



CSCI 381 - Language, Intelligence, and Computation Syllabus

Time/Location: 12:00-12:50am MW OCNL 121
1:00- 1:50am Lab/OfcHr MW OCNL 251

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Office Hours: M,T,W,R 3-4pm & MW 1-1:50 Office: 226 OCNL

Prerequisites: Junior-level standing.

Satisfies: Upper-division Theme J capstone; CSCI upper-division elective.

Catalog Description:

This course presents a practically based treatment of artificial intelligence, and natural language processing in particular, from a computational perspective. Students will use software tools to perform simple analysis of natural language and other intelligent applications. Also, students will explore the limits of computation, using practical and theoretical approaches. This is an approved General Education course. 3 Units.

Required Textbooks:

The Age of Spiritual Machines – Raymond Kurzweil
Penguin Books, 1999. 0-14-02-8202-5

Understanding Artificial Intelligence – Scientific American
Warner Books. ISBN: 0-446-67875-9

Additional text TBA (watch for posting on website)

Resources: <http://www.ecst.csuchico.edu/~renner/csci381>
Vista course pages & account on ecst server
<http://www.kurzweilai.net>

You are responsible for accessing web-based course materials on a regular basis. Web-based activities may include graded quizzes, exercises, and labs.

Objectives:

The primary objective of this course is to introduce students to the basic tenets of Artificial Intelligence, and solidify one's understanding of the practical vs impractical, probable vs improbable, current status of AI projects, and realistic vision for the future of AI. To this end, students are introduced to the principles and programming techniques employed when designing and implementing applications of artificial intelligence, and the limitations therein. Emphasis will be placed on the demonstration of these fundamentals at a simplistic level, to aid in conceptual understanding. Assigned projects promote a 'hands-on' approach for understanding, as well as a challenging avenue for exploration and creativity.

Specific Goals:

- 1) Gain a historical perspective of AI and its foundations and major players.
- 2) Receive an introduction to the basic principles of AI toward problem solving, perception, knowledge representation, language processing, and learning.
- 3) Experience applications of AI within expert systems, artificial neural networks and other machine learning models, vision, language, and robotics.
- 4) Experience modeling and simulation using modeling, programming and logic tools.
- 5) Discuss the potential, limitations, and implications of intelligent systems.
- 6) Ability to participate in intellectual dialogue surrounding a wide array of AI related technological and philosophical issues, with scholarly individuals and laypersons.

Course Outcomes:

Upon successful completion of this course, students should possess the following:

- 1) An appreciation for the history of computation and AI.
- 2) Basic problem-solving strategies for approaching complex problems from an agent view .
- 3) Beginner-level skill set for using a subset of AI applications and modeling tools .
- 4) An understanding of the current status of AI and visions for the future .

Grade Evaluation:	Homework, Classwork, Labs	40%
	Discussion, Preparedness, & Participation	20%
	Small Team Project & Write-up (March)	20%
	Final Exam	20%

Final Grades: Final grades shall be expressed as a percentage of the maximum possible score of all evaluated materials. Letter grades will be given according to the following scheme:

<u>Scale</u>	<u>letter grade</u>	<u>University Definition</u>
[93,100]	A	Superior Work
[90,93)	A-	
[87,90)	B+	
[83,87)	B	Very Good Work
[80,83)	B-	
[77,80)	C+	
[73,77)	C	Adequate Work
[70,73)	C-	
[67,70)	D+	
[63,67)	D	Minimally Acceptable Work
[60,63)	D-	
[0,60)	F	Unacceptable

Any grade discrepancy must be submitted in writing, along with the original document, within 1 week of distribution.

Attendance:

Attendance for all class & lab meetings is expected. Students will be held responsible for all subject matter and procedural information discussed in class and covered in the texts. Discussion & lab material will not be reiterated for persons failing to attend a previous session. In the event that you are forced to miss a class or lab it will be your responsibility to check the course web page for project information, lecture topics covered, etc. Oftentimes you will be working with partners, so missing class/lab is detrimental to your team.

Assignments:**Reading**

This course is READING INTENSIVE and will require investigation and analysis of challenging material for seminar-style discussion. At times we may be simultaneously reading from different texts, for both in-class and online discussions. You are expected to contribute to online discussions weekly, and contribute to in-class discussion regularly.

Homework & Labs

Assignments will consist of small written responses or critiques, hands-on modeling projects and demonstration tasks. We will be primarily working with high-level modeling tools in a PC environment and via web-apps. Occasionally, we may venture into less traditional software or hardware environments.

Exams:

There will be one exam, administered in the classroom or lab during the Final Exam period. Make-up exams will not be given without approval* from the professor. Any unapproved absence from an exam will yield a score of zero, no exceptions.

***Excused Absences:**

Requests for excused absences will be carefully reviewed and verified before approval or disapproval. Medical emergencies/crises must be officially documented and verifiable. Under normal circumstances, the following will not be grounds for approval: outpatient visits to a physician, traffic, car problems, work, etc.

Late drops and Incompletes:

University policies enforcing drop dates and criteria for incompletes will be strictly adhered to and at the professor's discretion. LATE DROPS are not given, without verifiable documentation of a serious and compelling reason.

Academic Dishonesty:

You are required to turn in your own work and not the work of others. Collaboration on homework, projects and exams is prohibited, unless otherwise specified by the professor. Likewise, plagiarism of other's work or web-related sources constitutes as a serious infraction. A penalty will be enforced for any student participating in any form of academic dishonesty. The minimum penalty will be a shared grade for that assignment. For serious or repeated infractions, the Vice-President for Student Affairs may also be notified with the recommendation of permanent suspension from the University.

SAMPLE PROJECTS (exploration; enhancement; analysis):

- Natural Language Interface
- Expert System Tool & Development of simple system
- Matlab GA toolkit
- Joone Neural Network Tool
- Simple Robotics Platforms (Scribbler, Lego,...)

It is my policy to return homework and labs but not exams. You may view exams or get additional feedback on homework and labs during office hours.

Please advise me immediately (within 1 week of start of classes), if you have a disability that will require a reasonable accommodation for the successful completion of this course.