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

**New Course Proposal Form**

**[] Undergraduate Curriculum Council**

**[x] Graduate Council**

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| **[x] 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 3/5/2019 **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Head of Unit (If applicable)** |
| Steven Green 3/1/2019 **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| Timothy Burcham 3/8/2019 **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 5511

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).

**Title: Unmanned Aircraft Systems**

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

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.

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 5763 or AGST 4543 AND AGST 5773 or AGST 4773.

* 1. Why or why not?

These prerequisite courses provide background and context for this course.

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.*

Enter text...

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 4511. Unmanned Aircraft Systems

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.)

Enter text...

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| Week | TOPIC – LECT / LAB |
| 1 | **Class:** Introduction to Unmanned aerial systems (UAS) |
| 2 | **Class:** UAS Regulations |
| 3 | **Class:** UAS Regulations |
| 4 | **Class:** UAS mission planning and control  **Lab I:** Mission planning |
| 5 | **Class:** Fundamentals of UAS operations-1 |
| 6 | **Class:** Fundamentals of UAS operations-2 |
| 7 | **Class:** UAS data processing  **Lab II :** Image analysis |

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

Labs

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 courses which give instruction on Unmanned Aerial Systems. It is intended to prepare students to take the FAA UAS Pilot License. Students should be able to manually fly a drone after this class, and will learn to use official FAA resources to prepare for the FAA pilot exam.

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.

Unmanned Aerial Systems (UASs) are becoming important tools for agriculture and environmental monitoring, and in the Agricultural Systems Technology emphasis area UASs are an emerging geospatial technology. This course exposes students to this technology and teaches basic operation and use in the context of agriculture and environmental monitoring.

c. Student population served.

**Agriculture Students who will work on farms, with Agricultural Extension, or in Precision Agriculture Industry.**

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

**Graduate, students can apply this technology to their graduate research**

**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?

Enter text...

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 1 (from question #23)** | Students will demonstrate depth in a concentration area to support their professional goals. |
| Assessment Measure | Successful development (Pass in a Pass/Fail class) of a work plan related to the student’s professional goals and interests with input and review by major advisor and instructor |
| Assessment  Timetable | Fall semesters of even years |
| Who is responsible for assessing and reporting on the results? | Instructor; review by CoAT Graduate Committee and CoAT Assessment Committee |

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| **Program-Level Outcome 2 (from question #23)** | Students will demonstrate both verbal and written communication skills. |
| Assessment Measure | Successful completion of written work plan with approval by major advisor and instructor; Successful (Pass) slideshow presentation of work plan or thesis to faculty and students in a seminar setting. |
| Assessment  Timetable | Spring semesters of even years |
| Who is responsible for assessing and reporting on the results? | Instructors; review by CoAT Graduate Committee and CoAT Assessment Committee |
| **Program-Level Outcome 3 (from question #23)** | Students will develop advanced skills in critical thinking and analysis applied to solve relevant problems. |
| Assessment Measure | Successful completion of the Comprehensive/Final Defense Exam in front of graduate advisory committee |
| Assessment  Timetable | Spring semesters of odd years |
| Who is responsible for assessing and reporting on the results? | Major advisors; review by CoAT Graduate Committee and CoAT Assessment Committee |

*(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** | Students will be able to plan drone missions. |
| Which learning activities are responsible for this outcome? | Use Unmanned Aerial Systems and software and mobile device applications for drone operation. |
| Assessment Measure | Drone mission plan graded with rubric. |

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| **Outcome 2** | Students will be able to analyze remotely sensed imagery. |
| Which learning activities are responsible for this outcome? | Use image processing software to analyze spectral reflectance Lab |
| Assessment Measure | Image processing project graded with rubric. |

*(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. 295 & 296 of the 2018-2019 Graduate 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).

## Pgs 295 & 296

## …

**Agricultural Systems Technologies (AGST)**

**AGST 5003. Modern Irrigation Systems** ~~The course will cover m~~ 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. ~~Prerequisite, MATH 1033 and PSSC 2813.~~ Dual listed as AGST 4003.

**AGST 501V~~3~~. Special Topics Graduate Seminar** Contemporary topics in Agricultural Systems Technology. **~~Precision Application Technology~~** ~~Techniques in soil and crop homogeneity detection and variable-rate precision application of crop inputs to increase productivity and enhance environmental sustainability. Dual listed with AGST 401~~**~~V~~**~~3.~~ **~~Fall,~~** ~~Spring~~**~~, Summer.~~**

***AGST 5022. Irrigation Technology Tools*** *Technical tools and software related to irrigation system hydraulic design and management. Dual listed with AGST 4022. Prerequisites: AGST 5003 or AGST 4003 AND AGST 5763 or AGST 4543.*

***AGST 5501. 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 4501. Prerequisite: AGST 5763 or AGST 4543.*

***AGST 5511. 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 4511. Prerequisites: AGST 5763 or AGST 4543 AND AGST 5773 or AGST 4773.*

***AGST 5763 Understanding Geographic Information Systems*** *Methods, concepts, software, analysis and modeling of geospatial data using raster and vector data models for human-environment interactions using geographic information systems (GIS).*

**AGST 5773. Remote Sensing** ~~The course will cover the image acquisition and image processing methods using ERDAS Imagine 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. Dual listed with AGST 4473.

**AGST 6543. Geospatial Data and Models ~~Advanced Geographic Information Systems~~** ~~Advanced GIS using Arc GIS software as the analytical assessment package~~. Geospatial data frameworks and methods including site suitability and hydrological modeling. Prerequisite~~s: PSSC 3543 Fundamental of GIS and GPS or instructors consent.~~*AGST 5763 or AGST 4543.*

***AGST 6843 Applied Geospatial Research*** *Design and execute applied geospatial research into Human-Environment Interactions. Prerequisites: AGST 5773 or AGST 4773; AGST 6543, or instructor approval.*

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