AT114 : Instrument Flight Lab

General Information

Author:	• Curtis G Potter
Course Code (CB01) :	AT114
Course Title (CB02) :	Instrument Flight Lab
Department:	AT
Proposal Start:	Spring 2025
TOP Code (CB03) :	(3020.20) Piloting
CIP Code:	(49.0102) Airline/Commercial/Professional Pilot and Flight Crew.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000149866
Curriculum Committee Approval Date:	05/22/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	05/22/2024
Course Description and Course Note:	AT 114 is a flight training lab course instructing students to operate an airplane by reference to instruments. Topics include: basic and advanced attitude instrument flying, recovery from unusual attitudes, holding patterns, Instrument Flight Rules (IFR) en-route procedures, IFR cross-country planning, departure and arrival procedures, and precision and non-precision approach procedures. Note: Recommendation - Possession of a FAA Private Pilot Certificate-Single Engine Land, have recent flight experience per FAR 61.57, logged 50 hours of Pilot-in-Command Cross County flight time per FAR 61.65, and have passed the FAA Instrument Rating Knowledge Test within the past 12 months.
Justification:	Mandatory Revision Notes for Submission: Cyclical revision; Materials fee added; Formatted Assignments and Method of evaluation CH; Grade basis; Grammar corrected per comments
Academic Career:	• Credit
Mode of Delivery:	
Author:	Curtis G Potter
Course Family:	

Academic Senate Discipline

Primary Discipline:	• Aviation (Flight, navigation, ground school, air traffic control)
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)	**Course Special Class Status (CB13)**

Course is not a basic skills course.

Course is not a special class.

Grading Basis

- Grade with Pass / No-Pass Option

☑ Allow Students to Gain Credit by Exam/Challenge

Pre-Collegiate Level (CB21)

Not applicable.

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to CSU only

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	4
Maximum Credit Units (CB06)	4
Total Course In-Class (Contact) Hours	144
Total Course Out-of-Class Hours	72
Total Student Learning Hours	216

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	2	4
Laboratory Hours	6	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	36
Laboratory	108
Studio	0
Total	144

Course Out-of-Class Hours	
Lecture	72
Laboratory	0
Studio	0
Total	72

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Prerequisite

AT125 - Instrument Rating Ground School (in-development)

Objectives

- Explain the proper procedures in the event of lost communication.
- Recite the steps required to file an instrument flight plan.
- Compare and contrast ground-based and satellite-based navigation systems.
- Interpret published material necessary for instrument flight.
- Solve problematic in-flight navigation situations.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Laboratory
Methods of Instruction	Discussion
Methods of Instruction	Tutorial
Methods of Instruction	Demonstrations

Out of Class Assignments

- Study IFR departure, enroute and approach charts to apply during flights
- Study FAA regulations, IFR Air Traffic Control procedures
- Flight plan IFR flights prior to next flight session
- Read textbook chapters for later discussion and to prepare for FAA IFR Practical Test

Methods of Evaluation	Rationale
Evaluation	Daily verbal evaluation by instructor
Activity (answering journal prompt, group activity)	Phase checks during semester

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Hayes, Michael D,	Instrument Pilot Oral Exam Guide	Aviation Supplies & Academics, Inc.	2020	978-1-64425-019-8

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

A material/lab fee may be required for this course.

Learning Outcomes and Objectives

Course Objectives

Pilot a single engine land airplane solely by instrument reference.

Maintain slow flight and recover from stalls solely by instrument reference.

Conduct precision and non-precision instrument approaches.

Recover from unusual attitudes by reference to instruments.

Enter and maintain holds and Distance Measuring Equipment (DME) arcs.

Recognize and adapt to instrument failures.

Plan and execute Instrument Flight Rules (IFR) cross-country flights.

Comply with the Air Traffic Control system.

Interpret published material necessary for instrument flight.

Solve problematic in-flight navigation situations.

SLOs

Describe the FAA Air Traffic Control system, advanced radio navigation concepts, instrument departure, cruise, holding and approach procedures as designed into the National Airspace System.

Expected Outcome Performance: 70.0

ILOs Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Discuss the concepts of human physiology and human factors while piloting aircraft solely by reference to the flight deck instruments.

Expected Outcome Performance: 70.0

ILOs Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Apply regulatory requirements, Aviation Safety and Aviation Decision Making concepts, as well as established best practices, to conduct safe and efficient instrument flights.

Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Course Content

Lecture Content

Basic Attitude Instrument Flying (4 hours)
- Basic Attitude Instrument Flying
- Climbs
- Descents
- Standard rate turns
- Steep turns
- Straight-and-level

Advanced Attitude Instrument Flying (4 hours)
- Advanced Attitude Instrument Flying
- Slow flight
- Stalls
- Unusual attitude recovery
- Partial panel (pilot-static, vacuum, and electrical failures)

Radio Navigation (4 hours)
- Radio Navigation
- Interception and tracking of VOR (Very high frequency Omnidirectional Range) radials
- RNAV (Area Navigation) course interception and tracking
    - Direct-to navigation
- Distance Measuring Equipment (DME) use DME arcs

VOR (Very High Frequency Omnidirectional Range) Approaches (3 hours)
- VOR Approaches
- Circle to land procedures

RNAV (Area Navigation) Approaches (2 hours)
- RNAV approaches
    - Circle to land procedures
    - Vertical guidance procedures
    - Missed approach procedures
    - RNAV Overlay procedures

Localizer Approaches (1 hour)
- Localizer approaches
- Back course

Instrument Landing System (ILS) Approaches (3 hours)
- ILS approaches
- Missed Approach Procedures

Holding Patterns (4 hours)
- Holding patterns
- Holds over VOR
- Holds at intersections
- Holds at waypoints

Partial Panel Approaches (4 hours)
- Partial Panel Approaches
- Partial Panel ILS Approach
- Partial Panel VOR Approach
- Partial Panel RNAV Approach
- Partial Panel Missed Approaches

Instrument Cross Country Dual (7 hours)
- Instrument cross country
- VOR approach
- Localizer back course approach
- ILS approach

Total hours: 36

Laboratory/Studio Content

Basic Attitude Instrument Flying (10 hours)
- Basic Attitude Instrument Flying

- Climbs
- Descents
- Standard rate turns
- Steep turns
- Straight-and-level

Advanced Attitude Instrument Flying (10 hours)
- Advanced Attitude Instrument Flying
- Slow flight
- Stalls
- Unusual attitude recovery
- Partial panel (pilot-static, vacuum, and electrical failures)

Radio Navigation (20 hours)
- Radio Navigation
- Interception and tracking of VOR (Very high frequency Omnidirectional Range) radials
- RNAV (Area Navigation) course interception and tracking
    - Direct-to navigation
- Distance Measuring Equipment (DME) use DME arcs

VOR (Very high frequency Omnidirectional Range) Approaches (15 hours)
- VOR Approaches
- Circle to land procedures

RNAV (Area Navigation) Approaches (10 hours)
- RNAV approaches
    - Circle to land procedures
    - Vertical guidance procedures
    - Missed approach procedures
    - RNAV Overlay procedures

Localizer Approaches (4 hours)
- Localizer approaches
- Back course

Instrument Landing System (ILS) Approaches (10 hours)
- ILS approaches
- Missed Approach Procedures

Holding Patterns (10 hours)
- Holding patterns
- Holds over VOR
- Holds at intersections
- Holds at waypoints

Partial Panel Approaches (10 hours)
- Partial Panel Approaches
- Partial panel ILS approach
- Partial panel VOR approach
- Partial panel RNAV approach
- Partial Panel Missed Approaches

Instrument Cross Country Dual (9 hours)
- Instrument cross country
- VOR approach
- Localizer back course approach
- ILS approach

Total hours = 108

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

Yes

If yes, who is your departmental library liason?

Adina Lerner (Technology & Aviation, Visual & Performing Arts)

Did you contact the DEIA liaison?

Yes

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value