Course Syllabus

# Course Name

Machine Intelligence Systems

# Contact Information

|  |  |
| --- | --- |
| Catalog Course Code: | SDV 4102 |
| Three-Letter Course Abbreviation: | MIS |
| Instructor: | Brandon Patterson |
| Telephone: | (407) 679-0100 ext 2351 |
| Email: Include the course email address rather than the staff email address if one exists. | cbpatterson@fullsail.com |
| Hours: Indicate office hours, chat hours, and preferred method of contact. | Email is the preferred contact method. Office hours vary |
| Office Location | Building FS130, Room 200 |

# Course Description

# This class has two main objectives: introduce the students to the machine learning, more practice coding.

# Machine Intelligence Systems emphasizes good design practices, debugging, software testing, and practice. Specific topics covered include requirements analysis, design documentation, design patterns, coding standards, common coding errors, and debugging strategies. To put these concepts into practice, the students will work on several different lab assignments: machine learning concepts, python practice, visualizing data. In short, skills that are indispensable to success the growing field of data science, but that are often skipped in a traditional computer science curriculum.

# Course Materials

* Anaconda Python Distribution
* Jupyter notebook lessons
* Data collections

# Course Objectives / Outcomes

* Familiarize yourself with machine learning
* Continue practicing Python
* Learn how to utilize visualization technology with machine learning results

# Lab Specialist / Office Hours Assistance Guidelines

The role of lab specialists in this course is to facilitate student work and guide the learning process. However, students are expected to perform work independently, more specifically, to write and debug their own code. Lab specialists are not to look at student code or debug student code errors, as these are important elements of the assignments themselves. Lab specialists will help students by clarifying concepts and algorithms, examining program output in order to help students track down program flaws, advise students on architectural elements of projects, and by engaging in other activities that help students to complete projects through their own work. If a lab instructor is unable to fix or solve an issue with your project you are still responsible for completion of the assignment. An engineer’s most important skill is the ability to problem solve, be sure to develop this skill by working through problems on your own.

# General Education Component

Within Machine Intelligence Systems much of the class involves discussing topics with the class. The general education classes at Full Sail University promote self-confidence in speaking in front of peers. This is essential to the course as there is often more than one way to solve a problem, discussing the solutions with the class and leading the students towards the most effective solution would not be possible without this in-class interaction component. The general education classes also enforce that it is okay to make a mistake and those mistakes are a part of the learning process. This allows Machine Intelligence Systems to be a much more dynamic class, and lectures to be less linear, allowing for a better learning experience tailored to each class based on the outcomes of the discussions.

# Industry Connection

Machine Intelligence Systems labs are designed to promote the use of debugging practices that will be essential in the industry. Through writing the memory manager the students realize how many permutations of execution can be possible by allocating different sizes in different orders, thereby having to debug and test for particular permutations greatly increases their awareness of potential bugs due to code design. When errors are found, since there are similar areas, it promotes the good practice of searching for similar errors throughout the application. Being aware of potential bugs can allow them to write better code in the industry, as debugging can account for up to fifty percent of total development time in a large project. Understanding test case design is also imperative, especially since they may be required to complete unit tests before checking in their work in the industry.

# Research Component

Machine Intelligence Systems is an integrated classroom, this means that a portion of your class day should be spent reading through the lecture material (in this class we use a thing called a notebook). The notebooks are laid out so that there is one per day, this should either be read before coming to class or sometime after the material has been presented to you. Whether you read before, after, or both will depend on your learning style and comprehension of the material. During the lecture I will cover most of the content, but there will be sections that we skip and important notes written in the notebook that you will miss if you don’t do the reading.

Research is critical to being successful engineer, however we need to be careful to understand all of the code we use. If you find a solution to your problem online and use it, you need to understand what all of the code is doing. If you are asked to explain a section of your code and you are unable to do so you will get a 0 on the assignment.

# Media Center Component

The Full Sail Media Center is a great resource for technical information; however there are no required texts for this course. If you want to further your understanding of the content presented in this class I would suggest the following: Data Points: Automate the Boring Stuff with Python, Data Science from Scratch, Programming Interviews Exposed.

# Critiques

Critiques are done online as an assignment on FSO, it should open up on the last Wednesday of the class and will be open until the following Saturday. Feedback is appreciated, critiques are reviewed by the department chair and we take them seriously.

# Resources

* Google ([www.google.com](http://www.google.com))
* Stack Overflow ([www.stackoverflow.com](http://www.stackoverflow.com))
* Python (http://www.python.org)

# Topics Covered

* Supervised Learning
* Unsupervised Learning
* Reinforcement Learning

# Learning Activities

* Classification
* Regression
* Clustering
* Data Processing
* Model Validation

# Grade Weights

8% Overview

8% Data Processing

8% Classification

8% Regression

8% Clustering

10% Research Assignment

20% Test 1

20% Test 2

10% GPS

* If you have any grade disputes do not wait until the last minute to resolve them
* With an excused absence you may make up a missed exam
* If you are retaking this course, you cannot simply turn in last month’s work

# Late Turn In Policy

The official late turn in policy for Full Sail is that any assignment may be turned in up to two days late for a penalty of 10%, after two days an assignment may not be submitted for any points.

# Strategies For Successful Learning

* Learn how to use the debugger and how to debug code, your greatest skill is the ability to problem solve.
* Practice, practice, practice
* Utilize external resources such as <http://www.google.com> and <http://www.stackoverflow.com>.

# Course-Specific Material

* Materials can be found on FSO