**AT-24900 Instrument Flight Lectures**

**Spring 2018, 1:30 – 2:45 TR, NISW 157**

Instructors: Michael Gref Lucero Duran Trinidad

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Office Hours: By Appointment By Appointment

**Course Description (3 credit hours):**

A study of the operation of flight instruments and navigation aids, Federal Aviation Regulations pertinent to instrument flight, meteorology, instrument charts, instrument flight planning, and air traffic control procedures. Preparation for the FAA Instrument Rating written examination.

**Prerequisite:** AT-144 or Private Pilot Certificate

**Required Texts and Materials:**

1. Instrument Flying Handbook
2. Instrument Procedures Handbook
3. Aviation Weather
4. Aviation Weather Services
5. FAR-AIM
6. Jeppesen Subscription – Low Enroute and Approach Charts
7. Instrument Pilot FAA Knowledge Test, Gleim (Optional)
8. Sheppard Air Instrument Knowledge Test Prep (Optional)
9. Enroute and Approach packet, Purdue Aviation (Optional)

**Course Goal:**

Instrument Flight Lectures is intended to present the aeronautical knowledge needed to operate an airplane safely and efficiently as an instrument rated pilot in instrument meteorological conditions.

**Learning Objectives:**

1. Demonstrate competency in aircraft flight instruments and navigation systems.
2. Demonstrate competency in the Federal Aviation Regulations for instrument flight.
3. Demonstrate competency in using instrument enroute charts, approach charts, SIDS and STARS.
4. Demonstrate knowledge in conducting instrument approaches.
5. Demonstrate knowledge of holding pattern procedures.
6. Demonstrate competency in IFR flight planning.
7. Demonstrate knowledge in aviation weather and aviation weather services.

**Topics:**

1. Flight Instruments
2. Attitude Instrument Flying
3. Navigation Systems
4. Federal Aviation Regulations
5. Airport Lighting and Markings
6. Aeromedical Factors
7. Holding Pattern Procedures
8. Instrument Approach Procedures
9. Instrument Departure, Enroute, Arrival
10. Instrument (IFR) Charts
11. Aviation Weather and Weather Services
12. IFR Flight Planning

**Course Requirements:**

The course will be conducted in an informal lecture/discussion format. The course will consist of two online exams given through Blackboard. Each exam will be timed to last 1.5hrs from the time students starts the exam. The student will have five days to complete the exam. Weekly in class quizzes will be done as well to cover material from the readings.

In order to take the FAA Instrument Knowledge Test, a final exam will be done in class. A score of 70% or higher will be necessary to receive the endorsement to take the FAA exam. If a score less than 70% is received, it is the student’s responsibility to schedule a retake with the course instructor(s).

All students in the course must take the FAA Instrument Rating Knowledge Test. The test will count as the final exam and will be equally included in calculating the student’s final grade. Only the first test results will be accepted for the course. If a student does not pass the FAA Instrument Rating Knowledge test on the first attempt, the student will not receive a grade higher than a “C” for the course. A copy of the FAA test results must be submitted to the instructor of the course by 5:30 p.m. Friday of finals week.

A passing grade on the FAA test is required to receive a grade in the course. An Incomplete will be given until the passing grade is received. The FAA Knowledge Test can be taken at any FAA Knowledge Testing site. Purdue Aviation at the Purdue University Airport is the closest location. A testing fee is assessed at the time of the test.

*Breakdown of Grade:*

Weekly Quizzes 5% of Total Grade

Exam I 30% of Total Grade

Exam II 30% of Total Grade

Final Exam Needed for Endorsement

FAA IRA Test 35% of Total Grade

**Grading:**

92% - 100% A

84% - 91% B

76% - 83% C

70% - 75% D

Below 70% F

**Relationship to Program Outcomes:**

This course provides learning experiences to the following AABI General Outcomes: b. analyze and interpret data; h. use the techniques, skills, and modern technology necessary for professional practice; i. assess the national and international aviation environment; j. apply pertinent knowledge in identifying and solving problems.

**Class/Laboratory Schedule:**

There are two one-hour and fifteen minute classroom sessions per week.

**General Course Policies:**

Personal electronic devices will only be allowed to be used in class if they are for classroom activities. These include, but are not limited to: note taking, group work, reading textbooks/assignments, etc. Ensure that your devices’ volume is turned off as to not disrupt the class and those around you.

Food and drink are allowed in class as long as you are able to clean up the area around you and place all your trash in bins. Additionally, ensure that eating and/or drinking will not be disrupting the class.

**Academic Dishonesty:**

Students should be familiar with rules and specific guidelines addressed in student handbooks and University Regulations, Part 5, Sec. III.

*Purdue prohibits “dishonesty in connection with any University activity. Cheating, plagiarism or knowingly furnishing false information to the University are examples of dishonesty.” [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that “the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest.” [University Senate Document 72-18, December 15, 1972]*

**Attendance:**

Attendance is required at **ALL** regularly scheduled class sessions. A student who accumulates more than three unexcused absences will receive an unsatisfactory grade in the course.

**Missed or Late Work:**

If a student misses a class session, the student must submit a two page double spaced paper on the topic that was covered in the missed session. The paper must be submitted via email to the instructor(s) by 5:30pm Friday of the week the session was missed.

No late work will be accepted in this course.

**Students with Disabilities:**

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with the instructors of the course within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (<http://www.purdue.edu/drc>) of an impairment/condition that may require accommodations and/or classroom modifications.

**Emergencies:**

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

**Safety:**

Safety is a top priority of the School of Aviation and Transportation Technology. In order to comply with the University safety policy, and to be proactive in all flight, laboratory, classroom and airport operations, an Aviation Technology safety manual is being developed. This will include an active Safety Committee and an on-line hazard reporting system. During the interim, any observed safety hazards or concerns should be reported to the AT Safety committee via email to: [atsec@purdue.edu](mailto:atsec@purdue.edu) or submitted in one the safety comment boxes.

**Nondiscrimination:**

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in [Executive Memorandum No. D-1](http://www.purdue.edu/policies/pages/human_resources/d_1.html), which provides specific contractual rights and remedies*.*

**Course Outline:**

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| **Date** | **Topic** | **Reading Assignment** |
| Jan 9 | Introduction |  |
| Jan 11, 16 | Flight Instruments | Instrument Flying Handbook: Chapter 5  AIM: Chapter 7 Section 2 |
| Jan 18 | Maintenance Record/Requirements | FARs: Part 91 |
| Jan 23, 25 | Attitude Instrument Flying | Instrument Flying Handbook:  Chapters 4, 6, 7 |
| Jan 30, Feb 1 | Navigation Systems | Instrument Flying Handbook: Chapter 9  AIM: Chapter 1  Instrument Procedures Handbook:  Chapter 2 Pages 29-35 |
| Feb 6, 8 | Federal Aviation Regulations | FARs: Part 91 |
| Feb 13, 15 | Airport Marking/Lighting  Air Traffic Control  Airspace | Instrument Flying Handbook: Chapter 2  AIM: Chapters 2, 3, 4, 5 Section 3, Chapter 6 Section 4  Instrument Procedures Handbook:  Chapter 2 Pages 1-7 and 46-48 |
| Feb 20, 22 | Aeromedical Factors | Instrument Flying Handbook: Chapter 3  AIM: Chapter 8 |
| Feb 22 to 27 | Exam 1 – On Blackboard |  |
| Feb 27, March 1 | Holding Patterns | Instrument Flying Handbook:  Chapter 10 Pages 10-13  AIM: Chapter 5 Section 3.8  Instrument Procedures Handbook:  Chapter 2 Pages 51-52 |
| March 6, 8 | Instrument Approach Procedures | Instrument Flying Handbook:  Chapters 1, 10 Pages 13-22  Instrument Procedures Handbook: Chapter 4  AIM: Chapter 5 |
| March 20, 22 | Instrument Procedures – Preflight, Departure, Enroute, Arrival | Instrument Flying Handbook: Chapter 10  Instrument Procedures Handbook: Chapters 1 Pages 16-44, Chapter 2 Pages 7-51, and Chapter 3  AIM: Chapter 5 |
| March 27, 29 | Aviation Weather | Aviation Weather  AIM: Chapter 7 Section 3 |
| April 3, 5 | Aviation Weather Services | Aviation Weather Services  AIM: Chapter 7 Section 1 |
| April 10, 12 | IFR Flight Planning | Instrument Flying Handbook:  Chapters 10 Page 26-33 |
| April 12 to 17 | Exam 2 – On Blackboard |  |
| April 17 | Review Session |  |
| April 19 | Exam 3 – In Class for Endorsement |  |
| May 4 | FAA IRA Written Exam Due by 5:30pm |  |

This syllabus is subject to change.