|  |
| --- |
| For Academic Affairs and Research Use Only |
| Proposal Number | LAC144 |
| CIP Code:  |  |
| Degree Code: |  |

**New or Modified Course Proposal Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

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

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

|  |  |
| --- | --- |
| Katherine Baker 1/21/2022**Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**COPE Chair (if applicable)** |
| Temma Balducci 1/21/2022**Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Head of Unit (if applicable)**   |
| Warren Johnson 9/27/2022**College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Undergraduate Curriculum Council Chair** |
| Mary Elizabeth Spence 1/24/2022**Office of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Graduate Curriculum Committee Chair** |
| Gina Hogue 9/28/2022**College Dean** | Alan Utter 10/17/2022**Vice Chancellor for Academic Affairs** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**General Education Committee Chair (if applicable)**   |  |

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

Mindy Fulcher, Dept. of Art + Design, mfulcher@astate.edu, 870-761-2121

1. **Proposed starting term and Bulletin year for new course or modification to take effect**

Fall 2023

**Instructions:**

*Please complete all sections unless otherwise noted. For course modifications, sections with a “Modification requested?” prompt need not be completed if the answer is “No.”*

|  |  |  |
| --- | --- | --- |
|  | **Current (Course Modifications Only)** | **Proposed (New or Modified)** *(Indicate “N/A” if no modification)* |
| **Prefix** |  | DIGI |
| **Number\*** |  | 4023 |
| **Title** (include a short title that’s 30 characters or fewer) |  | Design and Development of AI |
| **Description\*\*** |  | AI use case implementation using Python programming. Architecting and machine learning as well as Python programming concepts related to AI and machine learning. |

 ***\**** Confirm with the Registrar’s Office that number chosen has not been used before and is available for use. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.

\*\*Forty words or fewer (excepting prerequisites and other restrictions) as it should appear in the Bulletin.

1. **Proposed prerequisites and major restrictions** **[Modification requested? Yes/No]**

(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?

C or better in DIGI 3063 or ISBA 3063, Analysis and Design of AI

* 1. Why or why not?

 Students will be more successful in this course with prerequisite knowledge obtained in DIGI 3033

1. **NO** Is this course restricted to a specific major?
	1. If yes, which major? Enter text...
2. **Proposed course frequency [Modification requested? Yes/No]**

(e.g. Fall, Spring, Summer; if irregularly offered, please indicate, “irregular.”) *Not applicable to Graduate courses.*

Spring

1. **Proposed course type [Modification requested? Yes/No]**

Will this course be lecture only, lab only, lecture and lab, activity (e.g., physical education), dissertation/thesis, capstone, independent study, internship/practicum, seminar, special topics, or studio? Please choose one.

Lecture and lab

1. **Proposed grade type [Modification requested? Yes/No]**

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

Standard Letter

1. NO Is this course dual-listed (undergraduate/graduate)?
2. YES 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.)*

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

 ISBA 4023

 **b.** – YES Can the cross-listed course be used to satisfy the prerequisite or degree requirements this course satisfies?

 Enter text...

1. Yes Is this course in support of a new program?

a. If yes, what program?

 Digital Technology and Design-AI Emphasis

1. NO Will this course be a one-to-one equivalent to a deleted course or previous version of this course (please check with the Registrar if unsure)?

a. If yes, which course?

Enter text...

**Course Details**

1. **Proposed outline** **[Modification requested? Yes/No]**

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

**Module 1: Python Introduction**

* Import data using Python libraries
* Test the dataset using Python libraries
* Review various data processing techniques

**Module 2: Analysis**

* Perform univariate analysis
* Implement multivariate analysis and outlier treatment
* Review how to identify missing values in machine learning and AI use cases

**Module 3: Regression**

* Implement linear regression
* Review polynomial regression

**Module 4: Classification Methods**

* Develop classification methods SVM
* Implement classification methods for decision tree
* Analyze random forest technique

**Module 5: Supervised vs Unsupervised Learning**

* Understand supervised learning and unsupervised learning
* Use clustering algorithm

**Module 6: Python Libraries and Packages**

* Implement Neural network using Python libraries
* Build visualization using Python packages

**Module 7: Analyze Solutions**

* Analyze MLP with real-life solutions
* Understand neural networks, perceptions using Python libraries
1. **Proposed special features** **[Modification requested? Yes/No]**

(e.g. labs, exhibits, site visitations, etc.)

none

1. **Department staffing and classroom/lab resources**

Software: VS Code, Eclipse, Python

Hardware: Mac or Windows OS computer

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

Instructor/Adjunct, paid through AOS

1. 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.*

**Justification**

**Modification Justification (Course Modifications Only)**

1. Justification for Modification(s)

Enter text...

**New Course Justification (New Courses Only)**

1. Justification for course. Must include:

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

 The Digital Technology and Design degree provides students a core education in Design Software Technology and Human Centered Design Theory combined with foundational programming knowledge. Students in this degree then choose a concentration area to focus on. Students in this course will demonstrate in-demand industry needs through hands-on projects representing programming, problem solving, analytical, and design thinking. Students will benefit in their career through internship experience and a portfolio that demonstrates a high-level skillset in their chosen concentration area.

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

 The Department of Art + Design’s mission: The Department of Art + Design is dedicated to the creative, aesthetic and cultural development of visual art students that builds upon a well-rounded liberal arts education. This course adds to this mission.

c. Student population served.

Digital Technology & Design majors, BFA students, or students from any major could take this course as an elective.

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

This course requires knowledge in programming logic and human centered design theory in addition to knowledge learned in lower-level AI courses, therefore a 4000 level is appropriate.

**Assessment**

**Assessment Plan Modifications (Course Modifications Only)**

1. **Yes / No** Do the proposed modifications result in a change to the assessment plan?

 *If yes, please complete the Assessment section of the proposal*

**Relationship with Current Program-Level Assessment Process (Course modifications skip this section unless the answer to #18 is “Yes”)**

1. 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?

• SWBAT apply a working knowledge of digital design to create a portfolio.

• SWABT apply the technical and aesthetic skills required of a digital designer (within area of concentration).

1. Considering the indicated program-level learning outcome/s (from question #19), 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.*

|  |  |
| --- | --- |
| **Program-Level Outcome 1 (from question #19)** | **SWBAT apply a working knowledge of digital design to create a portfolio.**  |
| Assessment Measure | Yearly Portfolio Review by instructors within student’s specific concentration area  |
| Assessment Timetable | After Spring Term |
| Who is responsible for assessing and reporting on the results? | Mindy Fulcher/Shelley Gipson |

|  |  |
| --- | --- |
| **Program-Level Outcome 2 (from question #19)** | **SWABT apply the technical and aesthetic skills required of a digital designer (within area of concentration).** |
| Assessment Measure | Portfolio presentation to peers/instructors  |
| Assessment Timetable | After Spring Term |
| Who is responsible for assessing and reporting on the results? | Mindy Fulcher/Shelley Gipson |

 **Course-Level Outcomes**

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

|  |  |
| --- | --- |
| **Outcome 1** | Convert machine learning design into implementation using Python programming |
| Which learning activities are responsible for this outcome? | Weekly assignments, Final Project |
| Assessment Measure  | Project rubrics based on technical skill, ability to follow directions, and a clear understanding of the subject matter. |

*(Repeat if needed for additional outcomes)*

|  |  |
| --- | --- |
| **Outcome 2** | Implement AI use cases using the Python libraries |
| Which learning activities are responsible for this outcome? | Weekly assignments, Final Project |
| Assessment Measure  | Project rubrics based on technical skill, ability to follow directions, and a clear understanding of the subject matter. |

*(Repeat if needed for additional outcomes)*

|  |  |
| --- | --- |
| **Outcome 3** | Describe AI and machine learning architecture  |
| Which learning activities are responsible for this outcome? | Weekly assignments, Final Project |
| Assessment Measure  | Project rubrics based on technical skill, ability to follow directions, and a clear understanding of the subject matter. |

*(Repeat if needed for additional outcomes)*

**Bulletin Changes**

|  |
| --- |
| **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.**  |

**Undergraduate Bulletin 2022-2023**

[https://catalog.astate.edu/content.php?filter%5B27%5D=DIGI&filter%5B29%5D=&filter%5Bcourse\_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur\_cat\_oid=3&expand=&navoid=78&search\_database=Filter#acalog\_template\_course\_filter](https://catalog.astate.edu/content.php?filter%5B27%5D=DIGI&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=3&expand=&navoid=78&search_database=Filter%23acalog_template_course_filter)

|  |
| --- |
| **Digital Design** |
|    | •  [DIGI 2003 - Introduction to Coding with Swift](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4253) **Sem. Hrs:** **3** |
|    | •  [DIGI 2013 - Introduction to Coding with Kotlin for Android](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4254) **Sem. Hrs:** **3** |
|    | •  [DIGI 3003 - Intermediate Coding with Swift](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4255) **Sem. Hrs:** **3** |
|  | •  [DIGI 4003 - Advanced Studio in Swift Coding](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4257) **Sem. Hrs:** **3** |
|    | •  [DIGI 4013 - Advanced Studio in Android Development](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4258) **Sem. Hrs:** **3**• **DIGI 4023 - Design and Development of AI** **Sem. Hrs: 3**AI use case implementation using Python programming. Architecting and machine learning as well as Python programming concepts related to AI and machine learning. Spring.Prerequisites: grade C or better in DIGI 3063 or ISBA 3063.[https://catalog.astate.edu/content.php?filter%5B27%5D=ISBA&filter%5B29%5D=&filter%5Bcourse\_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur\_cat\_oid=3&expand=&navoid=78&search\_database=Filter#acalog\_template\_course\_filter](https://catalog.astate.edu/content.php?filter%5B27%5D=ISBA&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=3&expand=&navoid=78&search_database=Filter%23acalog_template_course_filter) |

|  |
| --- |
| **Information Systems and Business Analytics** |
|    | •  [ISBA 409V - Special Problems in Computer Information Technology](https://catalog.astate.edu/content.php?filter%5B27%5D=ISBA&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=3&expand=&navoid=78&search_database=Filter#/usr/local/webroot/acalog-legacy/shared/htdocs_gateway/ajax/preview_course.php) **Sem. Hrs:** **Variable** |
|    | •  [ISBA 488V - Internship in ISBA](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4821) **Sem. Hrs:** **Variable** |
|    | •  [ISBA 1503 - Microcomputer Applications](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4790) **Sem. Hrs:** **3** |
|    | •  [ISBA 2033 - Programming Fundamentals](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4791) **Sem. Hrs:** **3** |
|    | •  [ISBA 2413 - Word Processing I](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4792) **Sem. Hrs:** **3** |
|    | •  [ISBA 2523 - Telecommunications and Networking Essentials](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4793) **Sem. Hrs:** **3** |
|    | •  [ISBA 2543 - Keyboarding for Professionals](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4794) **Sem. Hrs:** **3** |
|    | •  [ISBA 3033 - Intermediate Programming](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4796) **Sem. Hrs:** **3** |
|    | •  [ISBA 3353 - Mobile Application Development For Business](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4797) **Sem. Hrs:** **3** |
|    | •  [ISBA 3403 - Database Management](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4798) **Sem. Hrs:** **3** |
|    | •  [ISBA 3413 - Big Data for Business](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4799) **Sem. Hrs:** **3** |
|    | •  [ISBA 3423 - Data Visualization for Business](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4800) **Sem. Hrs:** **3** |
|    | •  [ISBA 3523 - Operations Management](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4801) **Sem. Hrs:** **3** |
|    | •  [ISBA 3533 - Microcomputer Applications II](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4802) **Sem. Hrs:** **3** |
|    | •  [ISBA 3553 - Foundation of Business Analytics](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4803) **Sem. Hrs:** **3** |
|    | •  [ISBA 3603 - Systems Analysis and Design](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4804) **Sem. Hrs:** **3** |
|    | •  [ISBA 3623 - LAN Administration](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4805) **Sem. Hrs:** **3** |
|    | •  [ISBA 3663 - Data Mining for Business](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4806) **Sem. Hrs:** **3** |
|    | •  [ISBA 3853 - Computer Forensics](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4807) **Sem. Hrs:** **3**• **ISBA 4023 - Design and Development of AI** **Sem. Hrs: 3**AI use case implementation using Python programming. Architecting and machine learning as well as Python programming concepts related to AI and machine learning. Spring.Prerequisites: grade C or better in DIGI 3063 or ISBA 3063. |
|    | •  [ISBA 4453 - E-Commerce Business Strategies](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4809) **Sem. Hrs:** **3** |
|    | •  [ISBA 4503 - Business Technology Methods](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4810) **Sem. Hrs:** **3** |
|    | •  [ISBA 4513 - Business Technology Field Experience](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4811) **Sem. Hrs:** **3** |
|    | •  [ISBA 4523 - Advanced Network Telecommunications](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4812) **Sem. Hrs:** **3** |
|    | •  [ISBA 4533 - Word Processing II](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4813) **Sem. Hrs:** **3** |
|    | •  [ISBA 4603 - Microcomputer Applications III](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4814) **Sem. Hrs:** **3** |
|    | •  [ISBA 4623 - Information Systems Security](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4815) **Sem. Hrs:** **3** |
|    | •  [ISBA 4633 - Artificial Intelligence Business Strategies and Applications](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4816) **Sem. Hrs:** **3** |
|    | •  [ISBA 4653 - IoT and Blockchain Business Strategies](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4817) **Sem. Hrs:** **3** |
|    | •  [ISBA 4663 - Enterprise Resource Planning](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4818) **Sem. Hrs:** **3** |
|    | •  [ISBA 4853 - Project Management](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4819) **Sem. Hrs:** **3** |
|    | •  [ISBA 4863 - Current Topics in ISBA](https://catalog.astate.edu/preview_course_nopop.php?catoid=3&coid=4820) **Sem. Hrs:** **3** |
|   |