

# ARTIFICIAL INTELLIGENCE CONCENTRATION

## Degree Requirements

Students should refer to their DegreeWorks degree audit located in their Digital Backpack for more information regarding their specific degree requirements.

| Code                                                                                                                                                                                                 | Title                                               | Hours      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------|
| <b>Major Requirements</b>                                                                                                                                                                            |                                                     |            |
| General Education Requirements ( <a href="http://catalog.tamut.edu/academic-information/university-core-curriculum/">http://catalog.tamut.edu/academic-information/university-core-curriculum/</a> ) |                                                     | 42         |
| <b>Computer Science Core</b>                                                                                                                                                                         |                                                     |            |
| COSC 1315                                                                                                                                                                                            | Introduction to Computer Science                    | 3          |
| CS 355                                                                                                                                                                                               | Python Programming                                  | 3          |
| CS 310                                                                                                                                                                                               | Analysis of Algorithms                              | 3          |
| EE 340                                                                                                                                                                                               | Computer Architecture                               | 3          |
| CS 361                                                                                                                                                                                               | Database Systems and Design                         | 3          |
| MATH 357                                                                                                                                                                                             | Probability and Statistics using R                  | 3          |
| CS 363                                                                                                                                                                                               | Data Mining Using AI & Machine Learning             | 3          |
| CS 410                                                                                                                                                                                               | Operating Systems                                   | 3          |
| <b>Department Core</b>                                                                                                                                                                               |                                                     |            |
| CS 467                                                                                                                                                                                               | Image Processing and Computer Vision                | 3          |
| MATH 2305                                                                                                                                                                                            | Discrete Mathematics                                | 3          |
| MATH 2413                                                                                                                                                                                            | Calculus I <small>satisfies Core Curriculum</small> | 4          |
| MATH 2414                                                                                                                                                                                            | Calculus II                                         | 4          |
| MATH 372                                                                                                                                                                                             | Cryptology I                                        | 3          |
| CS 305                                                                                                                                                                                               | Data Structures                                     | 3          |
| CS 316                                                                                                                                                                                               | Web and UI Design                                   | 3          |
| CS 352                                                                                                                                                                                               | Java Programming I                                  | 3          |
| CS 353                                                                                                                                                                                               | Java Programming II                                 | 3          |
| CS 360                                                                                                                                                                                               | Artificial Intelligence                             | 3          |
| CS 430                                                                                                                                                                                               | Mobile App Development                              | 3          |
| CS 465                                                                                                                                                                                               | Computer Security                                   | 3          |
| CS 474                                                                                                                                                                                               | Computer Game Programming                           | 3          |
| CS 481                                                                                                                                                                                               | Software Project Management                         | 3          |
| <b>Artificial Intelligence Concentration</b>                                                                                                                                                         |                                                     |            |
| CS 300                                                                                                                                                                                               | Data Modeling using R                               | 3          |
| CS 400                                                                                                                                                                                               | Advances in Artificial Intelligence                 | 3          |
| CS 401                                                                                                                                                                                               | Artificial Neural Networks                          | 3          |
| CS 495                                                                                                                                                                                               | Computer Science Capstone                           | 3          |
| Electives as needed to meet minimum upper division and overall hours                                                                                                                                 |                                                     |            |
| <b>Total Hours required for the Degree</b>                                                                                                                                                           |                                                     | <b>120</b> |

## Four Year Plan

### First Year

| Code                                                                                                                                                                                                                               | Title                                                                                 | Hours                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------|
| <b>Fall</b>                                                                                                                                                                                                                        |                                                                                       | <b>Semester Credit Hours</b> |
| ENGL 1301                                                                                                                                                                                                                          | Composition I <small>requires minimum grade of 'C', Satisfies Core Curriculum</small> | 3                            |
| HIST 1301                                                                                                                                                                                                                          | United States History I <small>Satisfies Core Curriculum</small>                      | 3                            |
| MATH 2413                                                                                                                                                                                                                          | Calculus I                                                                            | 4                            |
| Language, Philosophy and Culture Core Curriculum Requirement ( <a href="http://catalog.tamut.edu/academic-information/university-core-curriculum/">http://catalog.tamut.edu/academic-information/university-core-curriculum/</a> ) |                                                                                       | 3                            |

|                                                |                                                                            |                                      |
|------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------|
| Core Curriculum Component Area Option B Course | MATH 1314 will count as CAO if taken                                       | 3                                    |
| <b>Fall Total Semester Credit Hours</b>        |                                                                            | <b>16</b>                            |
| <b>Spring Semester</b>                         |                                                                            | <b>Semester<br/>Credit<br/>Hours</b> |
| COSC 1315                                      | Introduction to Computer Science                                           | 3                                    |
| ENGL 1302                                      | Composition II <sup>Satisfies Core Curriculum</sup>                        | 3                                    |
| or ENGL 2311                                   | Technical Writing & Communication                                          |                                      |
| HIST 1302                                      | United States History II <sup>Satisfies Core Curriculum</sup>              | 3                                    |
| SPCH 1315                                      | Public Speaking                                                            | 3                                    |
| or COMM 1307                                   | Introduction to Mass Communication                                         |                                      |
| or COMM 1311                                   | Introduction to Communication Studies                                      |                                      |
| MATH 1316                                      | Plane Trigonometry <sup>If needed to meet prerequisite for MATH 2413</sup> | 3-4                                  |
| or MATH 2412                                   | Pre-Calculus                                                               |                                      |
| MATH 2414                                      | Calculus II                                                                | 4                                    |
| <b>Spring Total Semester Credit Hours</b>      |                                                                            | <b>16</b>                            |
| <b>Total First Year Semester Credit Hours</b>  |                                                                            | <b>32-33</b>                         |

## Second Year

| Code                                                                                                                                                                                                                            | Title                              | Hours                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------|
| <b>Fall</b>                                                                                                                                                                                                                     |                                    | <b>Semester<br/>Credit<br/>Hours</b> |
| Life and Physical Sciences Core Curriculum Requirement ( <a href="http://catalog.tamut.edu/academic-information/university-core-curriculum/">http://catalog.tamut.edu/academic-information/university-core-curriculum/</a> )    |                                    | 3-4                                  |
| PSCI 2305                                                                                                                                                                                                                       | U.S. Government and Politics       | 3                                    |
| Creative Arts Core Curriculum Requirement ( <a href="http://catalog.tamut.edu/academic-information/university-core-curriculum/">http://catalog.tamut.edu/academic-information/university-core-curriculum/</a> )                 |                                    | 3                                    |
| CS 355                                                                                                                                                                                                                          | Python Programming                 | 3                                    |
| Elective - Upper Division as needed to meet upper division and overall requirement                                                                                                                                              |                                    |                                      |
| <b>Fall Total Semester Credit Hours</b>                                                                                                                                                                                         |                                    | <b>12-13</b>                         |
| <b>Spring</b>                                                                                                                                                                                                                   |                                    | <b>Semester<br/>Credit<br/>Hours</b> |
| PSCI 2306                                                                                                                                                                                                                       | State and Local Government         | 3                                    |
| Life and Physical Sciences Core Curriculum Requirement ( <a href="http://catalog.tamut.edu/academic-information/university-core-curriculum/">http://catalog.tamut.edu/academic-information/university-core-curriculum/</a> )    |                                    | 3-4                                  |
| Social and Behavioral Science Core Curriculum Requirement ( <a href="http://catalog.tamut.edu/academic-information/university-core-curriculum/">http://catalog.tamut.edu/academic-information/university-core-curriculum/</a> ) |                                    | 3                                    |
| MATH 357                                                                                                                                                                                                                        | Probability and Statistics using R | 3                                    |
| CS 361                                                                                                                                                                                                                          | Database Systems and Design        | 3                                    |
| <b>Spring Total Semester Credit Hours</b>                                                                                                                                                                                       |                                    | <b>15-16</b>                         |
| <b>Total Second Year Semester Credit Hours</b>                                                                                                                                                                                  |                                    | <b>27-29</b>                         |

## Third Year

| Code                                    | Title                               | Hours                                |
|-----------------------------------------|-------------------------------------|--------------------------------------|
| <b>Fall</b>                             |                                     | <b>Semester<br/>Credit<br/>Hours</b> |
| EE 340                                  | Computer Architecture               | 3                                    |
| CS 316                                  | Web and UI Design                   | 3                                    |
| CS 352                                  | Java Programming I                  | 3                                    |
| CS 400                                  | Advances in Artificial Intelligence | 3                                    |
| MATH 2305                               | Discrete Mathematics                | 3                                    |
| <b>Fall Total Semester Credit Hours</b> |                                     | <b>15</b>                            |
| <b>Spring</b>                           |                                     | <b>Semester<br/>Credit<br/>Hours</b> |

|                                               |                                         |           |
|-----------------------------------------------|-----------------------------------------|-----------|
| CS 353                                        | Java Programming II                     | 3         |
| CS 360                                        | Artificial Intelligence                 | 3         |
| CS 465                                        | Computer Security                       | 3         |
| CS 410                                        | Operating Systems                       | 3         |
| CS 363                                        | Data Mining Using AI & Machine Learning | 3         |
| <b>Spring Total Semester Credit Hours</b>     |                                         | <b>15</b> |
| <b>Total Third Year Semester Credit Hours</b> |                                         | <b>30</b> |

## Fourth Year

| Code                                                   | Title                                | Hours                        |
|--------------------------------------------------------|--------------------------------------|------------------------------|
| <b>Fall</b>                                            |                                      | <b>Semester Credit Hours</b> |
| CS 300                                                 | Data Modeling using R                | 3                            |
| CS 305                                                 | Data Structures                      | 3                            |
| CS 310                                                 | Analysis of Algorithms               | 3                            |
| CS 401                                                 | Artificial Neural Networks           | 3                            |
| CS 430                                                 | Mobile App Development               | 3                            |
| <b>Fall Total Semester Credit Hours</b>                |                                      | <b>15</b>                    |
| <b>Spring</b>                                          |                                      | <b>Semester Credit Hours</b> |
| MATH 372                                               | Cryptology I                         | 3                            |
| CS 474                                                 | Computer Game Programming            | 3                            |
| CS 481                                                 | Software Project Management          | 3                            |
| CS 467                                                 | Image Processing and Computer Vision | 3                            |
| CS 495                                                 | Computer Science Capstone            | 3                            |
| <b>Spring Total Semester Credit Hours</b>              |                                      | <b>15</b>                    |
| <b>Total Fourth Year Semester Credit Hours</b>         |                                      | <b>30</b>                    |
| <b>Total Semester Credit Hours required for Degree</b> |                                      | <b>120</b>                   |

Note: A minimum of 54 upper division hours (300 and 400 level courses) are required for this degree. Resident credit totaling 25% of the hours is required for the degree. A minimum GPA of 2.0 is required in three areas for graduation: Overall GPA, Institutional GPA, and Major GPA.