SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE:	USING AERIAL PHOTOGRAPHS		
CODE NO. :	NRT132	**SEMESTER:**	3 - F&W 2 -Others
PROGRAM:	FOREST CONSERV., FISH & WILDLIFE CONSERV., FOREST MEASUREMENT SKILLS, ECOSYSTEMS SURVEYS-FIELD SKILLS, FOREST MEASUREMENT SKILLS		
AUTHOR:	ERWIN GOERTZ		
DATE:	Dec. 2008	**PREVIOUS OUTLINE DATED:**	May '08
APPROVED:	"B. Punch"		
	_____ **CHAIR**		_____ **DATE**
TOTAL CREDITS:	4		
PREREQUISITE(S):	None		
LENGTH OF COURSE:	2 hrs/week	**TOTAL CREDIT HOURS:**	32

Course Name Code No.

I. COURSE DESCRIPTION:

The aim of this course is to provide the student with basic knowledge and skills in the principles and techniques of vertical aerial photograph photogrammetry, distance, direction, area and photograph scale calculations and interpretation (general cultural features and trees species identification) as it relates to natural resource applications.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. **Use the knowledge of the geometry of a vertical aerial photograph and account for topographic displacement when determining distances and directions on aerial photographs.**

   Potential Elements of the Performance:
   - identify different types of aerial photographs
   - give precise definitions for camera focal length and angle of coverage
   - identify on an aerial photograph the fiducial marks, coordinate axes, and the three photo-centers on a slightly tilted aerial photograph
   - list the various types of distortion and displacement that radiate from each photo center
   - identify the different components of the equation for topographic displacement and be able to solve problems based on the equation

2. **Accurately determine the scale of a single standard OMNR (Ontario Ministry of Natural Resources) aerial photograph in order to make distance and area measurements.**

   Potential Elements of the Performance:
   - define photographic scale and list the three common methods of expressing scale
   - identify two reasons why photo scale varies between photographs as well as within a single photograph
   - list and use the two equations used to calculate photo scale

- use the correct equation to accurately determine the scale of a single OMNR aerial photograph

- use a metric scale to calculate the distance between two points on an aerial photograph
- use a dot grid and planimeter to calculate the size of an area on an aerial photograph and make additional calculations based on this size
- identify the camera focal length and the approximate aircraft flying height above mean sea level (amsl) for standard OMNR aerial photography

3. **Accurately determine directions, distance and area on standard OMNR aerial photographs**.

Potential Elements of the Performance:

- know how to use a navigational protractor
- be able to establish a known direction (baseline) on an aerial photograph both indoors and outdoors
- minimize the effects of topographic displacement on plot locations and thereby accurately determining the direction of a line
- be able to traverse outdoors from one point on an aerial photograph to another point.
- be able to accurately measure distances on aerial photographs
- be able to accurately measure areas using a dot grid and area/dot relationships

4. **Be able to delineate and identify forest stands/cover types.**

Potential Elements of the Performance:

- understand the basic principles of aerial photo interpretation
- identify the important characteristics used to recognize individual tree species and cover types
- use deductive reasoning in order to identify tree species and cover types
- identify the categories of non-forested land, non-productive forest land and productive forest land on an aerial photograph
- delineate individual forest stands/cover types on OMNR aerial photographs
- identify the forest tree species/cover type present within a delineated stand

5. **Be able to measure tree heights/object heights on aerial photographs.**

   Potential Elements of the Performance:
   - be able to use the topographic displacement equation to determine heights of trees/objects on aerial photographs
   - be able to use a parallax bar to determine heights of trees/objects on aerial photographs
   - identify the components of a parallax bar
   - identify the limitations of using the topographic displacement equation for height measurement

III. TOPICS:

1. Geometry of a vertical aerial photograph.
2. Scale of a vertical aerial photograph.
3. Distance, direction and area on a vertical aerial photograph.
4. Vertical measurements on a vertical aerial photograph.
5. Tree species identification.
6. Stand typing.

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. “Using Aerial Photographs” course manual
2. Pocket stereoscope
3. Calculator
4. Metric scale (1:500 to 1:2500)
5. Masking tape
6. 1:50 000 NTS topographic map sheet #41 K/9
7. Black china marker or black Stabilo grease pencil
8. Navigational protractor
9. Dot grid

V. EVALUATION PROCESS/GRADING SYSTEM:

Lab assignments will make up 25% of the final grade, with tests comprising the remaining 75%. There will be three (3) tests throughout the semester, each worth 25%. Regular attendance is necessary in that any student missing a lab assignment or test without a legitimate reason or prior notice will receive an "I" (incomplete) on that test or assignment. Students receiving "I" grades (incomplete) for three (3) tests and/or assignments will receive an "F" grade in the course.

Assignments are due on specific dates. Late assignments will be corrected, however, the student forfeits the marks for these late assignments. Under special circumstances, which can be verified, students may be given credit for late assignments.

The following semester grades will be assigned to students:

Grade	**Definition**	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
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.

VI. SPECIAL NOTES:

Disability Services:
If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 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.

Communication:
The College considers ***WebCT/LMS*** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the ***Learning Management System*** communication tool.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*. 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.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.

Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.