

MERCER COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

AVI 111
COURSE NUMBER

Flight Concepts
COURSE TITLE

2
CREDITS

2
CLASS HOURS

0
LABORATORY HOURS

TEXT: AN INVITATION TO FLY
Latest Edition

15 Weeks
LENGTH OF SEMESTER

CATALOG DESCRIPTION:

A study of the principles of flight and air navigation, evolution of modern aviation (civil and military), and the basic physiological difficulties experienced in flight. Fall offering in even numbered years.

None
PREREQUISITE

ENG 101
COREQUISITE

Joan Jones
COURSE COORDINATOR

Instructor's Name _____
Time/Location _____
Office/Phone #'s _____
Office Hours _____
E-mail _____

COURSE OBJECTIVES

1. The student will have an understanding of the evolution of modern aviation. The student will become familiar with origins of General and Military Aviation as well as Commercial Aviation.
2. The student will become familiar with the basic elements of flight including the theory of flight, aircraft engines, aircraft instruments, basic flight techniques, and aircraft performance.
3. The student will learn about the flight environment which includes, airports, airspace, communications and flight publications.
4. The student will gain insight into the basic principles of navigation that include chart interpretation, pilotage and dead reckoning, as well as radio aids to navigation.
5. The student will understand the principles of weight and balance as well as acquire the ability to determine whether aircraft are safely loaded for flight.
6. The student will become aware of physiological factors of flight as well as in-flight emergencies and how they are handled.

SPECIFIC OBJECTIVES

UNIT I: HISTORY OF HUMAN FLIGHT
Approximate Time – 1 week

UNIT I OBJECTIVES:

The student will:

1. Become familiar with the development of airships and balloons.
2. Become familiar with the development of Commercial Aviation, and the origins of General Aviation, which include: For Commercial Aviation—selected Milestones, Growth Triggered by Jet Transportation, Airline Support Personnel, Airline Flight Crew, and future of Commercial Aviation. For General Aviation—Ballooning, Soaring, Parachuting, types of aircraft, and future of General Aviation.
3. Be familiar with Military Aviation from World War I to the present.

4. Be familiar with the development of Modern Aircraft and their Economical, Social, and Political contributions.

UNIT II: INTRODUCTION TO THE AIRPLANE
Approximate Time – 3 weeks

UNIT II OBJECTIVES:

1. Distinguish between different varieties of aircraft.
2. Define the major components of the airplane and engine.
3. Define the forces acting on the aircraft.
4. Explain the basic theory of lift.
5. Define terms related to basic aerodynamics.
6. Define direct factors of basic aerodynamics, such as: the three axes, aircraft stability, torque effect, how the aircraft turns, functions of the primary and secondary flight controls and the principles behind them, and the relationship between load factors and stall speeds.
7. Define different factors affecting aircraft performance, such as effects of temperature, density altitudes, gross weight, and humidity.
8. Describe aircraft flight instruments.

UNIT III: AIRPORTS AND AIRSPACE
Approximate Time – 2 weeks

UNIT III OBJECTIVES:

The student will:

1. Be able to recognize the various types of airports, runways, runway markings, and lighting systems.
2. Become familiar with basic radio communication procedures.
3. Have a general awareness of controlled airspace and the restrictions to flight.

UNIT IV: NAVIGATION
Approximate Time – 3 weeks

UNIT IV OBJECTIVES:

The student will:

1. Be able to define different forms of air navigation including pilotage, dead reckoning, and radio navigation.
2. Be able to interpret information on aeronautical charts.
3. Have a basic understanding of forms of radio navigation such as VOR and ADF.

UNIT V: WEIGHT AND BALANCE
Approximate Time – 3 weeks

UNIT V OBJECTIVES:

The student will:

1. Understand the principles of weight and balance and their importance to flight safety.
2. Be able to explain terms of weight and balance including datum, fulcrum, arm, moment gross weight, center of gravity, and useful load.
3. Be able to calculate basic weight and balance problems using the computation, chart, or graph method.

UNIT VI: MEDICAL ASPECTS AND EMERGENCIES
Approximate Time – 3 weeks

UNIT VI OBJECTIVES:

The student will:

1. Recognize the interrelationships between oxygen, altitude, and the body.
2. Understand the effects of motion with regard to g-forces, spatial disorientation, vertigo, and motion sickness.
3. Understand various factors affecting vision and flight safety.

UNIT VI OBJECTIVES (continued)

4. Be familiar with the flight effects of drugs and alcohol.
5. Understand various airborne emergencies including fires, forced landings, hijackings, decompressions, etc. and how they can be handled
6. Gain an understanding of psychological limitations which may affect one's ability to perform safely as a required crew member aboard an aircraft.

EVALUATION PROCEDURE:

Evaluation and grading will be based on the student's growth and comprehension of the subject matter contained in the course work and lectures. Tests, papers, class attendance and class participation will be considered for the final grading.

	% of Final Grade
2 Tests	40%
1 Final Examination	20%
1 Paper	30%
Attendance & Participation	<u>10%</u>
Total	100%

The paper to be written will consist of a topic to be selected with approval of the instructor. It will consist of a review of the literature, 4-6 pages in length, and typed with an appropriate bibliography.

The paper will be submitted by the twelfth week of the course.

NOTE:

1. Students are required to take all tests on the date scheduled. No make up tests will be permitted except for extremely serious circumstances.
2. All students are expected to comply with MCCC's policy on Academic Integrity As explained in the Statement on Students' Rights and Responsibilities in the college catalog.

Academic Integrity Statement:

“A student who a.) knowingly represents work of other as his/her own; b.) uses or obtains unauthorized assistance in the execution of any academic work; or c.) gives fraudulent assistance to another student is guilty of cheating. Violators will be penalized.” (Student Handbook)

Classroom Conduct Statement:

It is the student’s responsibility to attend all of their classes. If they miss a class meeting for any reason, students are responsible for all content that is covered, for announcements made in their absence, and for acquiring any materials that may have been distributed in class. It is expected that students be on time for all their classes. If students walk into a class after it has begun, it is expected that they choose a seat close to where they entered the room so that they do not disrupt the class meeting.

Students are expected to follow ordinary rules of courtesy during class sessions. Engaging in private, side conversations during class time is distracting to other students and to the instructor. Leaving class early without having informed the instructor prior to class is not appropriate. Unless there is an emergency, leaving class and returning while the class is in session is not acceptable behavior. Disruptive behavior of any type, including sharpening pencils during class while someone is speaking, is not appropriate.

The college welcomes all students into an environment that creates a sense of community of pride and respect; we are all here to work cooperatively and to learn together.