



# Geographic Information Science Certificate

## PLAR Candidate Guide

Prior Learning Assessment and Recognition (PLAR)

### Copyright

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### Prior learning credit options at Saskatchewan Polytechnic

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See [Get Credit for What you Know](#) for important information about all options to get credit for prior learning at Sask Polytech, including PLAR, transfer credit, Canadian Armed Forces credit, and equivalency credit.

### How to navigate this document

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This document contains links to other document sections or webpages. To return to where you were from another section in this document, press the *ALT* key and *left arrow* key at the same time. To return to this webpage from another webpage, close the other webpage or click back on the browser tab for this document.

### Contents of this guide

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This guide contains the following specific PLAR information and tools for this program

- A. [PLAR fees](#)
- B. [PLAR eligibility and options](#)
- C. [Dates when PLAR assessment is available](#)
- D. [Special directions for this program](#)
- E. [PLAR contact person](#)
- F. [Self-rating course outlines](#)

## A. PLAR fees

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Fees for PLAR challenges are set to cover our costs for consultation, assessment, and related administrative tasks. PLAR fees are non-refundable and non-transferrable.

The PLAR fees policy is subject to change for each new academic year. Please see the **Cost** section on the [PLAR webpage](#) for current fee information.

## B. PLAR eligibility and options

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To be eligible for PLAR for courses in this program, you must first apply for admission and be accepted into the program. You must also consult with the [PLAR contact person](#) and be approved for PLAR assessment.

### Course pre-requisites and co-requisites

Some courses have one or more other courses that must be completed first (pre-requisite) or at the same time (co-requisite). See [course outlines](#) in this guide to identify any pre- or co-requisites for each course. Discuss with your [PLAR contact person](#) how to deal with courses with co-requisites.

### Block assessment

Some programs may assess a cluster of courses together in one block, which may save you time and effort. Ask the [PLAR contact person](#) whether there are any block assessment options in this program.

## C. Dates when PLAR assessment is available

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PLAR assessment for this program is available from Sept 1 to June 15 in each academic year.

**All PLAR assessment must be completed by June 15 of each academic year.**

## D. Special directions for this program

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1. **Review** the [PLAR process and FAQs](#) and the information in this guide.
2. **Self-rate** your learning for each course using the [Course Outlines](#) in this guide.
3. **Consult** with the [PLAR contact person](#) for PLAR approval. Be prepared to provide your resume, course self-ratings (see [section F](#)), and a partially completed [PLAR application](#). If you are approved for PLAR, the contact person will sign your PLAR application and explain next steps.
4. **Apply** for admission to the program. See [directions](#) for applying.
5. **Register** for PLAR at [Registration/Enrolment Services](#) once you have signed approval on your [PLAR Application Form](#). The PLAR fee will be added to your student account.
6. **Finalize** a detailed Assessment Plan with your assigned assessor.
7. **Complete** assessment before your PLAR registration expires.

## E. PLAR contact person

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Contact the person below to arrange a consultation **after** you have read this guide and [general PLAR information](#) and rated yourself for each course (see next session). Consultation may be by phone, online, or in person. Be prepared to provide your resume, course self-ratings, and a partially completed [PLAR application](#). If agreement is reached to go ahead with PLAR, the contact person will sign approval on your PLAR application and explain the next steps. Admission to the program is required before you can register for PLAR.

**Scott Lipsit**, Program Head  
Geographic Information Science  
Saskatchewan Polytechnic, Saskatoon Campus  
Phone: 306 – 765 - 1635  
Email: [lipsit@saskpolytech.ca](mailto:lipsit@saskpolytech.ca)

## F. Self-rating course outlines

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Clicking on a course code below opens a page where you can rate yourself on the knowledge and skills assessed for PLAR credit. For Arts & Sciences courses, clicking on the course code opens another PLAR guide. The [PLAR contact person](#) for this program will refer you to another person to discuss PLAR for courses delivered by Arts & Sciences or another program/department.

COURSE CODE	COURSE NAME	Delivered by another department/program
<b>Semester 1</b>		
<a href="#">COMP 174</a>	Introduction to Microsoft Excel 1	<a href="#">Standardized Computer Course</a>
<a href="#">COMP 175</a>	Introduction to Microsoft Excel 2	<a href="#">Standardized Computer Course</a>
<a href="#">GIS 101</a>	Geographic Information Systems 1	
<a href="#">GIS 102</a>	Introduction to ArcGIS	
<a href="#">GIS 103</a>	Data Input for Geographic Information Systems (GIS)	
<a href="#">GIS 104</a>	Introduction to Python	
<a href="#">GIS 107</a>	Geographic Information System (GIS) Hardware and Hardware Resources	
<a href="#">GIS 363</a>	Basic Statistics and Geostatistics	
<a href="#">GPS 110</a>	Basics of Global Positioning Systems (GPS)	
<a href="#">INDG 100</a>	Introduction to Indigenous Studies	<a href="#">Arts &amp; Sciences</a>
<a href="#">MAPS 101</a>	Introduction to Mapping and Compassing	
<a href="#">Work 126</a>	Work Preparation	

COURSE CODE	COURSE NAME	Delivered by another department/program
<b>Semester 2</b>		
<a href="#">GIS 105</a>	Vector Analysis	
<a href="#">GIS 108</a>	Unmanned Aerial Vehicle (UAV) Data	
<a href="#">GIS 109</a>	Unmanned Aerial Vehicle (UAV) Data Processing	
<a href="#">GIS 302</a>	Introduction to Mobile Geographic Information Systems (GIS)	
<a href="#">GIS 361</a>	Raster Analysis	
<a href="#">GIS 362</a>	Three-Dimensional Analysis	
<a href="#">MAPS 301</a>	Cartography	
<a href="#">MAPS 302</a>	Geographic Information Systems (GIS) and the Internet	
<a href="#">PROJ 117</a>	Applied Research Geographic Information Science	
<a href="#">PROJ 119</a>	Geographic Information Science (GIS) Project Management	
<a href="#">SYST 401</a>	Remote Sensing 1	
<a href="#">SYST 402</a>	Remote Sensing 2	

**COMP 174 – Introduction to Microsoft Excel 1**

You will study the basic features of Excel. You will learn to create workbooks, format spreadsheet elements, manipulate multiple worksheets, create simple charts, and use simple formulas and functions.

**Credit unit(s):** 1.0

**Pre and Co Requisites:** none

**Equivalent course(s):** COAP 117, COAP 138, COAP 197, COAP 344, COMP 120, COMP 174CE

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Create a spreadsheet.			
2. Use basic functions and productivity tools.			
3. Work with multiple worksheets.			
4. Create basic charts.			

**COMP 175 – Introduction to Microsoft Excel 2**

You will study the intermediate features of Excel. Using the skills and knowledge you acquired in COMP 174 (Introduction to Excel 1), you will learn to use more advanced spreadsheet functions, create, and modify several chart types, and perform data manipulation.

**Credit unit(s):** 1.0  
**Pre and Co Requisites:** COMP 172 or COMP 174  
**Equivalent course(s):** COAP 344, COMP 175CE, COMP 284

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Apply advanced formula construction.			
2. Work with charts.			
3. Perform data management.			

## GIS 101 - Geographic Information Systems 1

You will achieve a basic understanding of Geographic Information Systems (GIS) concepts and principles. You will study how to display spatial data, work with tables and create a map layout using GIS software.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** GIS 350, GIS 440

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Describe the nature and uses of Geographic Information Systems (GIS).			
2. Perform basic spatial analysis.			
3. Perform basic spatial analysis using spatial data.			
4. Manage attribute tables.			
5. Manage Global Positioning System data in a Geographic Information System (GIS).			
6. Integrate Geographic Information Systems (GIS) skills in a GIS project.			

**GIS 102 – Introduction to ArcGIS**

You will explore modules and capabilities of ArcGIS software. You will also practice geoprocessing tasks.

**Credit unit(s):** 3.0  
**Pre and Co Requisites:** GIS 101  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Display vector and raster data in ArcGIS.			
2. Query data in ArcGIS.			
3. Edit attribute data in ArcGIS.			
4. Create output products in ArcGIS.			
5. Create a geodatabase.			
6. Perform geoprocessing tasks.			



**GIS 103 – Data Input for Geographic Information System (GIS)**

You will collect data of Geographic Information Systems (GIS). You will use data input techniques and hardware to create new data sets pertaining to georeferencing, error checking and adding attribute data. You will also survey existing GIS data sources. Your studies will focus on working with various data formats using AutoCAD.

**Credit unit(s):** 3.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Establish vectors on a map sheet.			
2. Input XY data into different formats.			
3. Search for various formats using AutoCAD.			
4. Use various platforms to store and manage Geographic Information Systems (GIS) databases.			
5. Locate sources of GIS data.			
6. Georeference image data.			

## GIS 104 – Introduction to Python

You will be introduced to the basics of programming using Python software. Your studies will include creating scripts and programs.

**Credit unit(s):** 3.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Identify the defining characteristics of Python scripting language.			
2. Create Python scripts using integers, numbers, and strings.			
3. Use Python built-in functions.			
4. Create scripts suites.			
5. Use condition and looping structures in programs.			
6. Use ModelBuilder and Data Interoperability extension or Feature Manipulation Engine (FME).			

## GIS 107 - Geographic Information Systems (GIS) Hardware and Hardware Resources

You will gain hands-on experience using various Geographic Information Systems (GIS) hardware, including computers, large format plotters, scanners, and printers. Computer internal parts will be discussed. You will work on hardware pricing and use of various hardware components.

**Credit unit(s):** 1.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Prepare a pricing list of various hardware resources and consumables.			
2. Set up a Geographic Information System (GIS) computer.			
3. Demonstrate the use of a large format plotter.			
4. Create a scanned map image using a large format and georeference the image.			

**GIS 363 – Basic Statistics and Geostatistics**

You will receive an introduction to basic elements of statistics (including the organization and reporting of statistical data, sampling, measures of central tendency, dispersion, and regression). You will use Geostatistics to estimate data values for locations that cannot be sampled directly. You will establish and use models of spatial correlation to interpolate unknown data values.

**Credit unit(s):** 3.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	<b>Competent</b>	<b>Learning</b>	<b>None</b>
1. Compare general statistics.			
2. Compare spatial statistics.			
3. Develop data set for interpolation.			
4. Create interpolated data sets using Kriging, Inverse Distance Weighted (IDW), trend and spline functions.			
5. Produce a report with interpolated data sets mapped against known data.			

**GPS 110 – Basics of Global Positioning Systems (GPS)**

You will be introduced to Global Positioning Systems (GPS) for resource managers. You will gain hands-on experience navigating using handheld GPS receivers. Your studies will include entering GPS data into various Geographic Information Systems (GIS) file formats. Using handheld receivers, you will practice advanced data collection techniques.

**Credit unit(s):** 4.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Describe the basic theory of the Global Positioning System (GPS).			
2. Explain a GPS mission plan.			
3. Prepare for GPS data collection.			
4. Manage collected data.			
5. Use a GPS receiver.			
6. Explain uncorrected and corrected GPS data.			
7. Demonstrate data import to and export from GPS.			

## INDG 100 – Introduction to Indigenous Studies

You will receive an introduction to the Indigenous cultural groups within Saskatchewan. You will learn about the colonization of Indigenous peoples by the Canadian state. Your studies will help you discuss current issues and explore possible solutions.

**Credit unit(s):** 1.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b>  <b>Competent:</b> I can apply this outcome without direction or supervision. <b>Learning:</b> I am still learning skills and knowledge to apply this outcome. <b>None:</b> I have no knowledge or experience related to this outcome.	<b>Competent</b>	<b>Learning</b>	<b>None</b>
1. Describe Indigenous nations of Saskatchewan.			
2. Explain how colonization has impacted Indigenous peoples.			
3. Discuss current issues and possible solutions.			

**MAPS 101 – Introduction to Mapping and Compassing**

Your studies will focus on mapping systems and compassing. You will interpret maps and develop skills in ground and map measurements.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** MAPS 340

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	<b>Competent</b>	<b>Learning</b>	<b>None</b>
1. Use a compass for orientation.			
2. Collect ground and map distances with azimuth direction.			
3. Employ mapping systems.			
4. Interpret map content.			

**WORK 126 – Work Preparation**

You will develop skills that allow you to successfully compete for jobs in the field of resources, as well as other related careers.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Prepare a résumé.			
2. Prepare a cover letter.			
3. Prepare a portfolio.			
4. Prepare for job interviews.			



## GIS 105 – Vector Analysis

You will study the analytical capabilities of Geographic Information Systems (GIS) using the vector data model. You will apply topological overlay, buffering and proximity analyses of points, lines and polygons to resource management scenarios.

**Credit unit(s):** 3.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Perform vector overlays using polygons, lines, and points.			
2. Perform distance/proximity operations on vector features.			
3. Integrate data from various sources.			
4. Create geodatabase topology.			

**GIS 108 – Unmanned Aerial Vehicle (UAV) Data**

You will gain experience using various types of UAV cameras. Demonstrated in this course will be UAV data acquisition using RGB (Red, Green and Blue), NIR (Near-infrared), multispectral camera and Lidar (Light Detection and Ranging) cameras. Project work will include learning about UAV setup, UAV software setup, flight lines, flight patterns and UAV camera images and settings. UAV flight will be demonstrated in this course. You will be shown how to download data from the UAV to a computer.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b>		<b>Competent</b>	<b>Learning</b>	<b>None</b>
<b>Competent:</b>	I can apply this outcome without direction or supervision.			
<b>Learning:</b>	I am still learning skills and knowledge to apply this outcome.			
<b>None:</b>	I have no knowledge or experience related to this outcome.			
1.	Discuss UAV types and their operation.			
2.	Prepare UAV pay loads for data collection.			
3.	Observe UAV setup and flights.			
4.	Practice file management of UAV collected data.			
5.	Demonstrate the downloading of UAV data from various pay load types.			

## GIS 109 – Unmanned Aerial Vehicle (UAV) Data Processing

You will gain hands-on experience using various Geographic Information Systems (GIS) software to process data collected by an Uncrewed Aerial Vehicle (UAV). In this course you will post-process UAV field data and export to various GIS format types. Project work will include learning about initial processing, flight lines, UAV camera images, Keyhole Markup Language (KML) files, geotagging and calibration of images. Your studies will focus on post-processing data from various types of payloads including RGB (Red, Green and Blue), NIR (Near-infrared) and Lidar (Light Detection and Ranging).

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Discuss various Uncrewed Aerial Vehicle (UAV) pay loads and their uses.			
2. Prepare UAV data for post-processing in a UAV software.			
3. Demonstrate the loading of various UAV data into a post-processing software.			
4. Examine the results and outputs of the post-processing software.			
5. Compare various GIS file types using a GIS software.			

### GIS 302 – Introduction to Mobile Geographic Information Systems (GIS)

You will learn how to integrate Global Positioning Systems (GPS) and Geographic Information Systems (GIS). You will study intermediate theories and the principles of geodesy including positioning methods, errors, and error management. You will practice your skills by completing a project from the planning stage to final data output.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Discuss Global Positioning System (GPS) /Geographical Information Systems (GIS) integration.			
2. Manage GPS/GIS data.			
3. Display GPS data in a GIS.			
4. Edit GPS data in a GIS software.			
5. Compare various applications available for mobile GPS.			
6. Import data into GPS mobile units.			
7. Synchronize changes and edits.			

### GIS 361 – Raster Analysis

You will study the analytical capabilities of Geographic Information Systems (GIS) using the raster data model. You will study raster analysis techniques that include Boolean and arithmetic grid overlays, neighborhood and zonal functions, surface representations of elevation, density, distance, and proximity.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Evaluate the unique considerations related to working with raster data.			
2. Represent three-dimensional data with digital elevation models and derivatives.			
3. Perform raster overlays using Boolean, relational, and arithmetic operators.			
4. Apply neighborhood, zonal and global functions.			

**GIS 362 – Three-Dimensional Analysis**

You will perform advanced Geographic Information Systems (GIS) analysis using three-dimensional modeling. 3D models will be built using GIS 3D modelling software. You will use Internet-based software to display 3D models.

**Credit unit(s):** 3.0  
**Pre and Co Requisites:** GIS 105  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Distinguish between different methods of representing three-dimensional data.			
2. Demonstrate 3D modeling in an internet-based software.			
3. Demonstrate three-dimensional terrain fly-throughs on 3D elevation models.			
4. Create a triangular irregular network to display 3D elevations models.			
5. Plan 3D perspective views in a 3D elevation model.			

## MAPS 301 - Cartography

You will learn to apply cartographic principles of map design and produce a professional quality map with Geographic Information Systems (GIS) software.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** MAPS 101  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Describe the cartographer's world.			
2. Apply concepts of spheroid and graticule to cartography.			
3. Apply map projection concepts to cartography.			
4. Apply scope, scale, and generalization to cartography.			
5. Make effective use of labels and geodatabase (GDB) annotation.			
6. Make effective use of colour and pattern.			

**MAPS 302 – Geographic Information Systems (GIS) and the Internet**

You will develop Geographic Information Systems (GIS) applications for the internet. You will practice your skills by developing an internet web page.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** GIS 102, MAPS 301  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Identify web mapping applications.			
2. Input data using an internet mapping software.			
3. Design a web page using an internet mapping software.			
4. Create an account using an internet mapping software.			
5. Compose an internet mapping web page.			
6. Customize an internet mapping web page.			



**PROJ 117 – Applied Research Geographic Information Science**

You will conduct a research project. You will integrate the skills, training, and knowledge you acquired throughout the program to design, conduct, collect and analyze data then present the results of a Geographic Information Science (GIS) project.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Identify an applied research project of interest to Geographic Information Science (GIS) professionals.			
2. Submit a project proposal.			
3. Conduct a literature search.			
4. Perform the collection and analysis of data.			
5. Prepare a written report and GIS output outlining the principal findings of your research project.			

**PROJ 119 – Geographic Information Science (GIS) Project Management**

You will be introduced to Geographic Information Science (GIS) project management. You will examine the basic theory of project planning and control, from project initiation to project close out. You will apply project management skills to work on a GIS related project.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Describe project management concepts.			
2. Discuss the pros and cons of various project management software.			
3. Implement a Geographic Information Science (GIS) project.			
4. Manage a GIS project from start to finish.			
5. Prepare final deliverables for the completed GIS project.			

**SYST 401 – Remote Sensing 1**

You will be introduced to satellite imagery. Your studies will include remote interpretation techniques for natural resource management applications.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** none  
**Equivalent course(s):** SYST 340

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Explain the role of both electromagnetic radiation and the electromagnetic spectrum in remote sensing.			
2. Explain how remotely sensed imagery is obtained through sensor systems.			
3. Describe the characteristics of a remotely sensed image.			
4. Describe the uses of remote sensing in resource management.			
5. Discuss the use of Light Detection and Ranging (LIDaR).			
6. Order remote sensing imagery.			

**SYST 402 – Remote Sensing 2**

You will learn important image processing and analysis techniques for remotely sensed data. The techniques include geocorrection, enhancements, filtering, vegetation indices, classification, and mosaicking. Your studies will include analyzing lidar imagery.

**Credit unit(s):** 2.0  
**Pre and Co Requisites:** SYST 401  
**Equivalent course(s):** none

<p><b>Use a checkmark (P) to rate yourself as follows for each learning outcome</b></p> <p><b>Competent:</b> I can apply this outcome without direction or supervision.  <b>Learning:</b> I am still learning skills and knowledge to apply this outcome.  <b>None:</b> I have no knowledge or experience related to this outcome.</p>	Competent	Learning	None
1. Perform basic manipulations of image files using image analysis software.			
2. Perform spectral rationing.			
3. Perform an unsupervised classification.			
4. Perform a supervised classification.			
5. Combine images, using colour balancing techniques.			