

cse352  
Artificial Intelligence

Professor Anita Wasilewska

Fall 2017

## GENERAL INFORMATION

Course Web Page  
[www.cs.stonybrook.edu/~cse352](http://www.cs.stonybrook.edu/~cse352)

The webpage contains

**Course Syllabus**

**Lecture Notes** Slides

**Project Data** and **Project Description**

**Homeworks** and Homeworks Solutions (to be posted)

Some of Past **Students Presentations**

Some Past **Projects Presentations**

## Course Text Book

The Essence of ARTIFICIAL INTELLIGENCE

Alison Cawsey, Prentice Hall, 1998

This is a **very short** and condensed book (not expensive!)

We will use only first **3 chapters** and **chapter 7**

We will **mainly use Lecture Notes** and extra readings posted on the course WEB PAGE

The **Lecture Notes** are very detailed, technically more advanced than the book, and they **extend** material included in the book

## Course Additional Text Book

DATA MINING - Concepts and Techniques

Jiawei Han and Michelle Kamber

Morgan, Kauffman Publishers, 2006, 2010, 2013

Here is the author webpage: [www.cs.uiuc.edu/ hanj](http://www.cs.uiuc.edu/hanj)

You can download text and slides for

CHAPTER 6: Classification and Prediction at

[http://web.engr.illinois.edu/ hanj/bk2/slidesindex.htm](http://web.engr.illinois.edu/hanj/bk2/slidesindex.htm)

## Course Goal

**Artificial Intelligence** is a broad and well established field.

The AI textbooks seem to be getting longer and longer.

**Our little extbook** attempts to reverse this trend. It provides a concise, intuitive and accessible introduction to the field

**The course** is designed to give a broad, yet in-depth overview of different fields of AI

## Course Description

We will examine the most recognized AI **techniques and algorithms** in a **rigorous detail**

For this part we will provide **detailed lecture notes** and extra reading posted on the course web page

We will also explore **the newest trends and developments** of the field in form of **students research talks**

## Workload

During the semester you have to complete the following.

1. **Team Homeworks Assignments** - four assignments, each 10pts - TOTAL **40pts**

You work on and submit **Homeworks** as the same **Team** as you formed for the Research Presentations.

Your knowledge of Homework problems will be tested **INDIVIDUALLY** in two in class tests.

2. There will be two in class individual tests.

**Midterm 1 (80pts)**, and

**Midterm 2 (80pts)** covering material covered in class, homeworks and taken from reading assignments;



## Workload

### 3. **Team Research Presentation (40pts)**

You work on and present the **Research Presentation** as 4-5 students **Team**

### 4. Individual **Presentations Evaluation Reports (20pts)**

### 5. **Team Project** (see project description) (40pts)

You work on and present the **Project** as the same **Team** as you formed for the Research Presentations

### 6. **Extra Credit** I will give during the class small questions for extra credit and assign some extra credit work

You can earn up to **15 extra points** during the semester.

**None of the grades will be curved**

## Final grade computation

You can earn up to **200 points** during the semester plus up to **extra credit** points

**The grade** will be determined in the following way:

**# of earned points divided by 2 = % grade**

**The % grade** is translated into a **letter grade** in a standard way as described in the course **Syllabus**

## RESEARCH PRESENTATION

Each **team** of students has to deliver a **20 minutes** long presentation on a **chosen** topic of AI

You can, and I encourage you to do it in a **team of 4 or 5**, as we already have over 80 students in class

**Students are free to choose their own subjects**

It can be a presentation of a ]software involving AI, of a product that uses an AI techniques, of a research paper, or an overview of an AI subject not covered in the class.

It also can be a AI related science fiction, or philosophy book, or even a movie

## RESEARCH PRESENTATION

**Search** the Web, look for the papers, books- anything what really interest you and want to share with others.

**It has to be YOUR own vision** of what you think is interesting in or about ] AI **today**

Students presentations are a very important part of the **course design**

**You will bring us up date** with AI technology, research, implementations, and trends!

## RESEARCH PRESENTATION

**All Presentations** will be available on the course web-page for other students to learn the material

Students must **attend the presentations**

I will take attendance

**Students presentations are as important as Professor's lectures**

**The Presentations** help the presenters to **comprehend** better the material and to **improve** their own presentation skills

## PROJECT

Detailed **Project Description** is available on the course Web-page

I will discuss the **Project in class** when we cover enough of material for students to understand it.

It is a **practical, simple** project that **does not involve programming**

Each team will have to deliver a formal **presentation** of the results of the project

This is a very short **5 minutes long** presentation.

The organization of the presentation and submitted materials are the same as in the case of research presentation.

## Course Content

The book is very thin.

It is a **short overview** of major areas of AI.

**I will supplement** it with **LECTURE NOTES** for detailed information.

In particular we will cover the following book chapters and subjects (not always in the order they are listed).

**Chapter 1** AI history and applications

**Book** and **Lecture Notes**

**Chapter 2** Knowledge Representation and Inference

**Book** and **Lecture Notes**

## Course Content

**Chapter 2** Overview of Predicate Logic;

**Lecture Notes** provide explanation and supplement chapter 2

**Chapter 2** Automated theorem proving

Supplement to Chapter 2:

Propositional Resolution

EXTRA HANDOUTS and **Lecture notes**



## Course Content

### **Chapter 3** Expert Systems

Overview of EXPERT SYSTEMS Design and Technology.

Book, Lecture notes and EXTRA HANDOUT distributed in class

### **Chapter 5** Natural Language Processing

Reading assignment and students presentations

### **Chapter 8** Agent and Robots

Reading assignment and students presentations

## Course Content - Machine Learning

### Chapter 7 Machine Learning

Concentration on **CLASSIFICATION Learning**

**This is the major subject and MAIN part of the course**

In particular we cover the following subjects

**Decision Trees** - detailed algorithm on lecture slides posted on the web and intuitive introduction is in the book

**Neural Networks** - detailed algorithm on lecture slides on the web and intuitive introduction in the book

**Genetic Algorithms** - detailed algorithm on the lecture slides on the web and intuitive introduction in the book