# COURSE OUTLINE: AVT369 - IFR NAVIGATION

Prepared: Andrea Collins
Approved: Greg Farish, Chair, Aviation Technology - Flight

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| **Course Code: Title** | AVT369: NAVIGATION AND INSTRUMENT PROCEDURES |
| **Program Number: Name** | 4061: AVIATION TECHNOLOGY |
| **Department:** | AVIATION TECHNOLOGY |
| **Academic Year:** | 2023-2024 |
| **Course Description:** | AVT369 prepares the student for advanced IFR operations associated with the required Transport Canada knowledge to hold an Instrument Rating. This course covers air traffic services, IFR flight procedures, automation and technology, international procedures and physiological factors related to instrument flight. AVT369 incorporates base knowledge acquired in previous courses such as aircraft systems, air law, navigation and meteorology allowing the student to apply methodology to in-class planning of IFR navigational exercises. Upon course completion the student will be prepared to take on the written Transport Canada Instrument Rating (INRAT) examination. |
| **Total Credits:** | 3 |
| **Hours/Week:** | 3 |
| **Total Hours:** | 45 |
| **Prerequisites:** | AVT258, AVT366 |
| **Corequisites:** | There are no co-requisites for this course. |
| **This course is a pre-requisite for:** | AVT370, AVT371, AVT377 |
| **Vocational Learning Outcomes (VLO's) addressed in this course:**<br>**Please refer to program web page for a complete listing of program outcomes where applicable.** | **4061 - AVIATION TECHNOLOGY**<br>VLO 1 Aviation Technology - Flight |
| **Essential Employability Skills (EES) addressed in this course:** | EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.<br>EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.<br>EES 3 Execute mathematical operations accurately.<br>EES 4 Apply a systematic approach to solve problems.<br>EES 5 Use a variety of thinking skills to anticipate and solve problems.<br>EES 6 Locate, select, organize, and document information using appropriate technology and information systems.<br>EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. |

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| | EES 10 Manage the use of time and other resources to complete projects.<br>EES 11 Take responsibility for ones own actions, decisions, and consequences. |
| **Course Evaluation:** | Passing Grade: 70%, B<br><br>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation. |
| **Other Course Evaluation & Assessment Requirements:** | Students enrolled in this course are not permitted to write the Transport Canada INRAT without having first passed the qualification exam.<br><br>Unexcused absences will result in 2% deduction of the final mark for each occurrence, arriving for class late will result in a 1% deduction of the final mark for each occurrence, and violations of the dress code will result in a 1% deduction of the final mark for each occurrence. Refer to the SOP GEN 1.3 for dress code policies and SOP GEN 1.6.7 for policy regarding absence from classes<br>Quizzes will be given without prior notice.<br>Students may request a deferment of a test or exam or exam for compassionate reasons. Compassionate grounds for deferment will include but not be limited to death of an immediate family member, personal illness, or recent diagnosis of a serious illness of a family member. Make-ups will not be permitted after the fact for compassionate reasons.<br>A classroom code of conduct can be found in the SOP General section, and will be adhered to.<br>Attendance is mandatory for all Aviation classes unless approval is granted. In the case of illness, a phone call, voice mail or e-mail message is expected.<br>If a student expects to be late or will be delayed for any reason, every attempt should be made to contact the professor, or leave a message on voice mail or e-mail.<br>Although attitude, co-operation, etc., are not graded, students may be terminated based on their performance in this area (see section VI). These attributes are also considered in the selection of the Air Canada Award and other scholarships.<br>Dates of tests will be announced at least 1 week in advance. |
| **Books and Required Resources:** | Instrument Procedures Manual by David Holland<br>Publisher: Aviation Publishers Co. Limited Edition: 5th Edition<br>ISBN: 978-0-9730036-9-7<br><br>Aeronautical Information Manual<br>Downloadable from Transport Canada`s web site<br><br>Enroute Low Altitude - LO 3 & 4<br>Available by subscription from Nav Canada or electronic format from other suppliers - see Nav Canada website for list of providers<br><br>Canada Air Pilot - CAP 4<br>Available by subscription from Nav Canada or electronic format from other suppliers - see Nav Canada website for list of providers<br><br>Terminal Area Charts<br>Available by subscription from Nav Canada or electronic format from other suppliers - see Nav Canada website for list of providers<br><br>Canada Flight Supplement<br>Available by subscription from Nav Canada or electronic format from other suppliers - see Nav Canada website for list of providers |

**Course Outcomes and Learning Objectives:**

| Course Outcome 1 | Learning Objectives for Course Outcome 1 |
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| 1. Plan a navigation trip using instrument flight rules. | 1.1 Obtain and interpret weather, NOTAMS and PIREPS which are required for the trip<br>1.2 Apply the weather information to ensure you meet or exceed the minimums as set in the regulations.<br>1.3 Have a clear understanding of the rules and their application for each phase of the trip.<br>1.4 Utilization of all publications required for the trip. This includes the Canada Air Pilot (CAP), Low Enroute Charts (LO), Canada Flight Supplement (CFS) and the Aeronautical Information Publication (AIP). |
| **Course Outcome 2** | **Learning Objectives for Course Outcome 2** |
| 2. Depart, navigate enroute, hold, approach and execute a missed approach all using instrument flight rules. | 2.1 Departure procedures including taxi, clearances and take off criteria<br>2.2 Enroute procedures including position reports, IFR altitudes, climbs , descents and clearance limits<br>2.3 Holding procedures including types of holds, entry procedures, timing, shuttle holds and speed limitations.<br>2.4 Arrival procedures including descent, standard arrivals, profile descents, control transfers, types of approaches, approach clearance and approach.<br>2.5 Missed approach procedures including missed approach point or decision height, holds, clearances and alternate airports |
| **Course Outcome 3** | **Learning Objectives for Course Outcome 3** |
| 3. Respond to or anticipate physiological factors which may affect flight safety in instrument conditions. | 3.1 Effects of altitude, symptoms and prevention of hypoxia, hyperventilation and the treatment of hypoxia and hyperventilation<br>3.2 Visual and vestibular illusions, when they occur and how to avoid them<br>3.3 Effect of drugs and alcohol on flight performance.<br>3.4 The need for proper rest and the effects of fatigue and stress on a pilot`s performance |
| **Course Outcome 4** | **Learning Objectives for Course Outcome 4** |
| 4. Understand the use of automation and technology essential to IFR flight. | 4.1 Identify techniques that all pilots can practice for optimum use of automation and technology<br>4.2 Understand the different levels of automation and its many forms<br>4.3 Recognize the proper use of automation in the cockpit<br>4.4 Appreciate the various equipment systems such as GPS, TCAS, GPWS, TAWS, EFIS and Weather Radar |
| **Course Outcome 5** | **Learning Objectives for Course Outcome 5** |
| 5. Familiarization of international procedures and specific differences in flying IFR in the USA. | 5.1 Flight planning and filing of a master flight plan<br>5.2 Navigation procedures as they apply to oceanic flights<br>5.3 The use of radios, clearances, and position reporting while trans border flying |

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| | 5.4 Understanding the difference between Canadian and US IFR procedures |

**Evaluation Process and Grading System:**

| Evaluation Type | Evaluation Weight |
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| Final Exam | 45% |
| IFR Flight Planning Trip | 5% |
| Midterm Exam | 30% |
| Participation | 5% |
| Quizzes | 15% |

**Date:** June 2, 2023

**Addendum:** Please refer to the course outline addendum on the Learning Management System for further information.