

## NORTHWEST -SHOALS COMMUNITY COLLEGE

### Drafting and Design Technology

#### DDT 290 Survey of Aerospace Technology

**Instructor:** Alton Rice  
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**Credit Hours:** 3      **Contact:** 3 Hrs.      **Lecture:** 3 hrs.      **Lab:** 0 Hrs.

**Program/Degree:** Drafting and Design Technology / Associate in Applied Science Degree

**Description:** This course provides a survey of Aerospace technology including the history of spaceflight, propulsion, orbital mechanics, and the space environment. A discussion of unmanned spacecraft, and the named space program is also included, as well as, debate about the future, with solid facts and some speculation about humankind's ventures in the final frontier.

**Prerequisites:** None

**Primary Text:** *To Rise From Earth*  
Wayne Lee, 2nd Edition  
□ 2000, Checkmark Books, New York, NY  
**ISBN:** 0-8160-4092-3

**Supplemental Text:** *Introduction to Space – The Science of Spaceflight*  
Thomas D. Damon  
□ 1989, Orbit Book Company, Inc., Malabar, FL  
**ISBN:** 0-89464-028-3

**Supplies:** None

**Course Rationale:** "We choose to go to the Moon," President Kennedy daringly announced to a cheering Houston crowd at a September 1962 pep rally. "We choose to go to the Moon in this decade," reiterated the young president, "and do other things not because they are easy, but because they are hard, because there is new knowledge to be gained, and new rights to be won, and they must be won for the progress of all mankind." As a professional drafter/designer, you will be charged with the task of solving many problems. Those problems will be solved graphically as well as analytically. As history shows, the problems that were to be resolved by the courageous men and women of the space program were immense. We can certainly learn from their many sacrifices, failures and successes. This survey course will provide students with the basic knowledge of spaceflight, and in turn, will enable students to become better problem solvers.

**Course Objectives:** After completion of this course the student will be able to;

1. Provide an explanation as to the function and types of rockets and their orbits.
2. Discuss orbital mechanics in detail – without using math.
3. Explore how space maneuvers are performed, including how spacecraft can rendezvous or capture disabled craft and satellites.
4. Explain how space shuttles are processed for flight, how they operate, and the different missions that astronauts fly.
5. Discuss each planet in the Solar System as well as asteroids, comets, and the Sun, detailing the necessary steps NASA takes to journey to these distant places.
6. Look ahead to the future of space travel, including the International Space Station and future travel to Mars.

## Assignment Schedule

**Week/  
Meeting**

**Topic**

**Assignments**

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1	Introduction to the Course Hand out Syllabus	Read Chapter 1
2	Chapter 1 – Entering Space An Introduction to Orbits and Rockets	Read Chapter 2
3	Chapter 2 – Above the Clouds Orbital Mechanics without Math	Read Chapter 3
4	Chapter 3 – Dancing in the Dark How to Perform Space Maneuvers <i>Test – Chapters 1 &amp; 2</i>	Read Chapter 4
5	Chapter 4 – Moonstruck The Story of the Race to the Moon	Read Chapter 5
6	Chapter 5 – On Twin Pillars of Fire How the Space Shuttle Works <i>Test – Chapters 3 &amp; 4</i>	Read Chapter 6
7	Chapter 6 – Final Frontiers How to Reach Other Planets	Read Chapter 7
8	Chapter 7 – Invading Mars Scientific Armada to the Red Planet	As Assigned By Instructor
9	Trip to Huntsville	Students – Off Campus
10	<i>Final Exam – Chapters 5, 6 &amp; 7</i> <i>Testing of Lab Projects</i>	

<b>Grading Policy</b>	<b>Notes</b>	<b>Actual Score</b>	<b>Possible Points</b>
<b>Test – Chapters 1 &amp; 2</b>			<b>200</b>
<b>Test – Chapters 3 &amp; 4</b>			<b>200</b>
<b>Final Exam – Chapters 5, 6 &amp; 7</b>			<b>200</b>
<b>Team Project – Rocket</b>	<b>2 Teams</b>		<b>150</b>
<b>Team Project – Tater Gun</b>	<b>2 Teams</b>		<b>150</b>
<b>This Grade Will Be Based On # of Absences, Your Daily Attitude in Class, and Your Participation in Class Discussions.</b>			<b>100</b>
<b>Total Points</b>			<b>1000 Points</b>

**GRADES WILL BE ASSIGNED AS FOLLOWS:**

<b>A</b>	<b>=</b>	<b>900 to 1000 Points</b>
<b>B</b>	<b>=</b>	<b>800 to 899</b>
<b>C</b>	<b>=</b>	<b>700 to 799</b>
<b>D</b>	<b>=</b>	<b>600 to 699</b>
<b>F</b>	<b>=</b>	<b>Less Than 600</b>

**NOTE:** Northwest-Shoals Community College’s policy regarding academic honesty will be **strictly enforced!** As a common courtesy to the instructor, you should attend classes promptly at specified starting times. If you are going to be absent, for any reason, you should contact the instructor as soon as possible. This will establish communications with the instructor about the possibility of making up your work. Make-up test and assignments shall be given on an individual basis and only with a proper excuse. Class attendance is an important part of learning, and is required in the Drafting curriculum. If a student is absent more than 20% of class meetings that student may receive a grade of “**F**” for the course.

It is “**your**” responsibility to contact the instructor for make-up test and missed assignments. If you are absent for a test or assignment, because of a proper excuse, you must take the test or make up the assignment, at the next regularly scheduled class meeting. **If you refuse to do this, you will receive a “0” as the grade for that particular test or assignment.** Completing laboratory assignments is an integral part of you training. **All students must satisfactorily complete at least 75% of all daily lab assignments/graded activities to receive a passing grade in the course.** The exact number of assignments for the course shall depend on the abilities of the entire class as a whole, and shall be determined by the end of the semester. **If a student does not complete “75%” of the total number of assignments, the student will receive a grade of “F” for the course.**

**AMERICANS WITH DISABILITIES ACT (ADA)**

It is the policy of Northwest-Shoals Community College to comply with the Americans with Disabilities Act (ADA). Any student covered under this act needing and desiring reasonable accommodations for this class should notify the instructor during the first week of class.