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

**New or Modified Course Proposal Form**

**[] Undergraduate Curriculum Council**

**[X] 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.

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| --- | --- |
| Katherine Baker 2/15/2022 **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| Temma Balducci 2/16/2022 **Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Head of Unit (if applicable)** |
| Warren Johnson 2/23/2022  **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| Mary Elizabeth Spence 3/7/2022 **Office of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
| Carl M. Cates 3/2/2022 **College Dean** | Alan Utter 4/25/2022  **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**

Start term Fall 2022 Bulletin Year 2022-2023

**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.”*

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| --- | --- | --- |
|  | **Current (Course Modifications Only)** | **Proposed (New or Modified)**  *(Indicate “N/A” if no modification)* |
| **Prefix** |  | DIGI |
| **Number\*** |  | 6023 |
| **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?

DIGI 5033.

* 1. Why or why not?

Students will be more successful in this course with prerequisite knowledge obtained in DIGI 5033

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

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

N/A

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
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 6023

**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?

Masters of Science in Applied Digital Technology

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 technique
* Thesis Project continued

**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
* Thesis Project continued

**Module 3: Regression**

* Implement linear regression
* Review polynomial regression
* Thesis Project continued

**Module 4: Classification Methods**

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

**Module 5: Supervised vs Unsupervised Learning**

* Understand supervised learning and unsupervised learning
* Use clustering algorithm
* Thesis Project continued

**Module 6: Python Libraries and Packages**

* Implement Neural network using Python libraries
* Build visualization using Python packages
* Thesis Project continued

**Module 7: Analyze Solutions**

* Analyze MLP with real-life solutions
* Understand neural networks, perceptions using Python libraries
* Thesis Project continued

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

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

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 recent emergence of hybrid jobs has necessitated the need for workers to have a broad collection of skills encompassing business, data analytics, and familiarity with design/digital technologies. The number of hybrid jobs are expected to increase as businesses adapt to the changing environment accelerated by COVID. Such hybrid jobs are on averaging paying 20-40% higher salaries compared to their traditional counterparts who cannot work across diverse disciplines and domains. Representative high-growth hybrid jobs include: Data Scientist - 46% Projected Occupation Growth next 10 years Product Manager - 26.6% Projected Occupation Growth next 10 years Marketing Manager - 24.4% Projected Occupation Growth next 10 years Business Intelligence Developer – 10% Projected Occupation Growth next 10 years The Digital Technology learned within the AI Emphasis provides students with a core education in Digital Technology combined with foundational programming logic. These skills develop students into creative problem solvers who also possess the necessary software skills to make an impact in a variety of Digital Technology fields.  
We feel that there is a growing interest among students to learn about Artificial Intelligence and Machine Learning to become qualified for new careers within this emerging industry. We believe that this content would fit well within the Digital Technology and Design degree and attract new students to the University. This new concentration area will provide students with more advanced knowledge, skills, and portfolios in the field of Artificial Intelligence. By providing students with the ability to specialize in a specific area of Digital Technology, we will develop stronger graduates who are better prepared for the career field.   
  
Academic Partnerships provided the following marketing data in support of this change:  
**A-State: MS Applied Digital Technology (Artificial Intelligence Emphasis) employment data and needs assessment research provided by Academic Partnerships.**   
**Region:** AR, TX, TN, LA, MS and MO   
**Conferrals** for BS – Informational Technology were 839 in 2020, up 83.6% since 2016.   
**Computer Systems Engineers/ Architects (field closely related to AI)**   
- Employment for Systems Engineers is projected to grow 25% over the next 10 years in the region  
- In the last 12 months, 21,345 jobs were posted in the region.   
- Top 5 employers: Raytheon, Boeing, Accenture, Humana, Dell

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.

Students in the Masters of Science in Applied Digital Technology

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

This is a graduate level course, therefore a 6000 level is appropriate.

**Assessment**

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

1. 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.*

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| --- | --- |
| **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 |

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| **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, Thesis 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)*

|  |  |
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| **Outcome 2** | Implement AI use cases using the Python libraries |
| Which learning activities are responsible for this outcome? | Weekly assignments, Thesis 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, Thesis 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**

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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.** |

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**DEPARTMENT OF ART + DESIGN**

**Art Education (ARED)**

**ARED 6703. Applied Visual Art Infusion: Contemporary Approaches** Curriculum development and application of art-infused contemporary models to integrate the visual arts with other subject area content. Prerequisite: Acceptance to the MAT Teacher Education Program.

**Digital Design (DIGI)**

**DIGI 6023. Design and Development of AI** AI use case implementation using Python programming. Architecting and machine learning as well as Python programming concepts related to AI and machine learning. Cross listed as ISBA 6023. Prerequisite, DIGI 5033.

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