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|  | **SOUTH DAKOTA BOARD OF REGENTS**  ACADEMIC AFFAIRS FORMS |
| Minor Program Modification |
|  |  |

Use this form to request minor changes in existing programs (majors, minors, certificates, or specializations). The university Vice President for Academic Affairs approves minor program modifications and they are included in the Annual Minor Program Modification Summary form.

|  |  |
| --- | --- |
| **UNIVERSITY:** | DSU |
| **PROGRAM TITLE:** | Artificial Intelligence, B.S. |
| **CIP CODE:** | 111003 |
| **UNIVERSITY DEPARTMENT:** | The Beacom College of Computer and Cyber Sciences |
| **BANNER DEPARTMENT CODE:** | DCOC |
| **UNIVERSITY DIVISION:** | Computer Science |
| **BANNER DIVISION CODE:** | DCSC |

**University Approval**

*To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.*

|  |  |  |
| --- | --- | --- |
| A picture containing text  Description automatically generated |  | 4/20/2023 |
| Vice President of Academic Affairs or President of the University |  | Date |

|  |
| --- |
|  |

1. **This modification addresses a change in (*place an “X” in the appropriate box*):**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Course *deletions* that do not change the nature of the program, or distribution of courses in the program, or change of total credit hours required |  | Course *additions* that do not change the nature of the program, or distribution of courses in the program, or change of total credit hours required |
|  |  |  |  |
|  | Revised courses in the program. |  |  |

1. **Effective date of change: 8/1/2023**
2. **Program Degree Level (*place an “X” in the appropriate box*):**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Associate |  | Bachelor’s |  | Master’s |  | Doctoral |  |

1. **Category (*place an “X” in the appropriate box*):**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Certificate |  | Specialization |  | Minor |  | Major |  |

1. **Is the program associated with a current articulation agreement?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yes |  |  | No |  |

* 1. **If yes, will the articulation agreement need to be updated with the partner institution as a result of this minor program modification? Why or why not?**

1. **Primary Aspects of the Modification (*add lines or adjust cell size as needed*):**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Existing Curriculum* | | | | | *Proposed Curriculum (highlight changes)* | | | | |
| **Pref.** | **Num.** | **Title** | **Cr.**  **Hrs.** |  | | **Pref.** | **Num.** | **Title** | **Cr. Hrs.** |
|  |  |  |  |  | |  |  |  |  |
| General Education | | | 30 |  | | General Education | | | 30 |
| ~~Majors must take PSYC 101, SOC 285 and PHIL 200 as part of the System-wide General Education Requirements.~~ Majors who test directly into MATH 123 or MATH 201 will not need to complete MATH 114 but must take 3 credits of general electives. | | |  |  | | Majors who test directly into MATH 123 or MATH 201 will not need to complete MATH 114 but must take 3 credits of general electives. | | |  |
|  |  |  |  |  | |  |  |  |  |
| Required Courses | | | 48 |  | | Required Courses | | | 48 |
|  |  |  |  |  | |  |  |  |  |
| CSC | 105 | Introduction to Computers | 3 |  | | CSC | 105 | Introduction to Computers | 3 |
| CSC | 150 | Computer Science I | 3 |  | | CSC | 150 | Computer Science I | 3 |
|  |  |  |  |  | | CSC | 230 | Tech Foundations: Ethics | 1 |
|  |  |  |  |  | | CSC | 232 | Tech Foundations: Scripting | 1 |
|  |  |  |  |  | | CSC | 292 | Topics | 1 |
| CSC | 247 | Introduction to AI | 3 |  | | CSC | 247 | Introduction to AI | 3 |
| CSC | 250 | Computer Science II | 3 |  | | CSC | 250 | Computer Science II | 3 |
| ~~CSC~~ | ~~260~~ | ~~Object Oriented Design~~ | ~~3~~ |  | |  |  |  |  |
| CSC | 300 | Data Structures | 3 |  | | CSC | 300 | Data Structures | 3 |
| CSC | 386 | App of Deep Learning | 3 |  | | CSC | 386 | App of Deep Learning | 3 |
| CSC | 402 | Math Foundations of AI | 3 |  | | CSC | 402 | Math Foundations of AI | 3 |
| ~~CSC~~ | ~~410~~ | ~~Parallel Computing~~ | ~~3~~ |  | |  |  |  |  |
| CSC | 447 | Artificial Intelligence | 3 |  | | CSC | 447 | Artificial Intelligence | 3 |
| ~~CSC~~ | ~~460~~ | ~~Scientific Visualization~~ | ~~3~~ |  | |  |  |  |  |
| CSC | 478 | ~~Generative Deep Learning~~ | ~~3~~ |  | | CSC | 478 | Artificial Intelligence Topics | \*6 |
| CSC | 479 | ~~Reinforcement Learning~~ | ~~3~~ |  | | CSC | 479 | Artificial Intelligence Trends | \*6 |
| CSC | 482 | Algorithms and Optimization | 3 |  | | CSC | 482 | Algorithms and Optimization | 3 |
| CIS | 368 | Predictive Analytics | 3 |  | | CIS | 368 | Predictive Analytics | 3 |
| CIS | 372 | Programming for Analytics | 3 |  | | CIS | 372 | Programming for Analytics | 3 |
|  |  |  |  |  | |  |  |  |  |
|  |  |  |  |  | | \*Course is offered for 3 credits – student must take course twice. | | | |
|  |  |  |  |  | |  |  |  |  |
| Support Courses | | | 16 |  | | Support Courses | | | 16 |
|  |  |  |  |  | |  |  |  |  |
| Minor | | | 18 |  | | Minor | | | 18 |
|  |  |  |  |  | |  |  |  |  |
| Electives | | | 8 |  | | Electives | | | 8 |
|  |  |  |  |  | |  |  |  |  |
|  |  | Total Hours Required | 120 |  | |  |  | Total Hours Required | 120 |

1. **Explanation of the Change:**

The general education courses (PSYC 101, SOC 285, and PHIL 200) will be recommended by advisors, but no longer required. It is not practical to require a specific course withing the credit distribution model.

CSC 260, CSC 410, CSC 460 are outside the objectives of the program. They are core computer science courses but do not contribute directly to Artificial Intelligence.

CSC 230 will ensure students are exposed to issues related to the ethics of applying technology. CSC 232 will provide foundational Python skills in a dedicated course so that other courses in the degree can expect student experience without having to introduce or review. The plan of study will list these courses in the second semester.

The updated CSC 478 & CSC 479 courses will round out the program and ensure students are experienced in cutting edge areas of artificial intelligence and machine learning such as:

- Reinforcement Learning

- NLP and Large Language Models

- A.I. and Cyber Security

- Generative Deep Learning

- Creative A.I.

- Federated Learning

- Diffusion Models

- Ethical A.I.

- Human-Computer Interaction

As noted in the course medication paperwork, it is not practical to lock in a particular subject given the rate of change in this field of study.