

# LIS5377 - Artificial Intelligence Applications (3 credits)

TERM XXXX, COURSE MEETING DAY/TIME, COURSE MEETING LOCATION

Mode of Instruction: Online

**Instructor:
Email:
Office:
Phone:
Course Location/Website:
Office Hours:
Teaching Assistant:
TA Email:**

# COURSE PREREQUISITES:

Instructor permission.

# COURSE DESCRIPTION:

This course is an explorative introduction into artificial intelligence. AI and its related fields are used in many areas: business and health analytics, security, energy production, image and biometric analysis and recognition, weather forecasting, as well as copious other applications. The skills, tools, and techniques learned in this course are relevant to careers in the aforementioned areas.

# COURSE OBJECTIVES:

At the end of the course, the student will be able to:

* Define terms and concepts used in AI and related fields;
* Create individual development and distributed version control environments;
* Identify characteristics of various intelligent systems;
* Evaluate AI strategies used to address specific practical real-world applications;
* Apply AI techniques on data sets at a basic level.

# COURSE MATERIALS:

* The following (or similar textbook) is required:
McCoy, S. (2024). *Murach’s Python for Data Science* (2nd Ed.). Mike Murach & Associates Inc. ISBN 978-1-943873-17-3
* All necessary course software will be open source, and available through the course website.
* Additional readings as assigned and posted to the course website.

# COURSE ASSIGNMENTS AND EVALUATION:

**Homework assignments (25%)**

Students will create their own individual development/data analytics environments on their laptops. Students will install a number of open-source applications and productivity tools that will be used throughout the course for analyzing data and producing graphical representations of the results. In addition, students will create an individual distributed version control system (DVCS) environment, which will be used for storing and tracking completed course work. An ancillary benefit of storing completed course work in a personal DVCS repository is that it can function as an online résumé/portfolio to be used when providing evidence of acquired skill sets to employers.

**\*Project 1 (15%):**

Given a Jupyter Notebook screenshot, which includes a data set with analyzed data and plotted graphs, students will backward-engineer the screenshot, and will include a screenshot of their own Jupyter Notebook in a README.md file posted to a DVCS repository, e.g., Bitbucket, GitHub, etc. Students’ solution repositories will include at least three user-defined functions, their Jupyter notebook, including analyzed data, and plotted graphs. Students will submit a URL link to their associated DVCS repository.

**\*Project 2 (15%):**
Students will codify the differences among artificial intelligence (AI) and its related areas. For example, students will make contrasts and comparisons of AI, machine language, deep learning and neural networks, as well as natural language processing (NLP). After which, students will obtain a raw data set, clean and prepare the data for analysis, then employ various data analyzing tools and application programming interfaces (APIs), e.g., TensorFlow, as well as utilize algorithmic models in order to generate predictive outcomes.

**Study sets/Lab Exercises (15%).** Students will check their level of comprehension regarding course material each week by completing study sets and/or lab exercises before moving on to the next topic. These ensure that students understand the strengths and/or weaknesses of their knowledge base before moving on to the next concept.

**Problem Sets (30%).** Students will complete two major problem sets during the semester. These will challenge students to apply – broadly – large chunks of their knowledge to ensure that they are ready to complete bigger projects that require a broad body knowledge.

**\*Note:** For both project 1 and project 2, students are required to find at least three articles pertinent to each related project, and write a one to two page report on why the topics covered in the project would be beneficial, and/or could possibly pose challenges when utilized in real-world environments.

# GRADE CALCULATION:

Assignment 1 5%

Assignment 2 5%

Assignment 3 5%

Assignment 4 5%

Assignment 5 5%

Study Sets/Lab Exs. 15%

Project 1 15%

Project 2 15%

Problem set 1 15%

Problem set 2 15%

# GRADING SCALE

A 93 - 100

A- 90 – 92

B+ 87 – 89

B 83 – 86

B- 80 – 82

C+ 77 – 79

C 73 – 76

C- 70 – 72

D+ 67 – 69

D 63 – 66

D- 60 – 62

F 0 – 59

# COURSE SCHEDULE:

|  |  |
| --- | --- |
| **WEEK** | **TOPICS TO BE COVERED** |
| 1 | Brief History of Modern AI |
| 2 | Creating Development and Distributed Version Control Environments |
| 3 | Data Science and Basic Statistics Overview |
| 4 | Jupyter Notebooks Use and Applications  |
| 5 | Data Wrangling |
| 6 | Data Analytics Techniques  |
| 7 | Data Visualization |
| 8 | Problem Set 1 |
| 9 | Explore AI, Machine and Deep Learning Applications  |
| 10 | Machine Learning Models Overview |
| 11 | Deep Learning Models Overview |
| 12 | Natural Language Processing Overview |
| 13 | Introduction to Internet of Things (IoT) |
| 14 | Problem Set 2 |
| 15 | Philosophy, Ethics, and Future of AI |

**SCHOOL POLICIES**

**Graduate Certificate Application**

If you are intending to apply this course towards any of the [iSchool graduate certificate programs](https://ischool.cci.fsu.edu/academics/graduate/%22%20%5Ct%20%22_blank) you must submit the online [iSchool Certificate Application](https://fsuslis.wufoo.com/forms/ischool-certificate-application/%22%20%5Ct%20%22_blank) prior to completion of the 2nd course required for the certificate.

**Copyright Statement**

Some of the materials in this course are possibly copyrighted. They are intended for use only by students registered and enrolled in this course and only for instructional activities associated with, and for the duration of, the course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Technology, Education, And Copyright Harmonization (TEACH) Act (refer to the 3/7/2001 TEACH Act at [www.copyright.gov/legislation/archive/](http://www.copyright.gov/legislation/archive/) ).

**Sexual Harassment Policy**

It is the policy of the University that its employees and students neither commit nor condone sexual harassment in any form.  <http://registrar.fsu.edu/bulletin/graduate/information/university_notices/>

**iSchool Hardware and Software Requirements**

A list of all hardware and software requirements for students participating in the School of Information (iSchool) courses can be found at the following location: <http://ischool.cci.fsu.edu/academics/online/requirements/>

**Student Eligibility for an Incomplete Grade**

Incomplete (“I”) grades will not be assigned, except in the case of exceptional unforeseen circumstances that occur within the last three weeks of the semester and your work has otherwise been satisfactory.

**ATTENDANCE POLICY:**

Excused absences include documented illness, deaths in the family, and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid written excuse. Consideration will also be given to students whose dependent children experience serious illness.

**ACADEMIC HONOR POLICY:**

The Florida State University Academic Honor Policy outlines the University’s expectations for the integrity of student’s academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to “. . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University.” (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/academic-resources/academic-integrity-and-grievances/academic-honor-policy>)

**ACADEMIC SUCCESS:**

Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Department of Student Support and Transitions to learn more.

**AMERICANS WITH DISABILITIES ACT:**

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Office of Accessibility Services; and (2) request a letter from the Office of Accessibility Services to be sent to the instructor indicating the need for accommodation and what type; and (3) meet (in person, via phone, email, skype, zoom, etc...) with each instructor to whom a letter of accommodation was sent to review approved accommodations. This syllabus and other class materials are available in an alternative format upon request. For the latest version of this statement and more information about services available to FSU students with disabilities, contact the:

Office of Accessibility Services

874 Traditions Way

108 Student Services Building

Florida State University

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

oas@fsu.edu

<https://dsst.fsu.edu/oas>

**CONFIDENTIAL CAMPUS RESOURCES:**

Various centers and programs are available to assist students with navigating stressors that might impact academic success. These include the following:

Victim Advocate Program

University Center A, Rm. 4100

(850) 644-7161

Available 24/7/365

Office Hours: M-F 8-5

<https://dsst.fsu.edu/vap>

Counseling and Psychological Services (CAPS)

Florida State University’s Counseling and Psychological Services (CAPS) primary mission is to address psychological needs and personal concerns, which may interfere with students’ academic progress, social development, and emotional well-being. The following in-person and virtual (tele-mental health) services are available to all enrolled students residing in the state of Florida:

1. Individual therapy

2. Group therapy

3. Crisis Intervention

4. Psychoeducational and outreach programming

5. After hours crisis-hotline

6. Access to community providers for specialized treatment

Call 850-644-TALK (8255) for more information on how to initiate services.

Counseling and Psychological Services

250 Askew Student Life Center

942 Learning Way

(850) 644-TALK (8255)

Walk-in and Appointment Hours:

M-F 8 am – 4 pm

<https://counseling.fsu.edu/>

Services at UHS are available to all enrolled students residing in Florida:

The mission of University Health Services (UHS) is to promote and improve the overall health and well-being of FSU students. UHS provides a coordinated continuum of care through prevention, intervention, and treatment. Services include general medical care, priority care, gynecological services, physicals, allergy injection clinic, immunizations, diagnostic imaging, physical therapy, and a medical response unit. The Center for Health Advocacy and Wellness (CHAW) assists students in their academic success through individual, group, and population-based health and wellness initiatives. Topics include wellness, alcohol and other drugs, hazing prevention, nutrition and body image, sexual health, and power based personal violence prevention. For more information, go to uhs.fsu.edu.

University Health Services

Health and Wellness Center

960 Learning Way

Tallahassee, FL 32306

Hours: M-F, 8 am – 4 pm

(850) 644-6230

<https://uhs.fsu.edu/>

**SYLLABUS CHANGE POLICY**

Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.

**FREE TUTORING FROM FSU**

On-campus tutoring and writing assistance is available for many courses at Florida State University. For more information, visit the Academic Center for Excellence (ACE) Tutoring Services’ comprehensive list of on-campus tutoring options –see <https://ace.fsu.edu/tutoring> or contact tutor@fsu.edu. High-quality tutoring is available by appointment and on a walk-in basis. These services are offered by tutors trained to encourage the highest level of individual academic success while upholding personal academic integrity.

**STATEMENT FOR CLASSES SUBJECT TO HB233 RECORDING**

In this class, consistent with state law and university policy, students are permitted to make recordings of class lectures for personal use only. As noted, sharing, posting, or publishing classroom recordings may subject you to honor code violations and legal penalties associated with theft of intellectual property and violations of other state laws. Moreover, students and educators have expressed concern that recording classroom activities may negatively impact the learning experience for others, especially in classes that involve questions, discussion, or participation. To protect a learning environment in which everyone feels free to experiment with ideas, we ask you to refrain from recording in ways that could make others feel reluctant to ask questions, explore new ideas, or otherwise participate in class. Students must monitor their recordings so that they do not include participation by other students without permission. Students with disabilities will continue to have appropriate accommodations for recordings as established by the Office of Accessibility Services.

**STATEMENT FOR COURSES NOT SUBJECT TO HB233 RECORDING**

In this class, consistent with state law and university policy, you may not make recordings of classroom activities without the permission of the instructor. This policy applies to both audio and video recordings.