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

**Bulletin / Banner Change Transmittal Form**

**[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.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

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**Department Curriculum Committee Chair** |

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**COPE Chair (if applicable)** |
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| Donald Kennedy | 1/25/2019 |

**Department Chair:**  |

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**Head of Unit (If applicable)**   |
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| J. Kim Pittcock | 1/25/2019 |

**College Curriculum Committee Chair** |

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**Undergraduate Curriculum Council Chair** |
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| Timothy Burcham | 1/25/2019 |

**College Dean** |

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**Graduate Curriculum Committee Chair** |
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**General Education Committee Chair (If applicable)**   |

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**Vice Chancellor for Academic Affairs** |

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

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

**2.Proposed Change**

These bulletin changes are occurring as a part of the realignment of the Major of Agricultural Studies, and the emphasis areas under it, at the direction of the new Agricultural Systems Technology emphasis area faculty, Dr. John W. Nowlin and Dr. Ahmed Hashem.

In the Agricultural Education emphasis area, AGED 3433, Agricultural Equipment Hydraulic Systems, was removed because there is a lack of faculty to teach the course and it is of minor importance in the practice of secondary agricultural education due to the expense of hydraulic teaching systems. This had been one of four courses that the student had to choose three of, but now they are forced to take the three remaining courses.

In the Agricultural Communications emphasis area, There was a course deletion of AGST 1003, Modern Agricultural Systems, and it was replaces by the option to take one of two courses, AGST 3503, Geospatial Data Applications or

AGST 4003, Modern Irrigation Systems

In the Agricultural System Technology emphasis area, a set of changes to the assessment and curriculum are being proposed. These changes refocus the program on sustainable irrigation and a broader set of geospatial technology. The guiding intent of these changes is both to improve student success within and beyond the program and to open the program to a broader audience. This is reflected in the added and revised AGST courses. The following requested changes reflect deletion and revision of redundant courses, and addition of new courses and more course choices for students.

Course Deletions:

* AGST 1003, Modern Agricultural Systems is being deleted, because students don’t have the background to process the course material.

Course Revisions:

AGST 3503 and 3513, Agricultural Spatial Technologies I & II, are a parallel path to AGST 3543 Fundamentals of GIS. This detracts from their ability to effectively utilize GIS tools to make decisions. The valuable information from these courses is being incorporated into other new and existing courses (AGST 3543, Fundamentals of GIS/GPS, AGST 4501, Agricultural Decision Analysis, AGST 4511, Unmanned Aircraft Systems and AGST 4843 Ag. Sys. Tech. Capstone).

* AGST 3503 is being renamed to Geospatial Data Applications and readjusted to strengthen student’s ability to understand and manipulate geospatial data. This should have the effect of improving success in AGST 3543, Fundamentals of GIS/GPS, which will become the core course in the AGST emphasis area.
* AGST 3513 Agricultural Spatial Technology II is being revised to be a capstone course to follow all other courses and, in keeping with its original purpose focuses on incorporation of previous agricultural knowledge and geospatial skills to generate solutions to agricultural problems. This new capstone will also be the primary assessment vehicle in the emphasis area.
* AGST 4013, Precision Application Technology is being revised as a special problems course with a number and name change to AGST 401V3, Special Problems in Agricultural Systems Technology. This new course will be taught about a broad set of contemporary topics, based on the interest/need of the students and instructors.

New Courses:

Each of these courses focuses on important new technologies in the Agricultural Systems Technology Industry.

* AGST 4022 Irrigation Technology tools
* AGST 4501, Agricultural Decision Analysis
* AGST 4511, Unmanned Aircraft Systems.

Improved Set of Course Choices:

The requested changes increase the breadth of acceptable science preparation pathways for students. This allows the student to choose a path tailored to their intended post baccalaureate goals

* Agricultural systems technology represents a broad set of applications and the limited scientific preparation of the current curriculum plan, which emphasized Physics I in the Gen Ed Science preparation. This is not reflective of the broad applicability of geospatial technologies across the breadth physical and life sciences, therefore, Physics I was replaced with the Chemistry (CHEM 1013/1011, OR CHEM 1043/1041) as a Gen Ed Physical Science requirement, in keeping with other Agriculture majors
* Physics II was replaced by a broad set of other General Education level sciences, including: BIO 1503 AND 1501, Biology of Plants and Laboratory, GEOL 1003 AND 1001, Environmental Geology and Laboratory, PHSC 1014, Energy and the Environment, PHSC 1203 AND 1201, Physical Science and Laboratory, PHYS 1103 AND 1101, Intro to Space Science and Laboratory, or PHYS 2054, General Physics I.
* TECH 3863, Industrial Safety and TECH 4813 & Operations Systems Research have been removed.
* The set of electives outside of Agriculture that students can choose now directs students toward courses which improve their understanding of environmental, scientific, spatial, and technological subjects. including: BIOL 1063, People & Environment OR 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.

**3.Effective Date**

Fall 2019

**4.Justification –** *Please provide details as to why this change is necessary.*

Note: Multiple bulletin changes associated with an AGST program realignment are being submitted. Justification are supplied along with the changed described above in the Proposed Changes field.

**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.* |

The following changes occur on pages 115, 117, 118, 125, 430, 432

Pg. 115 …

**Major in Agricultural Studies**

**Bachelor of Science in Agriculture Emphasis in Agricultural Communications**

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 BIOL 1003* ***AND*** *BIOL 1001, Biological Science and Laboratory**CHEM 1013,* ***AND*** *CHEM 1011, General Chemistry I and Laboratory* ***OR****CHEM 1043* ***AND*** *CHEM 1041, Fundamental Concepts of Chemistry and Laboratory CMAC 1003, Mass Communications in Modern Society**ECON 2313, Principles of Macroeconomics* ***OR****ECON 2333, Economic Issues and Concepts**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 Communications:)** | **Sem. Hrs** |
| AD 3023, Principles of Advertising **OR**PR 3003, Principles of Public Relations | 3 |
| AGEC 3063, Agricultural Sales and Services | 3 |
| AGEC 4083, Agricultural Policy and Current Issues | 3 |
| AGED 1411, Introduction to Agricultural and Extension Education | 1 |
| AGED 3443, Leadership in Agriculture | 3 |
| AGED 445V, Practicum in Agricultural Communications | 3 |
| AGED 4462, Agricultural Youth Organizations | 2 |
| AGRI 420V, Internships in Agriculture | 3 |
| AGRI 4433, Organic Agricultural Production | 3 |
| AGRI 4223, Agriculture and the Environment | 3 |
| ~~AGST 1003, Modern Agricultural Systems~~  | ~~3~~ |
| AGST 3503, Geospatial Data Applications ORAGST 4003, Modern Irrigation Systems | ***3*** |
| AGST 3543, Fundamentals of GIS/GPS | 3 |
| CMAC 1001, Media Grammar and Style | 1 |
| CMAC 2003, Media Writing | 3 |
| CMAC 2053, Introduction to Visual Communications | 3 |
| ENG 3043, Technical Writing **OR**MDIA 4053, Advanced Reporting | 3 |
| MDIA 2013 **AND** MDIA 2010, Multimedia Reporting Laboratory | 3 |
| MDIA 2313, Multimedia Production | 3 |

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

115

Pg. 117 …

**Major in Agricultural Studies**

**Bachelor of Science in Agriculture Emphasis in Agricultural Education**

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 CHEM 1013* ***AND*** *CHEM 1011, General Chemistry I and Laboratory* ***OR****CHEM 1043* ***AND*** *CHEM 1041, Fundamental Concepts of Chemistry and Laboratory BIOL 1003* ***AND*** *BIOL 1001, Biological Science 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 Education):** | **Sem. Hrs** |
| ANSC 1621, Introduction to Animal Science Laboratory | 1 |
| PSSC 2811, Soils Lab | 1 |
| CHEM 1052, Fundamental Concepts of Organic and Biochemistry | 2 |
| AGED 2433, Principles of Agricultural Power: Electricity and Internal Combustion Engines | 3 |
| AGED 2453, Application of Welding Technologies to Agriculture | 3 |
| AGED 3453, Agricultural Structural Systems | 3 |
| **~~Select three of the following:~~**~~AGED 2433, Principles of Agricultural Power: Electricity and Internal Combustion Engines AGED 2453, Application of Welding Technologies to Agriculture~~~~AGED 3433, Agricultural Equipment Hydraulic Systems AGED 3453, Agricultural Structural Systems~~ | ~~9~~ |
| Electives in AGRI, AGEC, AGED, ANSC, HORT, PSSC, or TECH*(12 hours must be upper-level and all electives must be approved by advisor)* | 15 |
| **Sub-total** | **28** |
| **Professional Education Requirements:**Grade of “C” or better required for all Professional Education Requirements.Courses denoted below with an asterisk (\*) require admission to the Teacher Education Program. For additional information, see Professional Education Requirements for Secondary Majors in the College of Education and Behavioral Science section. | **Sem. Hrs** |
| AGED 1403, Basic Agricultural Mechanics | 3 |
| AGED 1411, Introduction to Agricultural and Extension Education | 1 |
| AGED 4433, Methods of Teaching Agricultural Mechanics | 3 |
| AGED 4462, Agricultural Youth Organizations | 2 |
| SCED 2513 Introduction to Secondary Teaching | 3 |
| PSY 3703, Educational Psychology | 3 |
| \*EDAG 4623, Special methods for Teaching Agricultural Education | 3 |
| \*TIAG 4826, Teaching Internship in the Secondary School | 12 |
| **Sub-total** | **30** |
| **Total Required Hours:** | **120** |

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From pg. 118 …

**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, Intro to Unmanned Aircraft Systems*** | ***1*** |
| AGST 4773, Remote Sensing | 3 |
| AGST 4843, Agricultural Systems Technology Capstone | **3** |
| *Select one of the following:*BIO 3023, Principles of Ecology **OR**GEOG 3723, Introduction to Physical Geography **OR**GEOG 4113, Water Resources Planning **OR**GEOG 4633, Climatology~~CHEM 1043 Fundamental Concepts of Chemistry~~  | **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 of the following:*CIT 1503, Microcomputer Applications **OR**CS 1013, Introduction to Computers Applications  | **3** |
| GEOG 2613, Introduction to Geography | 3 |
| MATH 1033, Plane Trigonometry | 3 |
| *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,** AGST, AGRI, PSSC. | ~~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/)

118

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Pg 430

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**Agricultural Education (AGED)**

**AGED 1403. Basic Agricultural Mechanics** Introduction to basic wood and metal working tools and equipment used in most mechanics laboratories. Instruction focuses on safety, project design, tool and equipment use. Spring.

**AGED 1411. Introduction to Agricultural and Extension Education** Philosophy, aims, and objectives of agricultural and extension education. Explanation of programs, career opportunities, and qualifications in agricultural and extension education. Fall, even.

**AGED 1441. Introduction to Forestry** Emphasis on tree identification, instruments and equipment, tree disease and disorders, forest product uses, timber stand improvement, general principles of forest management, map and compass reading, and pulp and sawlog volume estima- tion. Spring, even.

**AGED 2433. Principles of Agricultural Power Electricity and Internal Combustion Engines** Agricultural power includes electricity and internal combustion engines. Electricity includes systems, devices, motors, installation and service. Internal combustion power includes small engine repair and maintenance. Prerequisite, AGED 1403. Spring, odd.

**AGED 2453. Application of Welding Technologies to Agriculture** Principles and practices of various methods of welding technology applied to agriculture. Lecture two hours, laboratory two hours per week. Fall.

**~~AGED 3433. Agricultural Equipment Hydraulic Systems~~** ~~Study of the design, theory of opera- tion, and maintenance of agricultural equipment hydraulic systems. Includes troubleshooting and team solutions to functional system problems. Prerequisites, MATH 1023. Spring.~~

**AGED 3443. Leadership in Agriculture** Principles and practices associated with development of agricultural leaders as individuals or teams from a practical and historical perspective. Develop- ing skills needed to effectively work within agricultural organizations and with individual clientele. Spring, odd.

**AGED 3453. Agricultural Structural Systems** Basic carpentry skills associated with the agricultural environment. Focus of instruction is equipment safety and use, building supplies or materials, skills development in framing, roofing, installation of windows, etc. Two hour lecture and two hour laboratory per week. Fall.

**AGED 4433. Methods of Teaching Agricultural Mechanics** Methods and techniques used to teach and organize the mechanics laboratory. Teaching aids will be emphasized. Lecture two hours, laboratory two hours per week. Prerequisite, AGED 1403. Spring.

**AGED 445V. Practicum in Agricultural Communications** Practicum provides opportunities for students to gain practical experiences in a real working environment with trained professionals in the communications field. Fall, Spring, Summer.

**AGED 4462. Agricultural Youth Organizations** Introduction to the history, purposes, parlia- mentary procedure, and membership and awards structure. Emphasis on leadership development and advisor responsibilities to agricultural youth organizations 4H, FFA. Fall.

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

430

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, COMS 1203, 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, 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 ~~direc- tions~~ 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 401V~~3~~. Special Problems in Agricultural Systems Technology** For students of senior standing to work on special problems. Approval of instructor and dean necessary. **~~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~~. **Fall,** Spring**, Summer.**

***AGST 4022. Irrigation Technology Tools*** *Introduce 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. Intro to 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.~~ Integrate environmental phenomena, reveal a spatial problem, choose effective decision tools, and design a solution to an existing agricultural, environmental or natural resources problem using modern geospatial technologies. (AGST majors only) Prerequisites: AGST 3503, AGST 4543, AGST 4773 Spring.

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

432