

CS 444: Artificial Intelligence  
Section 1  
James Madison University  
Spring 2019 (3 credits)

## 1 Basic Course Information

### 1.1 Meeting Times and Locations

Section	Days	Time	Location
01	T/R	14:00-15:15	ISAT/CS Building 2208

### 1.2 Instructor

<i>Name</i>	Dr. Kevin Molloy
<i>Office</i>	ISAT/CS 216
<i>Email</i>	molloykp@jmu.edu
<i>Office Hours</i>	T 10:00 - 12:00 W 14:15 - 16:00

### 1.3 Website: <https://w3.cs.jmu.edu/molloykp/teaching/cs444>

Much of the information for this course will be disseminated via this website. You should check this website often (at least once a week) for announcements and updates.

### 1.4 Prerequisites

A grade of “C-” or better in **CS 240**

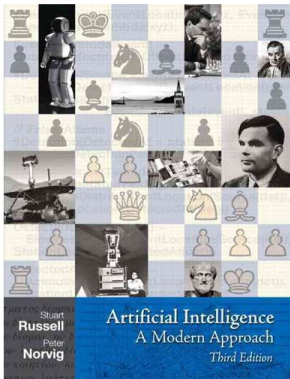
### 1.5 Course Description and Goals

*Official course description:* Students will study the history, premises, goals, social impact and philosophical implications of artificial intelligence. Students will study heuristic algorithms for large state spaces and learn to develop recursive and non-deterministic algorithms.

The topics covered include:

- Search algorithms including uninformed, informed, heuristic, and adversarial search techniques
- Optimization techniques including hill climbing, simulated annealing, and genetic algorithms
- Making optimal decisions/game playing
- First order logic and inference
- Reasoning with uncertainty and partially observable environments

## 1.6 Required Texts



*Artificial Intelligence 3rd Ed.* by Stuart Russell and Peter Norvig .

## 1.7 Computing Resources

You will require access to a computer for this class. A machine running Windows, Mac OS, or Ubuntu/Linux will work fine. My opinion is that Mac OS and Ubuntu/Linux machines are easier to use. Information is available on the website on how to utilize a virtual machine that will supply all the software you will need for this class (and provide a common environment to what you will experience in the labs).

## 1.8 Expectations/Keys to Success

### Homework

In a three-hour course, you should expect **six hours** of homework per week. How you manage your schedule is up to you, but do spend some time each day on this course.

### Preparing for Class

The material (reading and/or videos) for each class is detailed on the class calendar (available on the website). You will have a **quiz each week or every other week** based on this material, so, a key to success is reading this material **BEFORE** class.

### Programming Assignments

Programming assignments (PA) will utilize the python programming language. Each assignment can take about between 4 and 15 hours (final project) to complete. Don't wait until the week before the assignment is due to get started.

### Seeking Help

Piazza is a great platform to see help in this class. However, I generally do **not** answer Piazza questions over the weekend. If you choose to complete assignments at the last minute or after the deadline, please keep this in mind. I will make sure any questions posted over the weekend are answered on Monday. Please ask questions using Piazza first if at all possible. I have it set up so that I get an email when a question is posted to Piazza, so emailing me is not quicker and by posting to Piazza you will have a chance of being answered by a classmate, TA, or another faculty member. Email should be reserved for questions whose answers would only benefit you personally or only I would know the answer to.

## 1.9 Communication

We will use a number of different tools for communication in this course. These include:

- <https://w3.cs.jmu.edu/molloykp/teaching/cs444/> is our central course web site. The announcements, discussion board, videos, and documents posted there are part of the required reading for the course.
  - Use public posts on Piazza to discuss the material related to this course.
  - **Canvas** will be used to submit assignments and disseminate grades

- **Mail the professor** if you have logistic or personal issues to discuss such as setting up an appointment outside of office hours, if a health problem arises, or if you have a personal emergency.
- **Office Hours** No appointments are required to attend office hours or you can make an appointment with me.

## 1.10 Attendance and Participation

Attendance is not mandatory, but participation will be used as a part of your lab/quiz grade portion. I strongly encourage you to attend every class session and participate fully in order to derive the maximum benefit of this course. If you believe that there is something I could change about the way I am handling the course in order to improve its effectiveness for you, please let me know via email or office hours.

*Please silence your cell phone while class is in session.* If you have a laptop or tablet, you are encouraged to bring it to class and use it to work along with programming examples and exercises. Mute the volume to avoid unintended interruptions, and do not use any electronic devices for activities that may distract other students. Repeated violations of this policy may result in disciplinary action or a grade penalty in the course.

I strongly encourage you to check the main website and the Piazza web forum regularly for important announcements (usually regarding programming projects). You may also use the Piazza forum to ask general questions of interest to the class as a whole (e.g., administrative issues or project clarification questions) as well as to offer each other general advice on class assignments. However, do not post any information that would violate the university academic integrity policy. If you are unsure about this, please email me for approval before you post.

## 2 Methods of Evaluation and Grading Policies

You are responsible for all material discussed in lecture and discussion section and posted on the class web page, including announcements, deadlines, policies, etc.

Your final course grade will be determined according to the following percentages:

Component	Count	Weight
Quizzes/Homework/Classwork	6-8	10%
Exam 1	1	15%
Exam 2	1	20%
Programming Assignments	3	20%
Final Programming Assignment	1	15%
Final Exam	1	20%

## 2.1 Quizzes

A small quiz will be given either online or during class to test you on the current material.

## 2.2 Exams

We will have three exams in class (you must be present or give a valid doctors excuse or similar note confirming your absence if you miss any exam). Each exam will be 1 hour and 15 minutes long. If you must be absent during an exam for a legitimate reason, you must contact me at least one week beforehand to make special arrangements. Failure to make prior arrangements for a missed exam will result in a zero grade. Except in extraordinary situations, you will not be excused from exams. Your instructor will be the sole arbiter of whether a situation qualifies as extraordinary. Hence, you should behave as if you will not be excused from exams for any reason.

Letter grades will be assigned on the scale A=90-100, B=80-89, C=70-79, D=60-69, F=0-59, with potential minor adjustments after considering the overall performance of the class and actual distribution of numeric scores. I will use + and - grades at my discretion.

## 2.3 Grading Disputes

If you believe I have made an error while grading your work or calculating your final score, please bring it to my attention after class or during office hours. If I determine that there has been a simple mistake, I will fix it immediately and no formal request is necessary.

If you believe an exam question or assignment has been graded unfairly, you must submit a written formal request for a regrade via email. Such requests must be submitted within one week of when the assignment in question is returned to you. **Any coursework submitted for reconsideration may be regraded in its entirety, which could result in a lower score if warranted.**

## 3 Course Policies

Important announcements will be made in class and/or on the class website. Please make it a habit to check the web page and or your email daily during the week.

Although every effort has been made to be complete and accurate, unforeseen circumstances arising during the semester could require the adjustment of any material given here. Consequently, given due notice to students, I reserve the right to change any information on this syllabus or in other course materials.

You are permitted to use course materials for your own personal use only. Course materials may not be distributed publicly or provided to others (excepting other students in the course), in any way or format unless explicitly allowed.

### 3.1 Programming Assignments(PA's)

PA's must be submitted electronically following the instructions given in class and on the website. Assignments may not be submitted by any other means (e.g., do not email your projects to me unless I request that). It is your responsibility to test your program and verify that it works properly before submitting it.

All assignments are due at 23:00 (11:00pm) on the day indicated on the assignment unless noted otherwise.

Assignments may be submitted up to 48 hours late for a 15% penalty per 24-hour period. For example, a submission that would have earned 90 points in an on-time submission will earn  $90 \times 0.85 = 76.5$  points if submitted up to 24 hours late, or  $90 \times 0.60 = 54$  points if submitted up to 48 hours late. If you make multiple submissions, I will typically grade the latest submission. If you wish me to grade a different submission, you must indicate this before the 48-hour late period is over.

Regardless of the above policy, I reserve the right to refuse to grade any programs submitted after the beginning of the second class period following the project deadline, because I may discuss the solution in class.

Project extensions will not necessarily be granted due to server congestion, system problems, network problems, power outages, etc., so do not wait to submit a program until the night it is due. No consideration in grading will be made for errors made in transferring files or submitting the wrong version of your project. Having a working, non-submitted version will not count; only submitted code will be counted.

You will be responsible for developing your own techniques for testing your projects before submitting it. I will grade your assignment based on test cases not provided to you in advance. Your code will be graded on a combination of correctness, completeness, documentation, and code style.

I will be exploiting electronic methods to detect plagiarism. You should be able to explain your code to me. See Section 4.2 for more details.

### 3.2 Adding and Dropping the Course

Students are responsible for adding and dropping the course and verifying these actions in My-Madison. Please consult the appropriate [academic calendar](#) for the exact deadlines. I will not give “WP” or “WF” grades to students requesting a drop after the deadline except in extraordinary circumstances.

### 3.3 Disability Accommodations

If you need an accommodation based on the impact of a disability, you must contact the [Office of Disability Services](#) if you have not previously done so. Disability Services will provide you with an Access Plan letter that will verify your need for services and make recommendations for accommo-

dations to be used in the classroom. Once you have shown me this letter, we will sit down and review the course requirements, your disability characteristics, and your requested accommodations to develop an individualized plan appropriate for this course. I will not make any accommodations without the appropriate documentation, as I am not qualified to diagnose disabilities.

### **3.4 Excused Absences**

All University's policies apply during the semester. Some of these policies appear in the Undergraduate Catalog.

Missing an exam for reasons such as illness, religious observance, participation in required university activities, or family or personal emergency (such as a serious automobile accident or the funeral of a close relative) all are circumstances that *may* qualify as an excused absence. Where possible you should attempt by all means necessary to attend and take exams at their regularly scheduled class period.

If you must be absent during an exam for a legitimate reason, you must contact me at least one week beforehand to make special arrangements. Failure to make prior arrangements for a missed exam will result in a zero grade. Excused absences will be granted at my discretion and only with appropriate documentation. Please contact me as soon as possible if you wish to request an excused absence.

### **3.5 Behavior and Accommodations**

Students are expected to maintain a high level of civility for all participants in and out of class meetings. This includes respecting the beliefs of participants of all genders, ethnicities, and social backgrounds. Harassment of any type will not be tolerated and failure to behave in a respectful manner will result in referrals to University Counseling or the Office of Student Judicial Affairs. Any instances of sexual harassment will be reported to the Office of Equal Opportunity according to the following policy:

<https://www.jmu.edu/JMUpolicy/policies/1340.shtml>

Observance of religious events will be accommodated for students of any faith.

### **3.6 Inclement Weather**

In case of inclement weather, we will hold class online via Webex (unless I specifically make alternate arrangements). A link will be sent via an announcement in Canvas. Otherwise, this class will operate in accord with JMU's official cancellation policy.

## 4 Academic Honesty and Collaboration

### 4.1 Academic Honesty

You are expected to comply with the JMU Honor Code as stated in the Student Handbook and available from the [Honor Council website](#) on all assignments, projects, and exams.

Consulting with other students about problems and solutions is not necessarily a violation of the honor code, depending on the particular assignment. All final work turned in for an assignment must be your own unless it is a group project. In particular, you may not share source or binary code on programming assignments unless the project specification explicitly allows it. If you are in doubt about whether something is an honor code violation, please contact me immediately.

If I find evidence of a violation of the honor code, I will bring the matter to the attention of the involved individuals via email and request a face-to-face meeting. As per section IV of the honor code, first time student offenders may agree that a violation has occurred and accept an appropriate penalty by submitting an "Informal Resolution Agreement Form" to the honor council. If the student is not a first-time offender or if there is disagreement about the violation or penalty, the matter will be referred to the honor council under section V of the honor code.

### 4.2 PRIME DIRECTIVE

**PRIME DIRECTIVE: Be able to explain your own work including homework code and exam solutions.**

Nearly all cheating in programming can be averted by adhering to the PRIME-DIRECTIVE. Students may be asked at any time to explain code or exam solutions they submit. Inability to do so will be construed as evidence of misconduct. More specific guidelines are given below.

#### **Thou Shalt Not**

For the purposes of this course, the following actions constitute scholastic misconduct (cheating):

- Directly copying someone else's solution to a homework problem, including student solutions from a previous semester
- Directly copying an answer from some outside source such as the Internet or friend for a homework problem
- Making use of an Instructor Solution manual to complete homework problems
- Paying someone for a homework solution or submitting someone else's work as your own
- Posting solutions to any web site including our course web site
- Collaborating or copying someone else's answer during an exam



- Aiding or abetting any of the above
- Witnessing any of the above and failing to report it the instructor immediately

### Fair Collaboration

The purpose of this course is to learn about programming and learning from one another is a great help. To that end, the following actions **will NOT be considered cheating in this course.**

- Talking to other students in the course about HW problems and informally describing how a problem may be solved.
- Getting or giving help fixing a bug or two: a second set of eyes is a great boon to finding that misplaced semicolon that is preventing your code from compiling.
- Searching the Internet for alternative presentations of a programming concept.
- When unsure whether collaboration is fair or not, stop the activity until it can be cleared with instructor.

### 4.3 Penalties

Any instance of misconduct that is detected will be referred to the honor board and will likely result in failing the course. Be advised that the teaching team will be employing **electronic means to detect plagiarism.** This is extremely easy with computer code so keep your nose clean.