purdue University. Dishonesty is not an acceptable avenue to success. It
diminishes the quality of a Purdue education which is valued because of Purdue's high
academic standards” (S. Akers, Academic Integrity, A Guide for Students, 1995, revised
1999).

Adhering to high academic standards is an important part of the educational experience. In
this course, collaboration in the form of discussions is allowed as you work though the
problem sets. Plagiarism, however, is not acceptable and not allowed. The solved write-up of
the problem sets, Matlab scripts, and GMAT scenarios that are submitted are expected to be
accomplished independently and always be your own work. Modifying someone else’s work
to make it ‘your own’ is also unacceptable.
EMERGENCY PREPAREDNESS

Emergency preparedness is your personal responsibility. Purdue University is continuously preparing for natural disasters or human-caused incidents with the ultimate goal of maintaining a safe and secure campus. The following procedures are standard on campus:

- **To report an emergency, call 911.**
- **To obtain updates regarding an ongoing emergency, and to sign up for Purdue Alert text messages, view** [www.purdue.edu/eav](http://www.purdue.edu/eav).
- **There are nearly 300 Emergency Telephones outdoors across campus and in parking garages that connect directly to the Purdue Police Department (PUPD). If you feel threatened or need help, push the button and you will be connected immediately.**
- **If we hear a fire alarm, we will immediately suspend class, evacuate the building, and proceed outdoors, and away from the building. Do not use the elevator.** Our designated outside emergency assembly area is highlighted in green below: Northwestern Parking Garage. Exit using the nearest stairwell to your present position, whenever possible. The tunnel underneath the garage is also alternate shelter during severe weather.

![Emergency Preparedness Map]

- **If we are notified of a Shelter in Place requirement for a tornado warning, we will suspend class and shelter in the lowest level of this building away from windows and doors.**
- **If we are notified of a Shelter in Place requirement for a hazardous materials release, or a civil disturbance, including a shooting or other use of weapons, we will suspend class and shelter in our classroom, shutting any open doors or windows, locking or securing the door, and turning off the lights.**
- **Please review the Emergency Preparedness website for additional information** [http://www.purdue.edu/ehps/emergency_preparedness/index.html](http://www.purdue.edu/ehps/emergency_preparedness/index.html)