University of Lethbridge

Name: _____ ID: _____

Program Planning Guide

Current and past Program Planning Guides are available on the UofL website at www.uleth.ca/ross/ppgs/ppg.html

Calendar Year: 2012/2013

Faculty: Arts & Science

Bachelor of Science

Remote Sensing

About the Multidisciplinary Major in Remote Sensing

The Department of Geography and the Department of Physics and Astronomy offer instruction leading to the Multidisciplinary Major in Remote Sensing. The program is structured to provide a firm theoretical, experimental, and applied background in remote sensing. The Multidisciplinary Major provides a strong basis for further study at the graduate level in related fields, while also providing training in areas of employment opportunity from GIS to astrophysics. Further details on potential career opportunities can be obtained from www.uleth.ca/fas/phy/careers.html and www.uleth.ca/fas/geo/careers.html

Co-operative Education

A Co-op option, requiring three work terms, is available. Students interested in the Co-operative Education/Internship program should contact the Coordinator of Co-operative Education in the Career Resources Centre (AH154 | phone: 403-382-7154) for further information.

High School Courses

Several university-level science courses have high school-level courses as recommended background or prerequisites. Students are advised to complete recommended background courses before registering in the university-level course; students must have successfully completed prerequisites before they may register in the university-level course. Students pursuing a Remote Sensing major should note the following recommended/required high school courses.

UofL Science course		*High School course*
Computer Science	1620	Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30*
	1820	Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30*
Mathematics	1410	Mathematics 30-1 or Pure Mathematics 30*
	1560	Mathematics 30-1 or Pure Mathematics 30* *Recommended: Mathematics 31 and a blended grade of at least 75% in Mathematics 30-1 or Pure Mathematics 30**
Physics	1000	Physics 30, and Mathematics 30-1 or Pure Mathematics 30* *Corequisite: Mathematics 1560*
	1050	Mathematics 30-1 or Pure Mathematics 30* *Recommended: One course in the physical sciences at the 20 level or above*
Statistics	1770	Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30*

** Instead of Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30, students may use UofL's Mathematics 0500.*

Program Requirements

The B.Sc. degree with a multidisciplinary major in Remote Sensing requires 40 semester courses, including 21 courses in the major.

Transfer Credit

Remember that you may use both University of Lethbridge credit and credit transferred from another college or university to meet degree and major requirements. Transfer credit may be either specified or unspecified. Specified credit is indicated on your transcript by the subject name and the specific number of the course, e.g., Geography 1000, Physics 2000. Unspecified credit (1XXX, 2XXX, etc.) is indicated by the subject name and level of the course in parentheses, e.g., Geography (1000 level), Physics (2000 level), etc.

Unspecified Course Credit

Unspecified course credit means that the University of Lethbridge does not offer the same course you transferred in, but we recognize it and treat it as a regular course. An unspecified course would count as one of your maximum of 20 from one department, but it could not meet a specific course requirement. For example, if Geography 2030 is required in your program, you could not use Geography (2000 level) to fulfill that requirement. Students with unspecified transfer credit need to consult an Academic Advisor to establish how the transfer credit fits in the degree program. This should be done as soon as possible after transfer credit is awarded.

Program Worksheet

Name: _____ **ID:** _____

Seven required Physics courses:

_____ 1. ONE of:

- _____ Physics 1000 - Introduction to Physics I
- _____ Physics 1050 - Introduction to Biophysics
- _____ Engineering 2060 - Engineering Mechanics

_____ 2. Physics 2000 - Introduction to Physics II

_____ 3. Physics 2120 - Introduction to Physics III

_____ 4. Physics 2130 - Waves, Optics and Sound

_____ 5. Physics 2925 - Introduction to Experimental Physics

_____ 6. Physics 3650 - Optics

_____ 7. Physics 4650 - Physics of Remote Sensing

Eight required Geography courses:

_____ 8. Geography 1000 - Introduction to Physical Geography

_____ 9. Geography 2030 - Geomorphology

_____ 10. Geography 2300 - Weather and Climate

_____ 11. Geography 2700 - Geographical Data and Analysis

_____ 12. Geography 2735 - Introduction to Geographical Information Science

_____ 13. Geography 3720 - Remote Sensing

_____ 14. Geography 4725 - Advanced Remote Sensing

_____ 15. ONE of:

- _____ Geography 4710 - Remote Sensing Field Techniques
- _____ Geography 4751 - Seminar in Spatial Modelling
- _____ Geography 4753 - Seminar in Remote Sensing

Other required courses:

_____ 16. Computer Science 1620 - Fundamentals of Programming I

_____ 17. Mathematics 1410 - Elementary Linear Algebra

_____ 18. Mathematics 1560 - Calculus I

_____ 19. Mathematics 2560 - Calculus II

_____ 20. Mathematics 2570 - Calculus III

_____ 21. Mathematics 2580 - Calculus IV

Recommended courses:

_____ Geography 3300 - Microclimatology
_____ Geography 3710 - Field Techniques in the Earth Sciences
_____ Geography 3740 - Geographical Information Systems
_____ * Geography 4700 - Advanced Computer Mapping
_____ Geography 4750 - Glacial Processes, Measurements, and Models
_____ Any of Geography 4710, Geography 4751, and Geography 4753 not selected in the major
_____ Physics 2150 - Quantum Mechanics I
_____ Physics 3175 - Electricity and Magnetism
_____ ** Physics 3800 - Methods of Theoretical Physics
_____ Physics 3840 - Introduction to Computational Physics
_____ Physics 4175 - The Electromagnetic Interaction
_____ Computer Science 2620 - Fundamentals of Programming II
_____ *** Computer Science 3620 - Data Structures and Algorithms
_____ Computer Science 3710 - Computer Graphics
_____ **** Statistics 2780 - Statistical Inference

**Prerequisite required: Geography 3700*
***Prerequisite required: Physics 2800*
****Prerequisite required: Computer Science 1820*
*****Prerequisite required: Statistics 1770*

Sample Sequencing Plan

Shown below is a sample sequence of courses for your degree. If you follow this plan, you should be able to graduate in four years, provided you complete five courses per semester. This is just one example of how you could complete your major and degree requirements; you may find that a different sequence works as well as this one.

Year 1, Fall	***Year 1, Spring***
Geography 1000	Computer Science 1620
Mathematics 1410	Geography 2735
Mathematics 1560	Mathematics 2560
Physics 1000 or Physics 1050	Physics 2000
GLER course	GLER course
Year 2, Fall	***Year 2, Spring***
Geography 2030	Geography 2300
Mathematics 2570	Geography 2700
Physics 2120	Mathematics 2580
GLER course	Physics 2130
GLER course	GLER course
Year 3, Fall	***Year 3, Spring***
Geography 3720	Physics 2925
GLER course	Physics 3650[1]
GLER course	GLER course
Elective 3000/4000 level	Elective 3000/4000 level
Science Elective	Science Elective
Year 4, Fall	***Year 4, Spring***
Geography 4725	One of: Geography 4710[1], 4751[1], or 4753[1]
Physics 4650[1]	Science Elective 3000/4000 level
Science Elective	Elective 3000/4000 level
Elective 3000/4000 level	Elective
Elective	Elective

[1] *Semester of offering may vary.*

Terms Used

GLER course: A course that could count toward the General Liberal Education Requirement. You may use courses in your major towards this 12-course requirement. See the 2012/2013 University of Lethbridge Calendar, Part 4 - Academic Regulations (p. 90) for complete information.

The Faculty of Arts and Science offers Liberal Education 1000 and 2000, specifically designed to introduce first-year students to the wide scope of human knowledge and teach essential university success skills, critical thinking, and integrative thinking (see the 2012/2013 University of Lethbridge Calendar, Part 14 - Courses, p. 327). LBED 1000 and 2000 may be used toward satisfying the GLER.

Elective: A course that you may choose freely from all those available and applicable to your program. Use courses inside or outside your major, bearing in mind any restrictions that may apply (e.g., a maximum of 20 courses from any one department).

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