# Course Details

**Meeting Times:** Section 201: Tuesday, and Thursday, 11:00 AM – 12:15 PM

**Location:** WAEC1104

**Course Description:** This three (3) credit hour is intended to introduce concepts of artificial intelligence with a focus on game development. AI techniques covered include movement, path finding, decision making, learning, and knowledge representation. In this course, we will explore opportunities to use AI to enhance gaming experience. Programming proficiency for a 2D and 3D gaming environment is required as students will put common AI algorithms into practice.

**Prerequisites**: CIT 441 Game Development II: 3D

**Required Texts:** No required textbooks

**Suggested Texts:** Mat Buckland, “Programming Game AI by Example,” Jones & Bartlett,

**ISBN: 1556220782**

Ian Millington “Artificial Intelligence for Games”, Taylor&Francis Group,

**ISBN: 978-0-12-497782-2**

Game AI Pro Series (Volume 1 and 2 Available for free online <http://www.gameaipro.com/>)

# Instructor

**Name:** Davide Andrea Mauro

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**Office Hours:** Monday, Tuesday, Wednesday, and Thursday 1:30 PM – 3:00 PM

Or by appointment. To check my weekly schedule: <http://mupfc.marshall.edu/~maurod/weeklyschedule.pdf>

# Objectives and Instruction Method

There will be three (3) contact hours of classroom lecture and discussion per week. Coursework will include classroom lectures, assignments, and exams along with in-class discussion.

Lectures and course materials will be available from MUOnline as they become available.

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| **Learning Outcomes** | **Practice** | **Assessment** |
| The student will be able to describe the fundamentals of artificial intelligence including knowledge representation, reasoning, neural networks and genetic algorithms. | In class lecture and hands-on examples and discussion | Students’ performance on in-class exercises, projects and exams |
| The student will be able to analyze problems that can be solved by using AI. | In class lecture and hands-on examples and discussion | Students’ performance on in-class exercises, projects and exams |
| The student will be able to identify the boundaries of the capabilities of current AI systems. | In class lecture and hands-on examples and discussion | Students’ performance on in-class exercises, projects and exams |
| The student will have acquired a sufficient understanding of the basic concepts and methods of artificial intelligence to make use of some elementary artificial intelligence techniques in the design of computer games. | In class lecture and hands-on examples and discussion | Students’ performance on in-class exercises, projects and exams |
| The student will be able to create code that incorporates elementary artificial intelligence into game coding. | In class lecture and hands-on examples and discussion | Students’ performance on in-class exercises, projects and exams |

# Tentative Schedule

The following is a tentative class schedule. Please note this may change based on class progress or extenuating circumstances.

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| --- | --- | --- |
| **Week #** | **Topics Covered** | **Assignment** |
| Week 1 | Overview and Syllabus, Introduction to AI |  |
| Week 2 | FSM (Finite State Machines) |  |
| Week 3 | AI Techniques: Steering |  |
| Week 4 | AI Techniques: Steering |  |
| Week 5 | AI Techniques: Steering |  |
| Week 6 | AI Techniques: Pathfinding |  |
| Week 7 | AI Techniques: Pathfinding |  |
| Week 8 | AI Techniques: Pathfinding, Midterm Review | Midterm Exam (03/01/2018) |
| Week 9 | Decision Making |  |
| Week 10 | Genetic Algorithms |  |
| Week 11 | Neural Networks |  |
| Week 12 | Reasoning |  |
| Week 13 | Fuzzy Logic |  |
| Week 14 | Projects and Assignments discussion |  |
| Week 15 | Final Review | Dead Week |
| Week 16 | - | Final Exam (05/03/2018 10:15 AM – 12:15 PM) |

# Policies

## Computer Requirements

Course materials will be provided through MUOnline (<http://www.marshall.edu/muonline/>). Class announcements and other communications will be sent using your Blackboard account. You can reach me by emailing me through MUOnline or at my Marshall email (maurod@marshall.edu). Please use your official Marshall University email address when sending class related communications. It is good practice to check your email and MUOnline frequently (at least once a day). If you have a smartphone, I encourage you to setup your Marshall account on it so you get notified as soon as possible when you receive email.

**When you send an email always add in the title the course and the section you are referring to. E.g. [CIT443SEC201].**

## Grading

Coursework will account for the following percentages of your final grade:

Assignments and Projects: 60%

Midterm Exam: 20%

Final Exam: 20%

Final letter grades are determined based on the following scale, no rounding is applied:

[90-100]% A

[80-90)% B

[70-80)% C

[60-70)% D

[0-60)% F

The instructor reserves the right to change these values depending on overall class performance and/or extenuating circumstances.

### Submission Guidelines

Assignments will be given and turned in through MUOnline unless otherwise noted. Submitted files should follow the following naming convention:

CIT443\_Section#\_*LastName*\_*FirstInitials*\_*AssignmentName*.docx (or .xlsx, etc.)

### Assessment of Work

Grading of coursework will primarily be based on correctness. Overall quality, usability, and thoroughness will also be taken into account.

While students are encouraged to help each other learn and study, you are responsible for turning in your own work. If you give or receive assistance to/from another student, please include a comment about it with your submission, or it may be investigated as Academic Dishonesty (see below).

### Late Policy

All Assignments are due by midnight on the provided due date. These deadlines are chosen to ensure adequate progress in the course and that you will be prepared for exams. However, because your understanding of the material is top priority, late work will still be accepted at no penalty. This policy is intended to help you if you have difficulty with the material, technical difficulties or other extenuating circumstances; it is **not** an invitation to do everything at the last minute, and the class will be much easier for you if you keep up with each assignment as best you can. If you have trouble understanding something which prevents you from completing an assignment on time, please come see me and we will work out the problem.

Normally the submissions will be open for one more week after the due date (e.g. deadline Sunday at midnight, the assignment will be available until the next Sunday at midnight), if you realize that there is something preventing you from completing an assignment get in touch BEFORE that moment. No late submissions will be accepted if you fail to comply with this two policies.

It is your duty to check your grades and report in a timely manner any anomaly.

## Attendance

Attending class is your best opportunity to practice the course materials, ask questions, and learn firsthand. Regular attendance will improve your ability to complete assignments and exams and give you more experience to draw from when applying the skills you learn here in your personal and professional activities.

However, while highly recommended, attendance is NOT mandatory and your grade will not be directly impacted by a missed class. **You are still responsible for all assignments and exams.** If you have obligations which will cause you to miss an exam and inform me in written form ahead of time OR you provide a University Excused Absence for an exam day, a make-up exam time will be arranged. Otherwise, missed exams will receive a grade of zero (0).

## Inclement Weather

Students can find information concerning Marshall’s policy regarding inclement weather regarding inclement weather online via <http://www.marshall.edu/ucomm/weatheremergency-closings/>. Please note that a two-hour delay means that classes that begin at 10:00 a.m. begin on time. Classes that begin at 9:30 a.m. meet at 10:00 a.m. and continue for the remaining period of that class.

## Withdrawal Policy

This course follows standard University policy for withdrawals. The last day to drop this course with a “W” is March 16, 2018.

## Cell Phones

Please be respectful of others and set your phone to ‘Silent’ or ‘Vibrate’ during class. If you need to take a call, please take it outside.

## Academic Dishonesty

As described in the Marshall University Creed, Marshall University is an “Ethical Community reflecting honesty, integrity and fairness in both academic and extracurricular activities.” Academic Dishonesty is something that will not be tolerated as these actions are fundamentally opposed to “assuring the integrity of the curriculum through the maintenance of rigorous standards and high expectations for student learning and performance” as described in Marshall University’s Statement of Philosophy. A student, by voluntarily accepting admission to the institution or enrolling in a class or course of study offered by Marshall University accepts the academic requirements and criteria of the institution. It is the student’s responsibility to be aware of policies regulating academic conduct, including the definitions of academic dishonesty, the possible sanctions and the appeal process. For the purposes of this policy, an academic exercise is defined as any assignment, whether graded or ungraded, that is given in an academic course or must be completed toward the completion of degree or certification requirements. This includes, but is not limited to: Exams, quizzes, papers, oral presentations, data gathering and analysis, practical and creative work of any kind.

If you are found cheating on projects or plagiarizing answers from the Internet or other sources there will be no second chance. In this course, STUDENTS ARE NOT TO “COPY & PASTE” MATERIAL FROM A SOURCE INTO ANY ASSIGNMENT UNLESS SPECIFICALLY AUTHORIZED BY THE INSTRUCTOR. Your penalty is that you will receive a failing grade for the course. In those cases in which the offense is particularly flagrant or where there are other aggravating circumstances, additional, non-academic, sanctions may be pursued through the Office of Judicial Affairs. Notice of an act of academic dishonesty will be reported to the Department Chair, Dean of the College of Science, and to the Office of Academic Affairs. Please refer to the Marshall University Undergraduate Catalog for a full definition of academic dishonesty.

## University Policy

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to [www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to [www.marshall.edu/academic-affairs/policies/](http://www.marshall.edu/academic-affairs/policies/).

*Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/Dead Week/Students with Disabilities/Academic Forgiveness/Academic Probation and Suspension/Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment*

## Policy for Students with Disabilities

Marshall University is committed to equal opportunity education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disability Services (ODS) in Prichard Hall 117 (304.696.2467) to provide documentation of their disability.

Following this, the ODS Coordinator will send a letter to each of the student’s instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing, and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, access the website for the Office of Disabled Student Services: http://www.marshall.edu/disabled

## Dead Week

(SR-90-91-(95) 247 ASCR) The last five class days of the fall and spring semesters shall be designated as DEAD WEEK for undergraduate students. Examinations that are designated as 15% or more of the final course grade may not be given during this period. Major papers and/or projects defined as 15% or more of the final course grade may be assigned during this period only if stipulated in the official course syllabus which is to be distributed at the beginning of the semester. Night classes, laboratories, freshmen English composition courses, and any classes meeting once a week shall be exempt from the requirements. New material and make­up examinations may be introduced or conducted during the DEAD WEEK. DEAD WEEK is not intended to be incorporated in the summer sessions of the University.

# Disclaimer

The instructor reserves that right to modify the course schedule, evaluation system, and policy should it become necessary for the effective conduct of the course.

Any amendment to the course policy needs to be presented in a written form (e.g. an email, a course announcement on Blackboard).

E.g. if you want to request an extension for a deadline send an email to the instructor. If no other document can be provided to prove a claim the syllabus will be considered the valid source of information.