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| --- | --- |
| For Academic Affairs and Research Use Only | |
| Proposal Number | AGRI01 |
| CIP Code: |  |
| Degree Code: |  |

**Reconfiguration of Existing Degree Program Proposal Form**

(Also requires Arkansas Department of Higher Education (ADHE) approval)

**[x] Undergraduate Curriculum Council**

**[ ] Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | Jacob Manlove | 2/14/2023 |   **Department Curriculum Committee Chair** | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **COPE Chair (if applicable)** |
| |  |  | | --- | --- | | Donald Kennedy | 2/14/2023 |   **Department Chair** | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **Head of Unit (if applicable)** |
| |  |  | | --- | --- | | Mary Elizabeth Spence | 3/10/2023 | | **Office of Accreditation and Assessment** |  | | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **Undergraduate Curriculum Council Chair** |
| |  |  | | --- | --- | | Jacob Manlove | 2/14/2023 |   **College Curriculum Committee Chair** | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **Graduate Curriculum Committee Chair** |
| |  |  | | --- | --- | | Mickey Latour | 2/14/2023 |   **College Dean** | |  |  | | --- | --- | | Len Frey | 3/22/2023 |   **Vice Chancellor for Academic Affairs** |
| |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **General Education Committee Chair (if applicable)** |  |

1. **Contact Person** (Name, Email Address, Phone Number)

John W. Nowlin, [jnowlin@astate.edu](mailto:jnowlin@astate.edu), (870) 972-3468

1. **Title(s) of degree programs to be consolidated/reconfigured:**

Agricultural Studies emphasis in GIS & Precision Agriculture (GIS)

*Note: This note is for clarity, because this program name is not yet reflected in the bulletin. This emphasis was recently renamed (Fall of 2022) from Agricultural Studies emphasis in Agricultural Systems Technology (AGST) to Agricultural Studies emphasis in GIS & Precision Agriculture (GIS). Before it is added to the bulletin in July, we would like to pull this program out from under the Agricultural Studies Degree to stand alone, for clarity simply as GIS & Precision Agriculture (GIS). No other changes are being made to the program other than the name change.*

1. **Proposed title of consolidated/reconfigured program:**

GIS and Precision Agriculture

1. **Proposed Effective Date:** Spring 2024
2. **Reason for proposed program consolidation/reconfiguration:**

*(Indicate student need/demand (projected enrollment) for the proposed program and document that the program meets employer needs using the ADFA Workforce Analysis Form)*

In accordance with the College of Agriculture Strategic plan to expand the colleges footprint online, this degree was adjusted to be offered online in Fall of 2022. The name “Agricultural Studies emphasis in GIS & Precision Agriculture” (subject abbreviation “GIS”) has been determined to be difficult to market online. This degree is therefore being changed from an emphasis to a standalone degree named the same as the current emphasis “GIS and Precision Agriculture.” This name was chosen because it is modeled after a combined preparation in both areas Precision Agriculture being an agricultural application of GIS and GIS being the primary technology component of Precision Agriculture.

1. **Provide current and proposed curriculum outline by semester.**

*For undergraduate programs, please use Appendix A-8-semester plan form*

*Indicate total semester credit hours required for the proposed program. If new courses are needed for the reconfiguration, approval for the courses must be requested prior to approval for the new degree. Underline any new courses. Identify required general education core courses with an asterisk. If utilizing courses from other departments, please color-code them and provide a key.*

The curriculum does not change, this is essentially only a degree name change.

1. **Will the proposed degree be offered:**
   1. **Traditional/Face-to-face** in-person students will not be excluded, and most courses will be offered in-person, but intended & designed to be primarily online.
   2. **Distance/Online** Yes
      1. **If yes, indicate mode of distance delivery, and the percentage of courses offered via this modality (<50%, 50-99%, or 100%).**

This degree will be offered 100% online

* + 1. **If online, will it be offered through Global Initiatives/Academic Partnerships (AP)?**

Yes

1. **Will the proposed degree be offered off-campus?** No
   1. **If yes, identify the off-campus location**

Enter text...

1. **Provide documentation that proposed program has received full approval by licensure/certification entity, if required.**

*(A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).*

N/A

1. **List institutions offering similar program and identify the institutions used as a model to develop the proposed program.**

This is an existing emphasis area that is significantly different from the other emphases in the Agricultural Studies degree. It already exists, but is being named **GIS and Precision Agriculture**, because it is modeled after a combined preparation in both areas. Its curriculum is continually updated as it is an emerging technology and has taken pieces from UNC Greensboro, Virginia Tech, and the Ohio State University GIS programs, and the Perdue Precision Agriculture Program.

1. **Provide scheduled program review or specialized accreditation initial review date (within 10 years of program implementation).**

This is an existing curriculum that can retain the review dates with the College of Agriculture Schedule.

1. **Is there differential tuition requested?** *If yes, please fill out the New Program/Tuition and Fees Change Form.*

no

1. **Graduate programs only: Will this program require a comprehensive exam?**

no

**Student Learning Outcomes**

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

**University Outcomes**

Please indicate the university-level student learning outcomes for which this new program will contribute. Please complete the table by adding program level outcomes (PLO) to the first column, and indicating the alignment with the university learning outcomes (ULO). If you need more information about the ULOs, go to the [University Level Outcomes Website](http://www.astate.edu/a/assessment/student-learning-outcomes/files/ULOs%20for%20Website2.pdf).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **ULO 1: Creative & Critical Thinking** | **ULO 2: Effective Communication** | **ULO 3: Civic & Social Responsibility** | **ULO 4: Globalization & Diversity** |
| **PLO 1** | **x** | **x** |  |  |
| **PLO 2** | **x** |  |  |  |
| **PLO 3** | **x** |  |  |  |

***Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.***

|  |  |
| --- | --- |
| **Outcome 1** | Students will be able to assess a set of spatial phenomena relevant to agriculture or other human-environment interactions. |
| Assessment Procedure Criterion | In the capstone course, a paper, oral/visual presentation, or poster, meeting the standards of presentations in a professional academic forum will be prepared and delivered by the student in class. This presentation will be reviewed by the committee specified below and the students work will need to meet the mutually agreed upon goals relating to assessment of spatial phenomena relevant to agriculture or other human-environment interactions. This project will be approved by the student and course instructor and recorded in a customized rubric. Additionally, students will complete the ‘Leaving the Den’ survey as an indirect measure – there are plans to move toward an internal survey as the program progresses. |
| Which courses are responsible for this outcome? | GIS 4843 GIS and Precision Agriculture Capstone |
| Assessment  Timetable | This outcome is assessed in the capstone course (GIS 4843) in the Spring of the Senior year. |
| Who is responsible for assessing and reporting on the results? | Committee Including all faculty teaching GIS and Precision Agriculture courses and select faculty from the College of Agriculture. |

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| **Outcome 2** | Students will be able to choose an effective set of decision tools for a current agricultural or environmental problem. |
| Assessment Procedure Criterion | In the capstone course, a paper, oral/visual presentation, or poster, meeting the standards of presentations in a professional academic forum will be prepared and delivered by the student in class. This presentation will be reviewed by the committee specified below and the students work will need to meet the mutually agreed upon goals about choosing effective decision tools for a problem related to agriculture or the environment. This project will be approved by the student and course instructor and recorded in a customized rubric. |
| Which courses are responsible for this outcome? | GIS 4843 GIS and Precision Agriculture Capstone |
| Assessment  Timetable | This outcome is assessed in the capstone course (GIS 4843) in the Spring of the Senior year. |
| Who is responsible for assessing and reporting on the results? | Committee Including all faculty teaching GIS and Precision Agriculture courses and select faculty from the College of Agriculture. |

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| **Outcome 3** | Students will be able to design a solution to an existing problem related to agriculture, the environment, or natural resources. |
| Assessment Procedure Criterion | In the course AGST 4843 Geospatial Capstone, a paper, oral/visual presentation, or poster, meeting the standards of presentations in a professional academic forum will be prepared and delivered by the student in class. This presentation will be reviewed by the committee specified below and the students work will need to meet the mutually agreed upon goals relating to the design of a project representing the solution to an existing problem using geospatial technology relating to agriculture the environment or natural resources. This project will be approved by the student and course instructor and recorded in a customized rubric. Additionally, students will complete the ‘Leaving the Den’ survey as an indirect measure – there are plans to move toward an internal survey as the program progresses. |
| Which courses are responsible for this outcome? | GIS 4843 GIS and Precision Agriculture Capstone |
| Assessment  Timetable | This outcome is assessed in the capstone course (GIS 4843) in the Spring of the Senior year. |
| Who is responsible for assessing and reporting on the results? | Committee Including all faculty teaching GIS and Precision Agriculture courses and select faculty from the College of Agriculture. |

**Appendix A, 8-Semester Plan**

(**Referenced in #2** - **Undergraduate Proposals Only)**

*Instructions: Please identify new courses in italics*.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year 1** | | | | | | | | | |
| **Fall Semester** | | | |  | | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| Gen Ed: ENG 1003 | Composition 1 | 3 | x |  | | Gen Ed: ENG 1013 | Composition II | 3 | x |
| AGRI 1213 | Making Connections in Agriculture | 3 |  |  | | ISBA 1503, CS 1013 | **Choose one:**  Microcomputer Applications, Introduction to Computers | 3 |  |
| PSSC 1303 | Intro to Plant Science | 3 |  |  | | ANSC 1613 | Intro to Animal Science | 3 |  |
| Gen Ed Social Science\* ECON 2313,  ECON 2323,  ECON 2333,  HIST 1013,  HIST 1023,  MDIA 1003,  PSY 2013,  SOC 2213 | **Choose one:**  Principles of Macroeconomics,  Principles of Microeconomics,  Economic Issues & Concepts,  World History to 1500,  World History since 1500,  Mass Communications in Modern Society,  Introduction to Psychology,  Introduction to Sociology | 3 | x |  | | Gen Ed Math:  MATH 1023 | College Algebra **OR**  Any MATH requiring MATH 1023 as a prerequisite. | 3 | x |
| Gen Ed: ART 2503 | Fine Arts: Visual | 3 | x |  | | Gen Ed: COMS 1203 | Oral Communication | 3 | x |
| **Total Hours:** | | 15 | |  |  | **Total Hours**: | | 15 | |
|  | | | | | | | | | |
| **Year 2** | | | | | | | | | |
| **Fall Semester** | | | |  | | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| Gen Ed Life Science:  BIOL 1003/BIOL 1001 | Biological Science/ Lab | 4 | x |  | | Gen Ed Physical Science:  CHEM 1043/1041 | Fundamental Concepts of Chemistry/Lab | 4 | x |
| Gen Ed  ENG 2003,  ENG 2013,  PHIL 1013 | **Choose one:**  World Literature to 1660,  World Literature since 1660,  Intro to Philosophy | 3 | x |  | | PSSC 2813 or  GIS 2003 | Soils **OR**  Intro to Agribusiness | 3 |  |
| Extra Communications:  BCOM 2563,  COMS 2243,  COMS 2373,  COMS 3203,  COMS 3243,  COMS 4263 | **Choose one:**  Business Communication  Principles of Argumentation,  Introduction to Interpersonal Communications,  Business and Professional Communications,  Principles of Persuasion,  Organizational Communication | 3 |  |  | | GEOG 2613, | Introduction to Geography | 3 | x |
| GIS 2003 | Intro to GIS and Precision Agriculture | 3 |  |  | | GIS 3503 | Geospatial Data Applications | 3 |  |
| Gen Ed Social Science\*  HIST 2763,  HIST 2773,  POSC 2103 | **Choose one:**  United States History to 1876  United States History since 1876  Introduction to US Government | 3 | x |  | | Extra Communications:  BCOM 2563,  COMS 2243,  COMS 2373,  COMS 3203,  COMS 3243,  COMS 4263 | **Choose one:**  Business Communication  Principles of Argumentation,  Introduction to Interpersonal Communications,  Business and Professional Communications,  Principles of Persuasion,  Organizational Communication | 3 |  |
| **Total Hours:** | | 16 | |  | | **Total Hours**: | | 16 | |

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| **Year 3** | | | | | | | | |
| **Fall Semester** | | | |  | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| GEOG 3723,  GEOG 4113,  GEOG 4613, GEOG 4623,  GEOG 4633 | **Choose one:**  Intro to Phys. Geography, Weather & Climate,  Water Resources Planning, Conservation of Natural Resources, Environmental Management,  Climatology | 3 |  |  | PSSC | **Choose one:**  Plant and Soil Science 3000 or 4000 | 3 |  |
| GIS 3543 | Fundamentals of GIS/GPS | 3 |  |  | GIS 4003 | Modern Irrigation Systems | 3 |  |
| COMS 2243,  COMS 2373,  COMS 3203,  COMS 3243,  COMS 4263 | **Choose one:**  Principles of Argumentation,  Introduction to Interpersonal Communications,  Business and Professional Communications,  Principles of Persuasion,  Organizational Communication | 3 |  |  | Upper-Level Elective | Upper-Level Elective(s) in:  AGEC, AGED, ANSC, AGRI, GIS, GEOG, HORT, or PSSC. | 3 |  |
| AGRI 420V | Internships in Agriculture | 3 |  |  | GIS 4543 | Understanding Geographic Information Systems | 3 |  |
| PSSC | **Choose one:**  Plant and Soil Science 3000 or 4000 | 3 |  |  | AGRI 3233,  STAT 3233,  TECH 3733 | **Choose one**  Applied Agricultural Statistics, Applied Stats,  Statistics | 3 |  |
| **Total Hours:** | | 15 or 16 | |  | **Total Hours:** | | 15 | |
|  | | | | | | | | |
| **Year 4** | | | | | | | | |
| **Fall Semester** | | | |  | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| GIS 4773 | Remote Sensing | 3 |  |  | GIS 4843 | GIS and Precision Agriculture Capstone | 3 |  |
| GIS 4503 | Agricultural Decision Tools and Analysis | 3 |  |  | AGRI 4223 | Ag and the Environment | 3 |  |
| GIS 4511 | Unmanned Aircraft Systems | 1 |  |  | Upper-Level Elective | Upper-Level Elective(s) in:  AGEC, AGED, ANSC, AGRI, GIS, GEOG, HORT, or PSSC. | 7 |  |
| Upper-Level Elective | Upper-Level Elective(s) in:  AGEC, AGED, ANSC, AGRI, GIS, GEOG, HORT, or PSSC. | 8 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Total Hours:** | | 15 | |  | **Total Hours:** | | 13 | |
| **Total Upper-Level Hours:** | | 57 | |  | **Total Degree Hours:** | | 120 | |

**Bulletin Changes**

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| --- |
| **Instructions** |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Please include a before (with changed areas highlighted) and after of all affected sections.**  **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.** |

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| ~~Agricultural Studies, Emphasis in~~ GIS and Precision Agriculture, BSA |
|  |

Return to {$returnto_text} Return to: Programs by Department

A complete 8-semester degree plan is available at https://www.astate.edu/info/academics/degrees/

**UNIVERSITY REQUIREMENTS:**

See University General Requirements for Baccalaureate degrees

**FIRST YEAR MAKING CONNECTIONS COURSE**

* AGRI 1213 - Making Connections in Agriculture **Sem. Hrs:** **3**

**GENERAL EDUCATION REQUIREMENTS:**

* See General Education Curriculum for Baccalaureate Degrees **Sem. Hrs: 35**

**Students with this major must take the following:**

* CHEM 1043 - Fundamental Concepts of Chemistry **Sem. Hrs:** **3**
* CHEM 1041 - Fundamental Concepts of Chemistry Laboratory **Sem. Hrs:** **1**
* BIOL 1003 - Biological Science **Sem. Hrs:** **3**
* BIOL 1001 - Biological Science Laboratory **Sem. Hrs:** **1**
* GEOG 2613 - Introduction to Geography **Sem. Hrs:** **3**
* COMS 1203 - Oral Communication **Sem. Hrs:** **3** *(Required Departmental Gen. Ed. Option)*

**AGRICULTURE CORE COURSES:**

(See Agriculture Core Courses)

* GIS 2003 - Introduction to GIS and Precision Agriculture **Sem. Hrs: 3**

**MAJOR REQUIREMENTS:**

~~See emphasis area below.~~

**~~EMPHASIS AREA (AGRICULTURAL SYSTEMS TECHNOLOGY):~~**

* AGRI 4223 - Agriculture and the Environment **Sem. Hrs:** **3**
* GIS 3503 - Geospatial Data Applications **Sem. Hrs:** **3**
* GIS 3543 - Fundamentals of GIS/GPS **Sem. Hrs:** **3**
* GIS 4003 - Modern Irrigation Systems **Sem. Hrs:** **3**
* GIS 4503 - Agricultural Decision Tools and Analysis **Sem. Hrs:** **3**
* GIS 4511 - Unmanned Aircraft Systems **Sem. Hrs:** **1**
* GIS 4543 - Understanding Geographic Information Systems **Sem. Hrs:** **3**
* GIS 4773 - Remote Sensing **Sem. Hrs:** **3**
* GIS 4843 - Agricultural Systems Technology Capstone **Sem. Hrs:** **3**
* Select two upper-level PSSC courses **Sem. Hrs:** **6**
* Upper-level elective in AGEC, AGED, AGRI, ANSC, GEOG, GIS, HORT, or PSSC **Sem. Hrs: 21**

**Select two of the following:**

* BCOM 2503 - Business Communication **Sem. Hrs:** **3**
* COMS 2243 - Principles of Argumentation **Sem. Hrs:** **3**
* COMS 2373 - Introduction to Interpersonal Communication **Sem. Hrs:** **3**
* COMS 3243 - Principles of Persuasion **Sem. Hrs:** **3**
* COMS 3203 - Business and Professional Communication **Sem. Hrs:** **3**
* COMS 4263 - Organizational Communication **Sem. Hrs:** **3**

**Select one of the following:**

* GEOG 3723 - Introduction to Physical Geography Weather and Climate **Sem. Hrs:** **3**
* GEOG 4113 - Water Resources Planning **Sem. Hrs:** **3**
* GEOG 4613 - Conservation of Natural Resources **Sem. Hrs: 3**
* GEOG 4623 - Environmental Management **Sem. Hrs: 3**
* GEOG 4633 - Climatology **Sem. Hrs:** **3**

**Select one of the following:**

* ISBA 1503 - Microcomputer Applications **Sem. Hrs:** **3**
* CS 1013 - Introduction to Computers **Sem. Hrs:** **3**

**Sub-total: 64**

**TOTAL REQUIRED HOURS: 120**

|  |
| --- |
| GIS and Precision Agriculture, BSA |
|  |

Return to {$returnto_text} Return to: Programs by Department

A complete 8-semester degree plan is available at https://www.astate.edu/info/academics/degrees/

**UNIVERSITY REQUIREMENTS:**

See University General Requirements for Baccalaureate degrees

**FIRST YEAR MAKING CONNECTIONS COURSE**

* AGRI 1213 - Making Connections in Agriculture **Sem. Hrs:** **3**

**GENERAL EDUCATION REQUIREMENTS:**

* See General Education Curriculum for Baccalaureate Degrees **Sem. Hrs: 35**

**Students with this major must take the following:**

* CHEM 1043 - Fundamental Concepts of Chemistry **Sem. Hrs:** **3**
* CHEM 1041 - Fundamental Concepts of Chemistry Laboratory **Sem. Hrs:** **1**
* BIOL 1003 - Biological Science **Sem. Hrs:** **3**
* BIOL 1001 - Biological Science Laboratory **Sem. Hrs:** **1**
* GEOG 2613 - Introduction to Geography **Sem. Hrs:** **3**
* COMS 1203 - Oral Communication **Sem. Hrs:** **3** *(Required Departmental Gen. Ed. Option)*

**AGRICULTURE CORE COURSES:**

(See Agriculture Core Courses)

* GIS 2003 - Introduction to GIS and Precision Agriculture **Sem. Hrs: 3**

**MAJOR REQUIREMENTS:**

* AGRI 4223 - Agriculture and the Environment **Sem. Hrs:** **3**
* GIS 3503 - Geospatial Data Applications **Sem. Hrs:** **3**
* GIS 3543 - Fundamentals of GIS/GPS **Sem. Hrs:** **3**
* GIS 4003 - Modern Irrigation Systems **Sem. Hrs:** **3**
* GIS 4503 - Agricultural Decision Tools and Analysis **Sem. Hrs:** **3**
* GIS 4511 - Unmanned Aircraft Systems **Sem. Hrs:** **1**
* GIS 4543 - Understanding Geographic Information Systems **Sem. Hrs:** **3**
* GIS 4773 - Remote Sensing **Sem. Hrs:** **3**
* GIS 4843 - Agricultural Systems Technology Capstone **Sem. Hrs:** **3**
* Select two upper-level PSSC courses **Sem. Hrs:** **6**
* Upper-level elective in AGEC, AGED, AGRI, ANSC, GEOG, GIS, HORT, or PSSC **Sem. Hrs: 21**

**Select two of the following:**

* BCOM 2503 - Business Communication **Sem. Hrs:** **3**
* COMS 2243 - Principles of Argumentation **Sem. Hrs:** **3**
* COMS 2373 - Introduction to Interpersonal Communication **Sem. Hrs:** **3**
* COMS 3243 - Principles of Persuasion **Sem. Hrs:** **3**
* COMS 3203 - Business and Professional Communication **Sem. Hrs:** **3**
* COMS 4263 - Organizational Communication **Sem. Hrs:** **3**

**Select one of the following:**

* GEOG 3723 - Introduction to Physical Geography Weather and Climate **Sem. Hrs:** **3**
* GEOG 4113 - Water Resources Planning **Sem. Hrs:** **3**
* GEOG 4613 - Conservation of Natural Resources **Sem. Hrs: 3**
* GEOG 4623 - Environmental Management **Sem. Hrs: 3**
* GEOG 4633 - Climatology **Sem. Hrs:** **3**

**Select one of the following:**

* ISBA 1503 - Microcomputer Applications **Sem. Hrs:** **3**
* CS 1013 - Introduction to Computers **Sem. Hrs:** **3**

**Sub-total: 64**

**TOTAL REQUIRED HOURS: 120**