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

**Program Modification Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

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| **Modification Type: [ ]Admissions, [X]Curricular Sequence, or [ ]Other**  |

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

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**Department Curriculum Committee Chair** |

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |

**COPE Chair (if applicable)** |
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| --- | --- |
| Donald Kennedy | 3/2/2021 |

**Department Chair**  |

|  |  |
| --- | --- |
| Jason L. Causey | 3/2/2021 |

**Head of Unit (if applicable)**   |
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| J Kim Pittcock | 3/2/2021 |

**College Curriculum Committee Chair** |

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |

**Undergraduate Curriculum Council Chair** |
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**Director of Assessment** *(only for changes impacting assessment)* |

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**Graduate Curriculum Committee Chair** |
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|  |  |
| --- | --- |
| Mickey Latour | 3/2/2021 |

**College Dean** |

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| Alan Utter | 3/15/2021 |

**Vice Chancellor for Academic Affairs** |
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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |

**General Education Committee Chair (if applicable)**   |  |

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

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

1. **Proposed Change** (for undergraduate curricular changes please provide an 8-semester plan (appendix A), if applicable)

Addition of a domain study option in Geospatial Technology to the B.S. in Data Science and Data Analytics program.

1. **Effective Date**

Fall 2021

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

To provide a domain study option for students interested in working with spatial data through the use of geospatial technologies in the realms of: agriculture, natural resources, planning, the environment, government and/or the private sector, as a part of the new B.S. in Data Science and Data Analytics, in the Data Science emphasis.

**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.**  |

**After Page 185, following the “Data Science and Data Analytics Program” section and before the heading on “Engineering Programs”**

**DOMAIN STUDIES**

**DOMAIN STUDY: Geospatial Technology (for Data Science Track )**

**EMPHASIS: Data Science**

**SPONSORING COLLEGE: College of Agriculture**

***\*Note: Requires General Education, Social Science: GEOG 2613 Introduction to Geography***

|  |  |
| --- | --- |
| **Required Courses:** | **Sem. Hours** |
| AGST 3543 | Fundamentals of GIS/GPS | 3 |
| AGST 4511 | Unmanned Aircraft Systems | 1 |
| AGST 4543 | Understanding Geographic Information Systems | 3 |
| AGST 4773 | Remote Sensing | 3 |
| GEOG 3723 ORGEOG 4633 | Introduction to Physical Geography, Weather and Climate ORClimatology | 3 |
| **Select three from the following:** |  |
| AGEC 4253 | Agricultural and Environmental Data Science | 9 |
| AGRI 4223 | Agriculture and the Environment |
| AGST 4503 | Agricultural Decision Tools and Analysis |
| AGST 489V | Special Problems in Agricultural Systems Technology |
| GEOG 3723 ORGEOG 4633 | Introduction to Physical Geography, Weather and Climate ORClimatology |
| GEOG 4113 | Water Resources Planning |
| GEOG 4613 | Conservation of Natural Resources |
| GEOG 4643 | Geography of Arkansas |
| GEOG 4813 | Special Topics in Geography |
| **Domain Studies Total** | **22** |

**Appendix A, 8-Semester Plan**

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

*Instructions: Please identify new courses in italics*.

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| **Arkansas State University-Jonesboro****Degree: Bachelor of Science****Major: Data Science and Data Analytics, Emphasis in Data Science, Computer Science Domain****Year: 2021-2022** |
| Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters. Developmental courses do not count toward total degree hours. **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions. In most cases, general education courses may be interchanged between semesters.** A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree. |
| **Year 1** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| CS 1093 | Choose one:Making Connections Computer Science | 3 | X |  | MATH 1033 MATH 1054 | Choose one:Plane TrigonometryPrecalculus Mathematics | 3-4 |  |
| MATH 1023 | College Algebra | 3 | X |  | ENG 1013 | Composition II | 3 | X |
| ENG 1003 | Composition I | 3 | X |  | PHIL 1103 | Intro to Philosophy | 3 | X |
| Life Science Gen. Ed., BIOL 1003/ 1001BIOL 1033/ 1001BIOL 1063/ 1001BIO 1503/ 1501BIO 2013/ 2011BIO 2103/ 2101BIO 2203/ 2201 | Choose one:Biological Science/ LabPeople & Environment/ LabBiology of Plants/ LabBiology of the Cell/ LabMicrobio… Nursing & Allied Health/ LabHuman Anatomy & Physiology I/ Lab | 4 | X |  | Gen Ed Social Science\*GEO 2613HIST 1013HIST 1023 SOC 2213 PSY 2013 POSC 1003 CMAC 1003 | Choose one: Intro to GeographyWorld Civ. to 1660World Civ. Since 1660Intro to SociologyIntro to PsychologyIntro to PoliticsIntro to Mass Communication  | 3 | X |
| HIST 2763HIST 2773POSC 2103 | Choose one:U.S. to 1876 U.S. since 1876Intro to U.S. Government | 3 | X |  | COMS 1203 | Oral Communication | 3 | X |
|  |  |  |  |  |  |  |  |  |
| **Total Hours** |   | 16 |   |   | **Total Hours** |   | 15-16 |   |
|  |  |  |
| **Year 2** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| MATH 2204 | Calculus I | 4 |  |  | MATH 2214 | Calculus II | 4 |  |
| AGST 3503 | Geospatial Data Applications (DSDA 101) | 3 |  |  | STAT 3233 | Applied Statistics I | 3 |  |
| CS 1114  | Concepts of Programming  | 4 |  |  | AGST 3543 | Fundamentals of GIS/GPS | 3 |  |
| Physical Science Gen. Ed.CHEM 1013 /1011 CHEM 1043 /1041 GEOL 1003 / 1001 PHSC 1014PHSC 1203 / 1201PHYS 1103 / 1101PHYS 2054 | Choose one: General Chemistry I / LabFund. Concepts of Chemistry / LabEnvironmental Geology / LabEnergy and the EnvironmentPhysical Science / LabIntro to Space Science / LabGeneral Physics I | 4 | X |  | Gen Ed Social Science\*GEO 2613HIST 1013HIST 1023SOC 2213PSY 2013 POSC 1003 CMAC 1003 | Choose one: Intro to GeographyWorld Civ. to 1660 World Civ. Since 1660Intro to SociologyIntro to Psychology Intro to Politics Intro to Mass Communication  | 3 |  |
|  |  |  |  |  | DATA 2004 | Programming for Data Science | 4 | X |
| **Total Hours** |   | 15 |   |   | **Total Hours** |   | 17 |  |
| **Year 3** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| STAT 3133 | Applied Categorical Data Analysis | 3 |  |  | STAT 3243 | Regression Analysis and ANOVA | 3 |  |
| DATA 3003 | Applied Database and data mining | 3 |  |  | PHIL 3723 | Computers, Ethics, and Society | 3 |  |
| MATH 2183 | Discrete Structures | 3 |  |  | CSED 4231 | Principles of Operating Systems | 1 |  |
| AGST 4511 | Unmanned Aircraft Systems | 1 |  |  | CSED 4731 | Principles of Abstract structures | 1 |  |
| AGST 4503 | Agricultural Decision Tools and Analysis | 3 |  |  | CSED 4241 | Principles of Computer Organization | 1 |  |
| MUS 2503 or THEA 2503 or ART 2503 | Fine Arts-Musical or Fine Arts-Theatre or Fine Arts -Visual | 3 | X |  | CS 4623  | Fundamentals of Data Science | 3 |  |
|  |  |  |  |  | GEOG 2613 | Intro to Geography | 3 |  |
|  |  |  |  |  |  |  |  |  |
| **Total Hours**  | 16 |   |   | **Total Hours** | 15 |   |
|   |   |   |   |   |   |   |   |   |
| **Year 4** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| DATA 4003 | Fundamental concepts in Design of Experiments | 3 |  |  | DATA 4013 | Data Science and Data Analytics Capstone | 3 |  |
| DATA 3023 | Data Visualization and Communication | 3 |  |  | DATA 303V | Internship | 1 |  |
| AGST 4543 | Understanding GIS | 3 |  |  | MATH 3243 | Linear Algebra | 3 |  |
| GEOG 3723 ORGEOG 4633 | Introduction to Physical Geography, Weather, & Climate OR Climatology | 3 |  |  | AGST 4773 | Remote Sensing | 3 |  |
| DATA 3011 | Seminar | 1 |  |  | GEOG 4113 ORGEOG 4613 | Water Resources Planning OR Conservation of Natural Resources | 3 |  |
|  |  |  |  |  |  |  |  |  |
| **Total Hours** | 13 |   | **Total Hours** | 13 |
| **Total Upper-Level Hours** | **45** |  | **Total Degree Hours** | **120** |