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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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| Jason L. Causey | 1/22/2021 |

**Department Curriculum Committee Chair** |

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

**COPE Chair (if applicable)** |
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| Jake A. Qualls | 1/22/2021 |

**Department Chair**  |

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| --- | --- |
| Jason L. Causey | 1/22/2021 |

**Head of Unit (if applicable)**   |
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| Jason Stewart | 1/22/2021 |

**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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| Abhijit Bhattacharyya | 1/22/2021 |

**College Dean** |

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

**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)

Jason L. Causey
jcausey@astate.edu
(870) 972-3978 ext. 8182

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

Addition of a domain study option in Computer Science 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 practicing data analytics in software related industries, or in industries related to developing new data science tools and frameworks, 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: Computer Science**

**EMPHASIS: Data Science**

**SPONSORING COLLEGE: College of Engineering and Computer Science**

|  |  |
| --- | --- |
| **Required Courses** | **Sem. Hours** |
| CS 2114, Structured Programming | 4 |
| CS 2124, OOP and Fundamental Data Structures  | 4 |
| CS 3113, Algorithms and Advanced Data Structures | 3 |
| CS 3233, Operating Systems | 3 |
| **Sub-total** | **14** |
| **Electives** |  |
| **CS Electives (Choose two of the next 6.)**CS 3123, Programming LanguagesCS 3613, Web Application DevelopmentCS 4213, Distributed ComputingCS 4223, UNIX Systems ProgrammingCS 4433, Artificial IntelligenceCS 4713, Analysis of Algorithms  | 6 |
| Free Elective | 1-2 |
| **Sub-total** | **7-8** |
| **Domain studies total** | **21-22** |

**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 |  |  | MUS 2503 or THEA 2503 or ART 2503 | Fine Arts-Musical or Fine Arts-Theatre or Fine Arts -Visual | 3 | X |
| 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 |  | DATA 2004 | Programming for Data Science | 4 |  |
|  |  |  |  |  | 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 | 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 |  |
| CS 2114 | Structured Programming | 4 |  |  | CSED 4731 | Principles of Abstract structures | 1 |  |
|  | Free Elective | 1-2 |  |  | CSED 4241 | Principles of Computer Organization | 1 |  |
|  |  |  |  |  | CS 4623  | Fundamentals of Data Science | 3 |  |
|  |  |  |  |  | CS 2124 | OOP and Fundamental Data Structures | 4 |  |
| **Total Hours**  | 14-15 |   |   | **Total Hours** | 16 |   |
|   |   |   |   |   |   |   |   |   |
| **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 |  |
| CS 3113 | Algorithms and Advanced Data Structures | 3 |  |  | MATH 3243 | Linear Algebra | 3 |  |
|  | CS Elective | 3 |  |  | CS 3233 | Operating Systems | 3 |  |
| DATA 3011 | Seminar | 1 |  |  |  | CS Elective | 3 |  |
|  |  |  |  |  |  |  |  |  |
| **Total Hours** | 13 |   | **Total Hours** | 13 |
| **Total Upper-Level Hours** | **45** |  | **Total Degree Hours** | **120** |