Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

**College:** Science, Engineering and Technology  
**Department:** Computer Science  
**Program:** Computer Science  
**Type of Change:** COURSE PROPOSALS  
**Proposed Designator Change:**  
**Title Current:** Introduction to Intelligent Systems  
**Title Proposed:** Introduction to Intelligent Systems  
**24-Char. Abbrev.:** Intro Intelligent System

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):
Fundamentals of data mining and knowledge discovery. Methods include decision tree algorithms, association rule generators, neural networks, and web-based mining. Rule-based systems and intelligent agents are introduced. Students learn how to apply data-mining tools to real-world problems.

Pre: CS 110  
Fall

**Rationale or Justification for change:**
Designator needs to change to match computer science program changes but is otherwise the same.

### For General Education or Cultural Diversity Courses Only

**General Education Course:**

<table>
<thead>
<tr>
<th>GE Category #</th>
<th>GE Category Name (Maximum of 3 Categories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
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<td>N/A</td>
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<td>N/A</td>
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</tr>
</tbody>
</table>

† For Writing Intensive Courses, attach a description of the kind and quantity of writing.
‡ For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.

Attach paper copies of the following:
- Syllabus or course outline.
- Course's student learning outcomes associated with each GE competency or CD designation.
- List of strategies to be used to assess students' achievement of each GE competency or CD designation.

### For New Courses

<table>
<thead>
<tr>
<th>(Check all that apply.)</th>
<th>Instructional Type:</th>
<th>Lecture/Lab</th>
<th>Course will be offered:</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗ Course is an elective.</td>
<td></td>
<td></td>
<td>✗ Fall Semester</td>
</tr>
<tr>
<td>✗ Course is required for program</td>
<td>Grading Format: ☑ Grade ☑ P/N</td>
<td>Cognitive Science</td>
<td></td>
</tr>
<tr>
<td>☑ Pre- or Co-requisites:</td>
<td>Prerequisite: CS 110</td>
<td></td>
<td>☐ Spring Semester</td>
</tr>
<tr>
<td>☐ Other courses are being changed or eliminated. (Explain.)</td>
<td></td>
<td>☐ Summer Session</td>
<td></td>
</tr>
</tbody>
</table>

☐ Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:
- Syllabus or course outline.
- Course's student learning outcomes.
- A list of resources required to offer and support this course.
- A description of how teaching this course will affect department staffing.
- If 400/500 level course, an explanation of added expectations of graduate students.
Department

☑ Recommended (Category/ies________)
☐ Not Recommended (Category/ies________)
Comments:

Department Chair: Date

College Curriculum Committee

☑ Recommended (Category/ies________)
☐ Not Recommended (Category/ies________)
Comments:

Karen C. Chen: Date

College Dean

☑ Recommended (Category/ies________)
☐ Not Recommended (Category/ies________)
Comments:

Dean: Date

General Education Subcommittee

☑ Recommended (Category/ies________)
☐ Not Recommended (Category/ies________)
Comments:

General Education Subcommittee Chair: Date

Undergraduate Curriculum and Academic Policy Committee

☑ Recommended (Category/ies________)
☐ Not Recommended (Category/ies________)
Comments:

UCCP Faculty Chair: Date

Faculty Association Graduate Committee

☑ Recommended
☐ Not Recommended
Comments:

Faculty Association Graduate Chair: Date

Graduate Dean

☑ Recommended
☐ Not Recommended
Comments:

Graduate Dean: Date

Academic Affairs Council

☑ Recommended (Category/ies________)
☐ Not Recommended (Category/ies________)
Comments:

Assistant Vice President: Date

Senior Vice President and Vice President for Academic Affairs

☑ Approved (Category/ies________)
☐ Not Approved (Category/ies________)
Comments:

Sr. Vice President/Vice Pres. Academic Affairs: Date

Revised September 2002
CS 230: Introduction to Intelligent Systems (4 credits)

Course Description:
This course covers fundamental material on data mining and knowledge discovery. Several data mining methods including decision tree algorithms, association rule generators, neural networks, and Web-based mining are detailed. Rule-based systems and intelligent agents are introduced as methods for building decision models. Students learn how to use intelligent tools to help solve real-world problems.

3 lecture hours, 1 lab hour per week.

Prerequisites: CS 110

Proposed Text:
Discovering Knowledge in Data (an Introduction to Data Mining), Daniel T. Larose, 2005.

Schedule of Topics:
1) Data Preprocessing (~1.5-2 wks)
2) Exploratory Data Analysis (~1.5-2 wks)
3) Statistical Approaches to Estimation and Prediction (~1.5-2 wks)
4) k-Nearest Neighbor (~1.5-2 wks)
5) Decision Trees (~1.5-2 wks)
6) Hierarchical and k-Means Clustering (~1.5-2 wks)
7) Association rules (~1.5-2 wks)
8) Model Evaluation Techniques (~1.5-2 wks)

Student Outcomes:
Students who complete this course will be able to:
1) Define and understand basic data mining terminology.
2) Differentiate between supervised and unsupervised learning.
3) List and define the steps of the knowledge discovery in databases (KDD) process.
4) Understand basic supervised data mining methodologies used to solve problems inductively. Strategies include: decision trees, rule bases, concept hierarchies, association rules, Bayesian Learning, linear regression, and neural networks.
5) Describe basic unsupervised clustering techniques for solving problems.
6) Describe how to pre-process data prior to a data mining session.
7) Use statistical and heuristic methods to report the results of a data mining session.
8) Use one or several data mining tools to perform both supervised and unsupervised learning.
9) Know and define terms basic to artificial intelligence problem solving.
10) Understand and define basic expert system terms.
11) Design a solution to a problem using a knowledge-based system.
12) Understand how certainty factors are used with knowledge-based systems.
13) Know what intelligent agents are and how they are used to solve problems.

Grades will be assigned based on exams and assignments.

Required Resources & Departmental Staffing:
Resources currently in place within the department, the college, and the university library will support this new course. No new resources are required.

There is no impact on staffing requirements.