

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: Human Factors in Flight

CODE NO. : AVT248-2 **SEMESTER:** Four

PROGRAM: Aviation Technology (Flight)

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DATE: May/12 **PREVIOUS OUTLINE DATED:** June/11

APPROVED:

_____	Steven Hause	.	<u>2012 05 15</u>
CHAIR			DATE

TOTAL CREDITS: 2

PREREQUISITE(S): AVT119-2, AFT120

HOURS/WEEK: 2

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I. COURSE DESCRIPTION:

This course continues to build your awareness and knowledge of you and your working environment. Its focus is the link between this dynamic environment and your ability to make decisions. You will investigate accidents to show the connection between illusions and decisions. You will learn of the many design and documentation pitfalls which have trapped others. You will explore the decision making process used to solve problems and manage risk. Using Reason's Model and Dekker's New View, you will examine the role of pilot error in the chain of events leading to an incident or an accident.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course the student will demonstrate the ability to:

1. Describe and explain the components required to demonstrate good airmanship.

Potential Elements of the Performance:

- Definitions, models and levels of airmanship
- Qualities of effective airmanship
- Identify good flying practises
- How to apply good flying practises

2. Describe the man-environment interfaces of the SHEL conceptual model.

Potential Elements of the Performance:

- The purpose of the model
- The meaning and components of each letter of the SHEL model
- Characteristics of liveware
- Why man is at the centre
- Consequences of mismatches

3. Explain the challenges in dealing with pilot error.

Potential Elements of the Performance:

- Nature of error
- Sources of error
- Classification of error
- Meeting the challenges of error
- The new view of pilot error

4. Apply the concepts of Reason's Model when evaluating why an incident or an accident occurred.

Potential Elements of the Performance:

- The purpose of his model
- What's included in each layer of the model
- Latent and active failures
- Reason's rationale for his model

5. Appreciate the limitations of the "See and Avoid" principle.

Potential Elements of the Performance:

- The role of See and Avoid, its importance and its reliability.
- Its limitation.
- Evasive action.

6. Describe and employ all aspects of the pilot decision making process.

Potential Elements of the Performance:

- How we make decisions
- The role of situational awareness
- Strategies used in solving problems
- Factors affecting judgement
- Managing risk
- The inclusion of other physical, physiological, psychological, organizational and cultural factors
- The role of effective communication

7. Understand what is required to maintain your situational awareness

Potential Elements of the Performance:

- What is situational awareness
- What is required to maintain situational awareness
- Signs of losing situational awareness
- Strategies to maintain situational awareness and how to reverse a negative trend

8. Describe the role of motivation in our ability or desire to perform.

Potential Elements of the Performance:

- The link between motivation and safety
- Definition of motivation
- Theories of motivation
- Influencing motivation at work

9. Explain the meaning, qualities and role of leadership.

Potential Elements of the Performance:

- Role of a leader
- Characteristics and tasks of a leader

10. Understand how the attitude, beliefs and opinions of yourself and others influence decisions.

Potential Elements of the Performance:

- Definition of personality traits, attitudes, beliefs and opinions
- Components of attitudes
- Stereotyping people
- Function of our attitude
- Groups and group behaviour
- Attitude survey and hazardous attitudes

11. Describe the effect design and automation can and has had on our performance.

Potential Elements of the Performance:

- Design errors
- Closed loop systems
- Dealing with an automated cockpit

12. Describe the influence sleep, body rhythms, and fatigue can have on your flight performance.

Potential Elements of the Performance:

- The purpose of sleep, the phases of sleep, factors affecting your sleep and how to sleep better
- Definition of circadian rhythm and jet lag
- Body rhythm peaks and troughs
- The symptoms of jet lag
- Strategies to cope with jet lag
- When fatigue is most likely to affect you
- Types, causes and effects of fatigue
- Dealing with fatigue; is it a problem

13. Explain the effect altitude has on the function of your body and mind.

Potential Elements of the Performance:

- Hypoxia
- Decompression sickness
- Trapped gases

14. Explain how we learn, the process that is involved and examples of training aids and devices.

Potential Elements of the Performance:

- Define education, training and skills
- The cycle of training
- The learning process
- Training aids and training equipment

15. Explain how to manage the human factors involved in instrument flying.

Potential Elements of the Performance:

- Knowledge
- Planning
- Preparation
- Judgement

III. TOPICS:

1. Airmanship
2. The Accident Chain – the SHELL model, Reason’s model and pilot error
3. Pilot Decision Making
4. Other Latent Challenges – the Regulator, the Corporation, Documentation, Design and Automation
5. Sleep, Body Rhythms, Fatigue and the effect of altitude.
6. Motivation and Leadership
7. Training and Training Devices
8. Instrument Flying

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Human Factors for Aviation – Basic Handbook – Transport Canada
2. Human Factors for Aviation – Advanced Handbook – Transport Canada

V. OTHER RESOURCES/TEXTS/MATERIALS:

Your Sault College Library is an excellent resource!

Web Links:

[A.I.M. – aeronautical information manual](#)

<http://www.tc.gc.ca/eng/civilaviation/opssvs/aviationsafety-menu.htm>

<http://www.faa.gov/pilots/safety/pilotsafetybrochures/>

<http://flightsafety.org/>

<http://www.airforce.forces.gc.ca/dfs-dsv/index-eng.asp>

http://www.casa.gov.au/scripts/nc.dll?WCMS:HOMEPAGE::pc=PC_90001

VI. EVALUATION PROCESS/GRADING SYSTEM:

The student will be assessed by a combination of attendance and department, quizzes, classroom assignments, tests and a final exam. Weighting of each will be as follows: 15% for quizzes, 15% for classroom assignments and activities, 20% for all tests prior to the final exam and 50% for the final exam. A minimum mark of 70% is required to pass the course. No re-write or make-up tests will be permitted except for compassionate reasons as described below.

- Unexcused absences may result in 2% deduction of the final mark for each occurrence, arriving for class late may result in a 1% deduction of the final mark for each occurrence, and violations of the dress code may result in a 1% deduction of the final mark for each occurrence. Refer to the SOP GEN 1.3.1.8 for dress code policies and SOP GEN 1.3.1.13 for the policy regarding absence or tardiness.
- Quizzes will be given without prior notice.
- Students may request a deferment of a test 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.
- Dates of tests will be announced at least 1 week in advance.
- A classroom code of conduct can be found in the SOP General section, and will be adhered to.

The following semester grades will be assigned to students in this course:

Grade	Definition	Grade Point <u>Equivalent</u>
A+	90 -100%	4.00
A	80 - 89%	3.00
B	70 - 79%	3.00
F (Fail)	below 70%	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in non-graded subject area or flight training.	
U	Unsatisfactory achievement in non-graded subject area or flight training.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VII. SPECIAL NOTES:

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session. *Refer to section VI Evaluation Process/Grading System of this course outline for further details on specific attendance requirements for this course.*

VIII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.