

**CSE 352 Artificial Intelligence**  
**Spring 2022**  
**Professor Anita Wasilewska**  
<http://www.cs.sunysb.edu/~cse352>

**Meets** Tuesday, Thursday 4:45pm - 6:05pm

**Place** LIGHT ENGINEERING 102

**Professor Anita Wasilewska** e-mail: [anita@cs.sunysb.edu](mailto:anita@cs.sunysb.edu)  
Office phone number: (631) 632 8458  
Office location: New Computer Science Department building, Room 208

**Professor Office Hours**

Tuesday 11: 30 am - 12:30 pm

Thursday 6:15pm -7:30 pm, and by appointment

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

In person in the Office and /or ZOOM on demand

**ZOOM** <https://stonybrook.zoom.us/j/92492903108?pwd=SzcyeTA2bzdZdHZubGxQeGdWbG44Zz09>

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

**Teaching Assistants**

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

TAs are responsible for **grading**

All grades are listed on **BLACKBOARD**

TAs office hours and other responsibilities are listed, and updated, if needed, on the course webpage

**Course General Description**

Artificial Intelligence is a broad and well established field and AI textbooks seem to be getting longer and longer and often narrowly specialized. Our course attempts to provide a concise and accessible **introduction** to the field. It is designed to give a broad, yet in-depth overview of different fields of AI. We will examine the most recognized techniques and algorithms in a rigorous detail. We will also explore trends, areas, and developments of the field in form of lectures based on newest research and 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.**

This is a short, not expensive and not very 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 course LECTURES and additional materials published on the course webpage.

We will cover first 3 chapters and Chapter 5. They are supplemented by the Lecture Notes, Homeworks solutions, and additional materials for detailed technical details.

The chapter 7 is supplemented by the **Book 2** and very extensive Lecture Notes based on Book 2 relevant chapters.

## **Book 2**

DATA MINING - Concepts and Techniques  
Jiawei Han and Michelle Kamber  
Morgan, Kauffman Publishers, 2011  
Second/Third Edition

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

Do not need to buy the book

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

**Course Material** covered is included in **Lectures 7-17**

## **Additional Book**

LOGICS FOR COMPUTER SCIENCE: Classical and Non - Classical  
Anita Wasilewska  
Springer, 2018

We use (Lectures 4, 6) parts of CHAPTER 2 - link on the course webpage

The link to the VIDEO for Chapter 2 is posted on the course webpage as a part of LOGIC YOUTUBE Channel

## **Lectures Slides**

Class attendance is the most important, as the course **Lectures** serve as an **extra textbook**. for the course and are integral and as important part of the course design.

## **GRADING**

During the semester you have to complete the following.

1. **Quizzes** - (30pts)
2. **Midtem** - (65 pts)
3. **Project** (40pts);
4. **Final**( 65pts)
5. **Extra Credit** You can earn up to **15 extra points** during the semester

Quizzes and Tests are **closed book** (and cell phones) examinations

There will be **2 Quizzes** (40 minutes), 15 points each. Each quiz will consist of **1 - 5** questions.

**NO make-up** for quizzes.

## None of the grades will be curved

**Homeworks** There are 4 Homework Assignments AND Homework Solutions posted. I encourage students to SOLVE homework problems first- and then to compare their solutions with those posted.

**You do not submit Homeworks Solutions.**

Quizzes and TESTS will contain problems very similar to the posted Homework Problems.

### Final grade computation

During the semester you can earn **200pts** plus **extra credit**. 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 i.e.

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%.

### PRELIMINARY Quizzes and Tests schedule

Changes will be posted on course webpage and on Blackboard

**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** Thursday, May 5 - Review for Final

**FINAL** May 10 - 18 - exact time and place to be scheduled by University

## Course Content and Structure

The Book1: **The Essence of ARTIFICIAL INTELLIGENCE** is very thin and informal and we use it as it contains short overview of major areas of AI.

We supplement it with **Lectures Slides** containing extra detailed technical material.

We also supplement it with the Book 2 **Data Mining - Concepts and Techniques** for Machine Learning and Association Analysis.

The course **Lecture Slides** are written by me and are MAIN source of the material you need to know.

## **Course Structure**

### **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)

#### **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

#### **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

### **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 item[] Book 2, Chapter 6, Lectures 17, 18

**Required Syllabi Statements:** The University Senate has authorized that the following required statements appear in all teaching syllabi on the Stony Brook Campus.

**Critical Incident Management** Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Until/unless the latest COVID guidance is explicitly amended by SBU, during Spring 2022 "disruptive behavior will include refusal to wear a mask during classes. (If the syllabus is in print only, then add:) For the latest COVID guidance, please refer to: <https://www.stonybrook.edu/commcms/strongertogether/latest.php>

**Americans with Disabilities Act:** If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC(Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

**Academic Integrity:** Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures.