

cse352  
Artificial Intelligence

Professor Anita Wasilewska

Spring 2022

## GENERAL INFORMATION

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

The webpage contains

**Course Syllabus**

**Lecture Notes** Slides

**Course** extra Materials

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

**Homeworks** and Homeworks **Solutions**

Extra **Lectures-Presentations**

Some of Past **Students Presentations**

## Professor and TAs Office Hours

### **Professor Office Hours**

Tuesday, Thursday 11:30 am - 12:30 pm and by appointment

**Place** New Computer Science Building, Room 208,  
telephone: 2-8458

**In person** in the Office and /or **ZOOM** on demand

I also **read emails** DAILY and **respond** within a day or two to students e-mails

## Professor and TAs Office Hours

There are **multiple TAs** - and their office hours listed on course **webpage** and advertised on **Blackboard**

**TAs** are responsible for **grading** - I write tests and solutions

All grades are listed on **Blackboard**

**TAs** office hours and other responsibilities are **colored** listed and **updated**, if needed, on the course **webpage** and also advertised on **Blackboard**

## Course General Description

AI is a broad and well **established** field

AI books are long and often **narrowly** specialized

Our **course** attempts to provide a **concise** and **accessible introduction** to the field

It is designed to give a **broad** and yet **in-depth overview** of different fields of **AI**

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

We also **explore** trends, areas, and **developments** of the field based on **newest** research and its **applications**

## Textbooks

There are **two books** we cover in some measure and several additional course materials we cover in great detail

### **Book 1**

**The Essence of ARTIFICIAL INTELLIGENCE**

Alison Cawsey

Prentice Hall, 1998

### **Book 2**

**DATA MINING - Concepts and Techniques**

Jiawei Han and Michelle Kamber

Morgan, Kauffman Publishers, 2011

Second/Third Edition

## Book 1

### **Book 1**

#### The Essence of ARTIFICIAL INTELLIGENCE

This is a **short**, not expensive and **not technical** book

It is **easy** to read and builds a lot of intuitions, but lacks **technical rigor** and new approaches and developments

These are **provided** in the very extensive **Course Lectures**



## Book 1

### Book 1

#### The Essence of ARTIFICIAL INTELLIGENCE

We will use only **chapters 1- 3** and **chapters 5, 7**

**Chapters 1- 3** are **supplemented** by the course **Lectures**,  
Homeworks solutions, and additional materials for detailed  
**technical** details

**Chapter 7** is **supplemented** by the **Book 2** and very  
**extensive** course **Lectures** that are based on the  
**Book 2** relevant chapters

## Book 2

### Book 2

#### DATA MINING - Concepts and Techniques

**Course Lectures** cover some parts of **chapters 2, 5, 6** of the Second Edition

You do not need to buy the book

Original **Book 2 Slides** for **Chapters 2, 5, 6** are posted on course webpage

Material covered in them is presented in **Lectures 7-17**

## Additional Book

### **Additional Book**

LOGICS FOR COMPUTER SCIENCE: Classical and  
Non - Classical

Anita Wasilewska, Springer, 2018

We use in **Lectures 4, 6** parts of chapter 2 that is posted on  
the course webpage

The links to the **Chapter 2 VIDEO** and corresponding  
**Video Slides** are also posted

**Chapter 2 VIDEO** is a part of the YOUTUBE LOGIC Channel  
(link posted)

## Class Lectures

**Class attendance** is very important, as the course **Lectures** serve as an **Extra Textbook** for the course and play an **integral** and very **important** part of the course design

## GRADING

During the semester you have to complete the following.

**Quizzes** - (30pts)

**Midtem** - (65 pts)

**Project** (40pts)

**Final** - ( 65pts)

**Extra Credit**

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

## Final grade computation

You can earn up to **200 points** during the semester plus up to **25 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**

## Final grade computation

The % grade is translated into a letter grade as follows:

100 – 95 % is **A**

94 – 90 is **A–**

89 – 86% is **B+**

85 – 83 % is **B**

82 – 80 % is **B–**

79 – 76 % is **C+**

75 – 73 % is **C**

72 – 70 % is **C–**

69 – 60 % is **D range** and **F** is below 60%

## Quizzes and Tests Schedule

This is a **Preliminary Schedule**

**Q1** March 1 in class

Spring Break March 14 - 20

Project Data - due March 24

**MIDTERM** April 5

**Q2** April 11

Project - - due April 14

Last Class May 5 - Review for Final

**Finals Week** May 10 - 18

Quizzes and Tests are closed book examinations

· None of the grades will be curved



## Homeworks

### Homeworks

There are 4 **Homework** and **Homework Solutions** posted  
I encourage students to **solve** homework problems first as a  
**practice** to find out how much you know and understand  
Then look at the at **posted solutions** and **compare your**  
**solutions** with those posted  
**Quizzes** and **TESTS** will contain problems very **similar** to  
the **Homework Problems**

## PROJECT

Detailed **Project Description** is available on the course webpage

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

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

**IT is a TEAM Project**

Please form **3-4 people TEAMS** and send e-mail to a designated **TA**

**TA** will also help students to **form teams**

## Course Structure and Content

### Part 1 Lectures 1 - 6

1. Introduction to AI, Knowledge Representation and Inference

Lectures 1, 2 - details for Book 1, Chapter 1, 2

2. Logic for AI, Overview of Propositional and Predicate Logic; Predicate languages and basic Laws of Quantifiers; Predicate Logic Arguments.

Lectures 3, 4 - details for Book 1, Chapter 2, Additional Book, Chapter 2

3. Rules Based Expert System

Lectures 5, 5a - details for Book 1, Chapter 2, J. Busse book "Managing Uncertainty in Expert Systems" (Handout 1)

## Course Structure and Content

**4.** Automated theorem proving - Propositional Resolution and resolution strategies

**Lecture 6** - details for Book 1, Chapter 2, Genesereth, Nilson book "Logical Foundations of Artificial Intelligence", chapter 4 (Handout 2)

**Q1 - MARCH 1**

**Part 2    Lectures 7 - 12**

**1.** Introduction to Machine Learning and Classification

Book 2, Chapter 6, **Lectures 7 - 9**

## Course Structure and Content

**2. Descriptive Classifier - Decision Tree Basic and Full Algorithms (Handout 3)**

Book 2, Chapter 6, **Lectures 10 - 12**

**MIDTERM** - **April 5**

**Part 3** **Lectures 13, 14, 14a**

**1. Non Descriptive Classifier - Neural Network, Back propagation Algorithm (Handout 4)**

Book 2, Chapter 6, **Lecture 13**

**2. Classification Review**

Book 2, Chapter 6, **Lecture 14, 14a**

**Q2** - **April 11**

**Project** due **April 14**

## Course Structure and Content

### **Part 4** Lectures 15 - 18

**1.** Association Analysis: Apriori Algorithm and Classification by Association

Book 2, Chapter 5, Lectures 15, 16

**2..** Genetic Algorithms introduction and applications examples

Book 2, Chapter 6, Lectures 17, 18