

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
SAULT STE. MARIE, ONTARIO**



Sault College

COURSE OUTLINE

COURSE TITLE: Personal Growth and Human Factors
CODE NO. : HDG 1120 **SEMESTER:** one
PROGRAM: Aviation Technology (Flight)
AUTHOR: Brian Stewart
DATE: August 2002 **PREVIOUS OUTLINE** August 2000

DATED:

APPROVED:

DEAN

DATE

TOTAL

CREDITS: 3

HOUR/WEEK: 3

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School of School of Technology, Engineering and Technical Trades

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I. COURSE DESCRIPTION:

Personal growth and development is divided into two parts. The first part will help you adapt to life at Sault College, specifically as an aviation student. Students in the aviation technology program are typically very motivated, however for many this is the first time away from home and do not realize the many new responsibilities that are part of the program and life away from home. The second part deals with human physiology and how it fits into aviation. How the human adapts to an environment of less oxygen and pressure are critical to a long career as a pilot.

The semester begins with a brief overview of the aviation industry, the expectations and the demands as an aviation professional. You will learn about the college services that are available and meet the people that provide them. You will assess where you are now, do a time plan, learn techniques to improve your memory, learn some tips on note taking and test writing. You will learn how your life style affects your career as a pilot and countermeasures to improve both the quality and length of your profession. The second half of the semester deals with basic flight physiology. Why human factors are so important, the human anatomy, hearing, vision, altitude physiology, the atmosphere, sleep and circadian rhythms, stress, situational awareness and orientation, acceleration, motion sickness, a health maintenance program and Canadian medical standards.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1) Evaluate and develop his/her personal learning skills

Potential Elements of the Performance:

- self assessment using the discovery wheel
- do a time monitor/time plan
- practical knowledge of techniques to improve your memory, note taking and test writing

2) Evaluate and develop his/her personal life skills

Potential Elements of the Performance:

- tips to maintain your personal and aviation health
- money management

3) Define human factors and it's importance to aviation

Potential Elements of the Performance:

- define human factors and flight physiology
- role in aviation
- the components of human factors described by the "SHEL" model.

4) Describe the basic function of the human body

Potential Elements of the Performance:

- The nervous system
- The body's framework
- The digestive system
- The metabolic system

- The circulatory system
- 5) Describe the atmosphere
Potential Elements of the Performance:
- Composition and characteristics of the atmosphere
 - Atmospheric effect on gases
 - Physiological divisions of the atmosphere
- 6) 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
 - Prevention
- 7) Explain the effect of the atmosphere on the body's functions
Potential Elements of the Performance:
- Respiration
 - Hypoxia, types, stages, symptoms, factors affecting your susceptibility, prevention and treatment
 - Carbon monoxide poisoning
 - Decompression
 - Trapped gases
 - Evolved gases
- 8) Explain the role of hearing and the vestibular apparatus and the effect of vibrations
Potential Elements of the Performance:
- Anatomy of the ear
 - Sound, hearing and hearing loss
 - The effect of vibration on the body
 - The relationship of the inner ear and orientation
 - Types and causes of disorientation
 - Vestibular illusions
- 9) Explain how the eye works and its role in orientation
Potential Elements of the Performance:
- Anatomy of the eye
 - Night vision
 - Factors affecting visual acuity
 - Scanning for objects
 - Visual illusions and their affect on orientation
 - Vision and motion sickness
 - Eye protection

10) Realize the significance of the role your health plays on the safety of the flight

Potential Elements of the Performance:

- Dangers of self diagnosis
- Over the counter medications
- Caffeine and it's effects
- Smoking, alcohol and drugs

11) Realize the significance of environmental stresses and their effect on performance and flight safety

Potential Elements of the Performance:

- Temperature control, coping with the extremes
- Dehydration and air quality
- Importance of stress
- Types of stress
- Strategies to reduce, prevent or control stress

12) To deal with fatigue, understand the importance of rest and the effects of jet lag for long range flights

Potential Elements of the Performance:

- Sleep
- Circadian rhythms and jet lag
- Fatigue, symptoms and coping

13) Cope with accelerations and motion sickness in flight

Potential Elements of the Performance:

- Situations in civilian flying
- Tolerance to "G" forces
- Causes of motion sickness and some suggestions to reduce your susceptibility

14) Plan your personal health maintenance program

Potential Elements of the Performance:

- Nutrition and diet
- Hypoglycemia
- The importance of exercise
- Canadian medical standards

III. TOPICS:

- 1) Aviation - the industry - pilots - expectations - becoming an aviation professional
- 2) College Services - peer tutoring, learning resource centre, counseling, learning assistance centre, SAC, athletics, financial aid and health facilities.
- 3) Learning Skills - self assessment, time management, memory techniques, test tips
- 4) Life Skills - personal health, money management
- 5) Introduction to human factors
- 6) Basic human anatomy

- 7) Atmosphere
- 8) Situational awareness
- 9) Altitude physiology
- 10) Hearing and vibrations
- 11) Vision
- 12) Orientation
- 13) Stress - medical stress and environmental stress
- 14) Sleep
- 15) Acceleration and motion sickness
- 16) Health maintenance program
- 17) Canadian medical standards

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- 1) Becoming a Master Student - Ellis
- 2) Basic Flight Physiology - Reinhart

V. OTHER RESOURCES/TEXTS/MATERIALS:

- 1) From the Ground Up
- 2) A.I.P. - aeronautical information publication
- 3) Human Factors for Flight – Frank H Hawkins (Second Edition)
Ashgate ISBN # 1-85742-135-3
- 4) Human Factors for General Aviation – Stanley Trollip & Richard Jensen
Jeppesen Sanderson ISBN # 0-88487-138-X
- 5) Aviation Safety Programs
Jeppesen Sanderson ISBN # 0-88487-236-X
- 6) Human Factors in Aviation
Earl L Wiener, David C Nagel
- 7) Pilot Judgement and Crew Resource Management
Richard S Jensen
- 8) Human Factors in Multi Crew Operations
Harry W Or lady
- 9) Flight Safety – A Primer for General Aviation Pilots
Alexander T Wells
- 10) Human Factors for Aviation - Basic Handbook - Transport Canada
- 11) Pilot – Mental and Physical Performance
David C Edwards
- 12) Beyond Aviation Safety Human Factors
Daniel E Maurino, James Reason, Neil Johnston, Rob B Lee
- 13) Flightdeck Performance
Stanley Roscoe

Internet Access

<http://www.psy.utexas.edu/psy/helmreich/nasaut.htm>
<http://www.hf.faa.gov/>

<http://www.crm-devel.org/resources/human.htm>

http://flightsafety.org/human_factors.html

<http://www.tc.gc.ca/aviation/general/human/litrev/hfft1e.htm>

VI. EVALUATION PROCESS/GRADING SYSTEM

The student will be assessed by a combination of attendance and deportment, quizzes, tests and a final exam. Weighting of each will be as follows: 10% for attendance and deportment, 10% for quizzes, 40 % for all tests prior to the final exam and 40% for the final exam. A minimum mark of 60% is required to pass the course. Re-writes are not permitted except in accordance with section VI of this outline.

- When attendance is taken, the attendance mark will be awarded as follows: unexcused absences will result in 2% deduction, arriving for class late will result in a 1% deduction, and violations of the dress code will result in a 1% deduction up to a maximum of the attendance grade. In the event of illness, a telephone call must be made prior to the beginning of the class (a voice mail message is acceptable). Examples of dress code violations will include, but not limited to, not shaving, not wearing a tie, etc.
- Quizzes may be given without prior notice.
- If it is necessary to re-write the final exam in order to pass the course, the highest grade achievable will be a "C". (See re-write policy in section VI)
- 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. **Rewrites will not be permitted after the fact for compassionate reasons.**
- **"R" grades in any subject at the end of a semester will result in termination from the Aviation program. Re-writes in aviation subjects are not permitted except as provided in the re-write policy below.**
- Attendance is mandatory for all Aviation classes unless approval is granted in advance. In the case of illness, a phone call , voice mail or e-mail message is expected.
- 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.
- 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.
- Dates of tests will be announced at least 1 week in advance.

- The following semester grades will be assigned to students in post secondary courses:

Grade	Definition	Grade Point Equivalent
A+	90-100%	4.0
A	80-89%	3.75
B	70-79%	3.0
C	60-69%	2.0
R	Below 60%	0.0
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see <i>Policies & Procedures Manual – Deferred Grades and Make-up</i>).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.	

- 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. **Rewrites will not be permitted after the fact for compassionate reasons.**
- "R" grades in any subject at the end of a semester will result in termination from the program. Re-writes in aviation subjects are not permitted except as provided in the re-write policy below.
- Attendance is mandatory for all Aviation classes unless approval is granted in advance.
- Although attitude, co-operation, etc., are not graded, students may be terminated based on their performance in this area. These attributes are also considered in the selection of the Air Canada Award and other scholarships.
- Dates of tests will be announced at least 1 week in advance.

RE-WRITE POLICY

- No re-writes on term tests.

- In the event of a failure the final exam of HDG 112 may be re-written provided the semester average is 60% or greater and the failed final exam is within 5% of a pass. (i.e. 55% or above). The re-written final exam will be averaged with the failed final exam to determine the resulting mark which must be 60% or above to pass.

VII. SPECIAL NOTES:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other post secondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

VIII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

IX. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.