Contact Person*	Terrence Fries	**Contact Email***	t.fries@iup.edu">t.fries@iup.edu
Proposing Department/Unit*	Computer Science	**Contact Phone***	7-4492

Course Level*

undergraduate-level

Course Revisions

(Check all that apply;fill out categories below as specified; i.e. if only changing a course title, only complete Category A)

Category A:	Category B:
catalog_desc_change mod_prereq	course_revision ** Teacher Education: Please complete the Teacher Education section of this form (below)* ** Liberal Studies: Please complete the Liberal Studies section of this form (below)* ** Distance Education: Please complete the Distance Education section of this form (below)*

Rationale for Proposed Changes (All Categories)

(A) Why is the course being revised /deleted:

Modifications are being made to the catalog description and student learning outcomes to reflect more up-to-date topics and techniques in artificial intelligence. The modifications also address requirements of the ABET accreditation agency. Additionally, a grade of C or better will be required for the prerequisite COSC 310 to ensure that students are prepared for the rigorous programming tasks required.

(B) University Senate Summary of Rationale

Please enter a single paragraph summary/rationale of changes or proposal for University Senate.

Modifications are being made to the catalog description and student learning outcomes to reflect more up-to-date topics and techniques in artificial intelligence. The modifications also address requirements of the ABET accreditation agency. Additionally, a grade of C or better will be required for the prerequisite COSC 310 to ensure that students are prepared for the rigorous programming tasks required.

(C) Implications of the change on the program, other programs and the Students:

Current Course Information **Proposed Changes**

Category A			
(D) Current Prefix	COSC	**Proposed Prefix**	
(E) Current Number	405	**Proposed Number**	
(F) Current Course Title	Artificial Intelligence	**Proposed Course Title**	
(G) Prerequisite(s)	COSC 310	**Proposed Prerequisite(s)**	Grade of C or better in COSC 310
(H) Current Catalog Description	An introduction to the field of artificial intelligence, i.e., the study of ideas that enable computers to process data in a more intelligent way than conventional practice allows. Covers many information representation and information processing techniques. Explores the underlying theory including matching, goal reduction, constraint exploration, search, control, problem solq of ideas that .41 6.75 Tf 1 gDaBT /F2 6.f6.1 Tm (Catabrs 0 1 (Propos)Tj ET BT /F16.75 Tf 1 0 0 1 33		
	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.		1. 2. 3. 4. 5. 6. 7. 8. 9.

(K) Dual Listed Courses Only: **List Current Learning Objectives for the Higher-Level Course**		**Dual Listed Courses Only:** **List Proposed Learning Objectives for the Higher-Level Course**	
(L) Brief Course Outline *(It is acceptable to copy from old syllabus)*	*As outlined by the federal definition of a "credit hour", the following should be a consideration* *regarding student work - For every one hour of classroom or direct faculty instruction,* *there should be a minimum of two hours of out of class student work.* **A. Introduction** **3 hours** a. What is AI b. The foundations of AI c. The History of AI d. Intelligent agents e. Agent based system **B. Search** **6 hours** a. Searching for solution b. Uninformed/Blind search c. Informed/ Heuristic search d. A* search e. Hill-climbing search f. Genetic algorithms g. Constraint satisfaction problems **C. Game** **5 hours** a. Games b. Optical decision in games c. Minimax algorithm d. Alpha-Beta pruning		

a. Knowledge-based agents

b. Syntax of First Order Logic

c. Semantics of First Order Logic

d. Reasoning patterns in propositional logic

e. First order logic

f. Inference in first order logic

g. Unification and lifting

h. Forward and backward chaining

i. Resolution

E. Planning
5 hours

a. The planning problem

b. Planning with state space search

c. Partial order search

d. Planning with proportional logic

e. Planning and acting in the real world

F. Learning
5 hours

a. Learning from observation

b. Knowledge in learning

c. Statistical learning methods

d. Reinforcement learning

Choose any two of the following:

G. Robotics
5 hours

a. Robotics hardware

b. Perception

c. Planning to move and moving

d. Software architecture

H. Vision
5 hours

a. Digitization

b. Low-level processing

c. Noise removal

d. Feature detection

e. Segmentation and the Hough transformation

f. Recovering 3D information

g. The waltz algorithm

h. Active vision

i. Object recognition

j. Scene recognition

I. Natural Languages **5 hours**

a. Signal processing

b. Syntax

c. Reinforcement learning

d. Knowledge acquisition

H. Uncertainty

a. Hidden Markov models

b. Bayesian networks

c. Dempster-Shafer

d. Fuzzy Logic

I. Soft Computing Techniques

a. Neural networks

b. Genetic algorithms

J. Ethical issues in AI

	c. Parsing d. Semantics e. Meaning f. Pragmatics g. Natural language generation **J. Expert Systems hours** **5** a. Examples b. History c. Advantages of expert system d. AI as an experimental discipline		

Distance Education Section

- Complete this section only if adding Distance Education to a New or Existing Course

Course Prefix/Number	
Course Title	
Type of Proposal	*See CBA, Art. 42.D.1 for Definition*
Brief Course Outline	*Give an outline of sufficient detail to communicate the course content to faculty across campus. It is not necessary to include specific readings, calendar or assignments* *As outlined by the federal definition of a "credit hour", the following should be a consideration regarding student work - For every one hour of classroom or* *direct faculty instruction, there should be a minimum of two hours of out of class student work.*
Rationale for Proposal (Required Questions from CBA)	
How is/are the instructor(s) qualified **in the Distance Education delivery** **method as well as the discipline?**	
For each outcome in the course, describe **how the outcome will be achieved using** **Distance Education technologies.**	
How will the instructor-student and **student-student interaction take place?** **(if applicable)**	

Liberal Studies courses require the reading and use by students of at least one non-textbook work of fiction or non-fiction or a collection of related articles. Please describe how your course will meet this criterion.	

Teacher Education Section

- Complete this section only for a new Teacher Education course or Teacher Education course revision

Course Designations:	
Key Assessments	
	For both new and revised courses, please attach (see the program education coordinator): • The Overall Program Assessment Matrix • The Key Assessment Guidelines • The Key Assessment Rubric **File** **Modified**
Narrative Description of the Required Content	*How the proposal relates to the Education Major*

For Deans Review