AT121 : Navigation

General Information

Author:	• Curtis G Potter
Course Code (CB01) :	AT121
Course Title (CB02) :	Navigation
Department:	AT
Proposal Start:	Fall 2024
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) :	CCC000082641
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 121 introduces the student to the aspect of dead-reckoning and pilotage navigation using the aeronautical chart. Composite navigation and vector analysis using the flight computer familiarizes the student with the practical features of navigation.
Justification:	Mandatory Revision
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 is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

• Grade with Pass / No-Pass Option

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)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	54
Total Course Out-of-Class Hours	108
Total Student Learning Hours	162

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	3	6
Laboratory Hours	0	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	54
Laboratory	0
Studio	0
Total	54
Course Out-of-Class Hours	
Lecture	108
Laboratory	0
Studio	0
Total	108

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

AT120 - Private Pilot Ground School

Objectives

- Apply Federal Aviation Regulations to flight.
- Perform tasks of enroute communication procedures.
- Demonstrate knowledge of weather theory.
- Evaluate aviation weather information.
- Develop the skills of navigation, including radio, pilotage, and dead-reckoning.

Entry Standards

Entry Standards

Interpret aeronautical charts symbols.

Evaluate situations that may be encountered in flight.

Perform pre-flight and in-flight calculations on an E6B flight computer.

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Discussion
Methods of Instruction	Multimedia
Methods of Instruction	Demonstrations

Out of Class Assignments

- Students complete 11 or more flight plans as homework assignments with varying difficulty, complexity and scenarios that address some of the most important considerations in local and long distance flights

Methods of Evaluation	Rationale
Exam/Quiz/Test	Midterm exam
Exam/Quiz/Test	Final exam

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
No Value	No Value	No Value	No Value	No Value

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

Description	Anatomy of a Navigation Log
Author	Newman, H. Robert
Citation	No value
Online Resource(s)	No value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Plan flights, both locally and to distant locations using the Aviation Department's Navigation Log.

Calculate aircraft weight and balance before flight, assess whether it is within limits, and correct an overweight or out of balance condition.

Review and interpret FAA flight briefings as they relate to the flight in question, using the information to determine whether the flight may be completed safely.

Obtain, collect and calculate all information required by FAA regulation §91.103.

SLOs

Read and interpret FAA charts, publications and weather briefings necessary for flight planning. 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.
AT Pilot Training - Certificate	demonstrate proficiency in cross country flight planning.
AT Pilot Training - A.S. Degree Major	demonstrate proficiency in cross country flight planning.

Prepare flight plans with navigation log, runway information, radio frequencies and weight & balance. 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.
AT Pilot Training - Certificate	demonstrate proficiency in cross country flight planning.
AT Pilot Training - A.S. Degree Major	demonstrate proficiency in cross country flight planning.

Determine whether the planned flights may be completed safely based upon the information provided. 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.
AT Pilot Training - A.S. Degree Major	demonstrate practical skills required to pass FAA practical testing for the rating sought.
	demonstrate proficiency in cross country flight planning.
AT Pilot Training - Certificate	demonstrate practical skills required to pass FAA practical testing for the rating sought.
	demonstrate proficiency in cross country flight planning.

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Review of Navigation Methods (1 hour)
- Dead reckoning and pilotage
- Radio navigation
- VFR charts

Regulatory Requirements of Flight Planning (1hour)
- Pre-flight actions
- The navigation log

Performance & Wind Calculations (8 hours)
- Atmospheric effects on aircraft performance
- Performance charts and graphs
- Interpolation
- Winds and temperatures aloft charts
- Wind correction angle

Flight Briefings (3 hours)
- Telephone vs. online
- Types of briefings
- Requirements for obtaining weather briefings
- NOTAMS
- TFRs
- Traffic delays
- Navigation websites and apps

Weight & Balance (4 hours)
- General techniques
- Type-specific techniques
- Weight and CG limits
- Effects of loading on aircraft handling

Use of the E6B Flight Computer (5 hours)
- Mechanical vs. electronic
- Functions
- Accuracy

Airspace (3 hours)
- Classes of airspace
- Special Use Airspace
- Special VFR operations
- Communication requirements
- Weather minimums

LAX Transition Routes (2 hours)

Flight in the San Diego Area (2 hours)

Flight in the San Francisco Bay Area (2 hours)

Night Flight (2 hours)

Aviation Security (2 hours)
- Airport security awareness
- Aircraft theft prevention

Density Altitude (2 hours)
- Calculating density altitude
- Effects on performance
- Adjustments to flight operations

Over Water Operations (Flights to Catalina) (2 hours)

Flights to Destinations Further Than the Fuel Tanks Will Allow (2 hours)

Selection and Use of Visual Checkpoints (4 hours)
- FAA requirements
- Spacing
- Designated VFR reporting points
- Inappropriate visual checkpoints
- Checkpoints at night and VFR over-the-top

Use of Radio Navigation Methods (3 hours)
- VOR and VORTAC
- GPS
- Lost procedures
- Future radio navigation

Personal Minimums (3 hours)

Risk Management (3 hours)
- The go/no-go decision
- Diversion
- In-flight emergencies

Total hours: 54

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?

No

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