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| For Academic Affairs and Research Use Only | |
| CIP Code: |  |
| Degree Code: |  |

**New Course Proposal Form**

**[x] Undergraduate Curriculum Council**

**[ ] Graduate Council**

|  |
| --- |
| **[ ] New Course or [ ]Experimental Course (1-time offering) (Check one box)** |

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

Email completed proposals to [curriculum@astate.edu](mailto:curriculum@astate.edu) for inclusion in curriculum committee agenda.

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| --- | --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| Donald Kennedy 1/25/2019 **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Head of Unit (If applicable)** |
| J. Kim Pittcock 1/25/2019 **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| Timothy Burcham 1/25/2019 **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
| |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **General Education Committee Chair (If applicable)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |

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

John Nowlin, jnowlin@astate.edu, (870) 972-3468

2. Proposed Starting Term and Bulletin Year

Fall 2019

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*. )

AGST 4501

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Agricultural Decision Analysis

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Hands-on experience with cloud/desktop software, spatial algorithms and image processing of georeferenced data obtained from diverse sources, such as human scouts, ground and equipment sensors, and unmanned aerial systems.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

1. **YES** Are there any prerequisites?
   1. If yes, which ones?

AGST 3543 with a grade of B or better.

* 1. Why or why not?

The software used in this course is GIS based.

1. **NO** Is this course restricted to a specific major?
   1. If yes, which major? Enter text...

7. Course frequency(e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Fall

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture and Lab

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **YES** Is this course dual listed (undergraduate/graduate)?

AGST 5501. Agricultural Decision Analysis

11. **NO** Is this course cross listed?

*(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)*

**11.1** – If yes, please list the prefix and course number of cross listed course.

Enter text...

**11.2** – **Yes / No** Are these courses offered for equivalent credit?

Please explain. Enter text...

12. **NO** Is this course in support of a new program?

a. If yes, what program?

Enter text...

13. **NO** Does this course replace a course being deleted?

a. If yes, what course?

Enter text...

14. **NO** Will this course be equivalent to a deleted course?

a. If yes, which course?

Enter text...

15. **YES** Has it been confirmed that this course number is available for use?

*If no: Contact Registrar’s Office for assistance.*

16. **NO** Does this course affect another program?

If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Enter text...

**Course Details**

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

1st Semester Term

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Date | TOPIC – LECT / LAB | ROOM - LECT / LAB |
| 1 | 1/15  1/17 | **Class:** Spatial and temporal heterogeneity of soils  **Lab I :** Soil Salinity Analysis | AG 301/AG 242  HMK:  Soil Salinity |
| 2 | 1/22  1/24 | **Class:** Spatial and temporal heterogeneity of soils  **Lab II :** Variable soil tillage | AG 301/AG 242  HMK:  Variable soil tillage |
| 3 | 1/29  1/31 | **Class:** Surface creation using point data  **Lab II :** Precision yield management-1 | AG 301/AG 242  HMK:  Yield Analysis |
| 4 | 2/5  2/7 | **Class:** Surface creation using point data  **Lab III :** Precision yield management-2 | AG 301/AG 242  HMK:  Yield Analysis |
| 5 | 2/12  2/14 | **Class:** Precision weed management  **Lab IV:** Weed management-1 | AG 301/AG 242  HMK –  Weed Analysis |
| 6 | 2/19  2/21 | **Class:** Spatial distribution of rootworms  **Lab VI :** Rootworms population and soil texture | AG 301/AG 242  HMK –  Rootworms analysis |
| 7 | 2/26  2/28 | **Class:** Spread invasive Species  **Lab VII :** Spread invasive Species analysis | AG 301/AG 242  HMK–  invasive Species analysis |

18. Special features (e.g. labs, exhibits, site visitations, etc.)

Enter text...

19. Department staffing and classroom/lab resources

College of Agriculture, Ag Systems Technology area emphasis

1. Will this require additional faculty, supplies, etc.?

**NO**

20. **NO** Does this course require course fees?

*If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.*

**Course Justification**

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course fills a gap in exposure to software tools used for making agricultural decisions related to soil salinity, variability, precision yield management, weed management, rootworms, and invasive species. The goals of the course are to give students a working knowledge of what software tools exist to respond to common issues in agruculture. Students should be able to use these tools to address this limited set of problems.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

Part of the Agriculture Program mission statement is, “... To conduct problem-solving research related to crop and livestock production, natural resource management, and value-added processing in collaboration with private and other public sector entities;…” (18-19-UG-Bulletin, pg. 110). The introduction to the software tools presented in this course directly helps solve a set of agricultural problems.

c. Student population served.

Agriculture Students who will work on farms, in Agricultural Extension, in precision agriculture, or with pesticide and nutrient application services.

d. Rationale for the level of the course (lower, upper, or graduate).

Upper required due to large amount of context knowledge related to a large number of agronomic variables and geospatial technologies used to help make decisions in the field.

**Assessment**

**Relationship with Current Program-Level Assessment Process**

22. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

Will give contextual knowledge for AGST 4853 Geospatial Capstone course where the Program is assessed.

23. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program’s 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.*

|  |  |
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| **Program-Level Outcome 3 (from question #23)** | Students will be able to design a solution to an existing problem related to agriculture, the environment, or natural resources. |
| Assessment Measure | 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. |
| Assessment  Timetable | This outcome is assessed in the capstone course (AGST 4843) in the Spring of the Senior year. |
| Who is responsible for assessing and reporting on the results? | Committee Including:  Dr. John W. Nowlin, Assistant Professor of Geospatial Technology  Dr. Ahmed Hashem, Assistant Professor of Agricultural Systems Technology  A rotating full-time faculty member of the College of Agriculture or a State/County Agricultural Extension Agent with a Master’s Degree or higher and a related professional specialization. |

*(Repeat if this new course will support additional program-level outcomes)*

**Course-Level Outcomes**

24. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

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| --- | --- |
| **Outcome 1** | Learn Agricultural Decision Software tools |
| Which learning activities are responsible for this outcome? | Use software and mobile device applications for agricultural decision making. |
| Assessment Measure | Testing and lab work in the software and mobile applications |

*(Repeat if needed for additional outcomes)*

**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. Follow the following guidelines for indicating necessary changes.**  **\*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.**  - Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)  - New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).  - Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)  *You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the ‘format painter’ icon 🡪 , and selecting the text you would like to apply the change to.*  *Please visit* [*https://youtu.be/yjdL2n4lZm4*](https://youtu.be/yjdL2n4lZm4) *for more detailed instructions.* |

Multiple bulletin changes associated with an AGST program realignment are being submitted. Below is the primary program for these changes which is Pgs. 118 & 432 of the 2018-2019 Undergraduate Bulletin. Other changes are addressed in numerous proposals submitted concurrently.

\*Due to the high number of concurrent changes, for clarity, these revisions are highlighted at the end on the bulletin page(s).

From pg. 118

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**Major in Agricultural Studies**

**Bachelor of Science in Agriculture**

**Emphasis in Agricultural Systems Technology**

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

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| --- | --- |
| **University Requirements:** |  |
| See University General Requirements for Baccalaureate degrees (p. 44) |  |
| **First Year Making Connections Course** | **Sem. Hrs.** |
| AGRI 1213, Making Connections in Agriculture | **3** |
| **General Education Requirements:** | **Sem. Hrs.** |
| See General Education Curriculum for Baccalaureate degrees (p. 89)  **Students with this major must take the following:**  *MATH 1023, College Algebra or MATH course that requires MATH 1023 as a prerequisite*  *~~PHYS 2054, General Physics I~~*  *BIOL 1003* ***AND*** *BIOL 1001, Biological Science and Laboratory*  ***CHEM 1013 AND 1011, General Chemistry I and Laboratory OR***  ***CHEM 1043 AND CHEM 1041, Fundamental Concepts of Chemistry and Laboratory***  *COMS 1203, Oral Communication (Required Departmental Gen. Ed. Option)* | **35** |
| **Agriculture Core Courses:** | **Sem. Hrs.** |
| (See Beginning of Agriculture Section) | **24** |
| **Major Requirements:** | **Sem. Hrs.** |
| See emphasis area below. |  |
| **Emphasis Area (Agricultural Systems Technology):** | **Sem. Hrs** |
| *Select one of the following:*  ~~AGEC 3003, Agricultural Marketing~~  AGEC 3013, Agricultural Records **OR**  ~~AGEC 3063, Agricultural Sales and Service~~  AGST 3503, Geospatial Data Applications | 3 |
| ~~AGED 3433, Agricultural Equipment Hydraulic Systems~~ | ~~3~~ |
| AGRI 4223, Agriculture and the Environment | 3 |
| ~~AGST 1003, Modern Agricultural Systems~~ | ~~3~~ |
| ~~AGST 3503, Agricultural Spatial Technologies I~~ | ~~3~~ |
| ~~AGST 3513, Agricultural Spatial Technologies II~~ | ~~3~~ |
| AGST 3543, Fundamentals of GIS/GPS | 3 |
| AGST 4003, Modern Irrigation Systems | 3 |
| ~~AGST 4013, Precision Application Technology~~  ***AGST 4022, Irrigation Technology Tools*** | ~~3~~ ***2*** |
| AGST 4543, Advanced ~~GIS for Agriculture and Natural Resources~~ Geographic Information Systems | 3 |
| *Select one of the following:*  ***AGST 4501, Agricultural Decision Analysis*** **OR**  ***AGST 4511, Unmanned Aircraft Systems*** | ***1*** |
| AGST 4773, Remote Sensing | 3 |
| AGST 4843, Agricultural Systems Technology Capstone | **3** |
| *Select two of the following:*  BIO 3023, Principles of Ecology **OR** GEOG 2613, Introduction to Geography **OR**  GEOG 3723, Introduction to Physical Geography **OR**  GEOG 4113, Water Resources Planning **OR**  GEOG 4623, Environmental Management **OR**  GEOG 4633, Climatology  ~~CHEM 1043 Fundamental Concepts of Chemistry~~ | ~~3~~ **6** |
| *Select one of the following:*  CIT 1503, Microcomputer Applications **OR** CS 1013, Introduction to Computers | **3** |
| MATH 1033, Plane Trigonometry | 3 |
| *Select one of the following:*  BIO 1503 AND 1501, Biology of Plants and Laboratory **OR**  GEOL 1003 AND 1001, Environmental Geology and Laboratory **OR**  PHSC 1014, Energy and the Environment **OR**  PHSC 1203 AND 1201, Physical Science and Laboratory **OR**  PHYS 1103 AND 1101, Intro to Space Science and Laboratory **OR**  PHYS 2054, General Physics I  ~~PHYS 2064, General Physics II~~ | 4 |
| *Select ~~one~~ two of the following:*  PSSC 3313, Plant Disease Management **OR**  PSSC 3323, Weeds and Weed Control **OR**  PSSC 4713, Soil Quality Assessment and Interpretation **OR**  PSSC 4804, Principles of Crop Production **OR**  PSSC 4813, Soil Fertility **OR**  PSSC 4853, Soil and Water Conservation | ~~3~~ **6-7** |
| TECH 3803, Electrical Systems | 3 |
| ~~TECH 3863, Industrial Safety~~ | ~~3~~ |
| ~~TECH 4813, Operations Systems Research~~ | ~~3~~ |
| Upper-level electives in **AGEC, AGED,** AGST, AGRI, PSSC, **ANSC, HORT, or TECH.** | ~~3~~ **8-9** |
| **Sub-total** | **58** |
| **Total Required Hours:** | **120** |
|  |  |

*The bulletin can be accessed at* [*https://www.astate.edu/a/registrar/students/bulletins/*](https://www.astate.edu/a/registrar/students/bulletins/)

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From pg. 432

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# Agricultural Systems Technology (AGST)

**~~AGST 1003. Modern Agricultural Systems~~** ~~Multidisciplinary introduction to various crop and animal production systems, system interactions, problems, and solutions that lead to a sustainable agricultural productivity. Fall, Spring~~.

**AGST 2003. Intro to Agricultural Systems Technology** Introduction to physical concepts relevant to different agricultural systems: applied mechanics, agricultural equipment technology, agricultural power trains and machinery management, efficiency and precision. Prerequisites: CS 1013 or CIT 1503, ENG 1013, MATH 1023 or higher. Fall.

**AGST 3503. ~~Agriculture Spatial Technologies I~~**Geospatial Data Applications Basic understanding and utilization of ~~data collection and assessment using global position system receivers, direct and remote sensing, and geographic information system software related to crop production and nutrient management.~~software applications to manage geospatial and tabular data, including text editors, spreadsheets, databases and geodatabases for data: collection, cleaning, joining, filtering, summarization, visualization and unit conversion. Prerequisite: AGST 2003, PSSC 2813. Fall, Spring.

**~~AGST 3513. Agriculture Spatial Technologies II~~** ~~The course will concentrate on a study of the electromagnetic properties of earth objects, vegetation, soils, water, and, the principles and operations of different sensors used to measure this energy. Prerequisite, AGST 3503.~~

**AGST 3543. Fundamentals of GIS/GPS**~~Fundamentals of GPS-Global Positioning System and GIS-Geographical Information System concepts, equipment, and software used in agricultural, environmental, and natural resource applications~~ Geospatial data acquisition, mapping, and interpretation for human-environment interactions using geographic information systems and the global positioning system. Prerequisites: COMS 1203, ENG 1013, MATH 1023 or higher; Prerequisite or corequisite: AGEC 3013 or AGST 3503 or BIO 3023. Fall, Spring.

**AGST 4003. Modern Irrigation Systems** Methods, equipment, current issues and future directions of irrigation, irrigation design and scheduling, drainage systems, irrigation measurements, performance evaluation, and impact on productive and sustainable agriculture. Two hours lecture and two hours lab weekly. Dual listed with AGST 5003. Prerequisites: AGST 2003; PSSC 2813. Spring.

**~~AGST 4013. Precision Application Technology~~** ~~Techniques of soil and crop homogeneity de- tection and variable-rate precision application of crop inputs to increase productivity and enhance environmental sustainability. 2 hours lecture and 2 hours lab weekly. Dual listed with AGST 501~~**~~V~~**~~3.~~ ~~Spring~~**~~.~~**

***AGST 4022. Irrigation Technology Tools***  *Technical tools and software related to irrigation system hydraulic design and management. Dual listed with AGST 5022. Prerequisites: AGST 3543, AGST 4003. Fall.*

***AGST 4501. Agricultural Decision Analysis*** *Hands-on experience with cloud/desktop software, spatial algorithms and image processing of georeferenced data obtained from diverse sources, such as human scouts, ground and equipment sensors, and unmanned aerial systems. Dual listed with AGST 5501. Prerequisite: AGST 3543 with a grade of B or better. Fall.*

***AGST 4511. Unmanned Aircraft Systems*** *Software and mobile applications for designing flight missions, collecting data, and analyzing/interpreting imagery for agricultural practices. Intended to prepare students for the Federal Aviation Administration (FAA) remote pilot license exam. Dual listed with AGST 5511. Prerequisites: AGST 3543, AGST 4773. Fall.*

**AGST 4543. Advanced Geographic Information Systems ~~GIS for Agriculture and Natural Resources~~** ~~Principles and advanced techniques of using Geographic Information System (GIS) concepts, equipment, and software used in agricultural, environmental, and natural resource applications.~~Methods, concepts, software, analysis and modeling of geospatial data using raster and vector data models for human-environment interactions using geographic information systems (GIS). Prerequisite, AGST 3543 with a grade of B or better. Spring.

**AGST 4773. Remote Sensing** ~~The course will cover the image acquisition and image processing methods using ERDAS Image software as the analytical assessment package.~~Passive and active means of aerial and satellite image acquisition, processing, analysis, and interpretation for research and decision making in agricultural, environmental, and natural resource applications. Prerequisite, AGST 3543 with a grade of B or better. Fall.

**AGST 4843~~3513~~. ~~Agriculture Spatial Technologies II~~ Agricultural Systems Technology Capstone** ~~The course will concentrate on a study of the electromagnetic properties of earth objects, vegetation, soils, water, and, the principles and operations of different sensors used to measure this energy.~~ Design of modern geospatial solutions for problems related to agriculture, the environment, and natural resources. Restricted to Agricultural Studies majors. Prerequisites: AGST 3503, AGST 4543, AGST 4773 Spring.

***AGST 489V. Special Problems in Agricultural Systems Technology*** *Individualized instruction and/or projects for advanced students. Approval of instructor. Fall, Spring, Summer.*

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