MBA 655
Beginning Python
Summer 2021

Instructor Information

Co-Professors: Jacob Cook (M.A.), Mary Makris (M.S./MBA), Thomas Ray (M.S)
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Instructors' Background

Jake serves as CEO and cofounder at Tadpull and during his career has worked with Google, Microsoft, DonorsChoose.org, Kickstarter, Caterpillar, Outdoor Research, Jackson Hole Resort and a host of other leading digital brands. Since 2007, he has been an adjunct professor teaching undergraduate and graduate courses on innovation, digital marketing, eCommerce and analytics at Montana State University, University of Montana's College of Business, MCAD and The American College. He has open sourced a textbook at OnDigitalMarketing.com used in universities and exec ed programs around the world. Jake holds an undergraduate degree in Physics and an MA in Marketing from Drury University.

Mary Makris is a Marketing & Product Manager at Tadpull. She specializes in scaling eCommerce businesses through paid advertising and the power of data science insights. She also has experience marketing high-tech software in the B2B arena. Mary holds an undergraduate degree in Marketing, an MBA, and a MS in Business Analytics from the University of Montana.

Thomas works in Data Science and Engineering at Tadpull. He enjoys the process of driving value for eCommerce businesses with data - from the exploratory data analysis to putting models in production. He holds an undergraduate degree in Finance and a MS in Business Analytics from the University of Montana.

Course Information

Meeting Place: Zoom (meeting link in Moodle)
Meeting Time: Wednesdays from 5:00 - 8:00 PM
Office Hours: After class and by appointment

Course Description

This is a 3-credit graduate course covering Python fundamentals including how to do basic programming for manipulating, analyzing, and visualizing a variety of datasets. In addition, the course explores modern workflows and tools for version control of code, leveraging open source libraries, and using tools like Jupyter notebooks on local machines as well as Google Colab in the cloud for analysis.

The course assumes students have no prior programming experience and will start with basic fundamentals of the Python language and coding principles.

Pre-reqs: Graduate students enrolled in the MBA, MSBA, or MACC programs

Course Learning Goals

Python is an incredibly powerful language and can be used in a variety of data analysis tasks. Much of today's modern machine learning libraries use Python and the language enjoys a robust open-source community supporting it.

The other advantage of Python is it is much more approachable for beginners compared to more complex languages like C++ or Java. Thus, it's often a great toolset for collaborating with software engineers and data scientists.

Throughout the course, students will get a chance to learn basic coding fundamentals and apply Python methods to a variety of tasks to either automate or analyze common problems when working with a variety of datasets. The course will not explore much of the underlying math beyond some of these methods but instead will seek to give the student the coding frameworks which will be put to use later in the UM graduate program.

At the conclusion of the course, students will have a basic foundational understanding of the Python language to build upon as they progress through their graduate program in MSBA or the MBA track.

Our goal is not to become production software developers but instead learn the fundamentals that can be expanded upon throughout our technical careers. After all, programming is an infinite loop of ongoing skill mastery.

Grading Evaluation

We will be employing contract grading, whereas you will determine the grade you want at the outset and then make a contract with the professors on achieving that grade by completing assignments at the level that matches with your grade desired and with your

- A - Completing all assignments (9 total) with a 70/100 and at least a 210/300 or better on the final project
- B - Completing 8 assignments with a 60/100 and at least a 180/300 or better on final project
- C - Completing 5 assignments with a 50/100 and at least a 150/300 or better on final project
- D - Completing 3 assignments and no final project submission

Weekly Assignment
We will be assigning a basic Jupyter notebook assignment each week with a blend of coding problems and basic qualitative knowledge checks for a total of 100 points. This will be graded by a teaching assistant (TA) and we will start each class off by reviewing the assignment and any questions to help cement the concepts. There will be a total of nine weekly assignments.

Final Project
This will build upon all the learnings of the course and culminate in a final project where students get to apply all that they have learned and will also be worth a total of 300 points. It is strongly recommended that students keep up with each weekly assignment so they are able to complete this with reasonable proficiency as it will seek to tie all the concepts together we cover each week into a final deliverable.

Pre-Course Assignment

(required before the first day of class)

1. A laptop with Zoom installed for video and screensharing
2. Anaconda installed (Mac or Windows version)
3. Terminal Access (for Windows or Mac)
4. Github account

Total time - 1-2 hours

Expected Learning Objectives and Assessment

Students will have a basic understanding of the following:

- Anaconda, Terminal, Git & Github
- Data types, variables, simple math
- Conditionals (basic Booleans)
- Loops & lists
- Functions and scoping
- Strings and dictionaries
- File manipulation and management

- Data wrangling
- Pandas (dataframes)
- Data visualizations

Attendance

Due to the timeline and delivery of the course, it is imperative that you attend class each week. If you miss class, it is your responsibility to catch up and be prepared on the concepts that will build on themselves each week. If you miss - find a buddy, buy them a coffee, and thank them profusely for helping you understand the material.

At the graduate level, we fully expect students to take their learning seriously and make accommodations as needed to keep up in the course by whatever means necessary.

However, if there are extenuating life circumstances, please let your instructors know as soon as possible.

Mission Statements and Assurance of Learning

The College of Business at the University of Montana creates transformative, integrated, and student-centric learning experiences, propelling our students to make immediate and sustained impact on business and society. We nurture our students' innate work ethic to develop confident problem solvers and ethical decision makers. We pursue thought leadership and collectively create opportunities for a better life for our students, faculty, and staff.

COB Core Values:

- Students first: We educate the whole person
- Experiential learning: We create experiences that matter
- Thought leadership: We create rigorous and relevant knowledge
- Stewardship: We value people, planet and profit

The mission statement for the MS in Business Analytics program is as follows:

The MS in Business Analytics prepares graduates for successful careers working with data across a wide range of organizations. Students build a strong foundation at the intersection of business, statistics, and computing. In addition to a firm grounding in analytical techniques and applications, students gain the ability to effectively communicate and use the results of data analytics for innovative solutions to catalyze business growth. Graduates are deeply engaged with the private and public sector, acquiring relevant skills to provide immediate value to employers.

As part of our assessment process and assurance-of-learning standards, the MSBA program has adopted five learning goals for our students.

The MS in Business Analytics graduates will possess:

1. **Knowledge** A deep understanding of a wide range of analytical techniques and programing tools for both structured and unstructured (e.g., text, sentiment) data.

2. **Application** The ability to apply appropriate analytical techniques to solve a wide variety of business/organizational problems.

3. **Communication/Story Telling** The ability to effectively: (a) communicate data analytics results and translate these into effective business decision making inputs; (b) use data visualization techniques to illustrate results and implications; and (c) write an impactful narrative supporting key insights and implications from an analysis.

4. **Ethics/Data Stewardship** The ability to act as effective data stewards, applying governance techniques to secure data, to develop and promote policies for using data in an ethical manner, to respect data privacy considerations, and to enforce data compliance.

5. **Innovation** The ability to innovate beyond providing answers to existing questions and solutions to known problems by harnessing data analytics to identify new sources of value, to see patterns and anomalies, and to reveal new insights.

Academic Honesty

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. The University of Montana Student Conduct Code specifies definitions and adjudication processes for academic misconduct and states, “Students at the University of Montana are expected to practice academic honesty at all times.” (Section V.A., available at http://www.umt.edu/vpsa/policies/student_conduct.php). All students need to be familiar with the
Student Conduct Code. It is the student’s responsibility to be familiar with the Student Conduct Code.
SoBA Professional Conduct. (link:
http://www.business.umt.edu/ethics/professional-conduct-code.php)

Disability Services for Students

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommason Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Names and Pronouns

Many people might go by a name in daily life that is different from their legal name. In this classroom, we seek to refer to people by the names that they go by. Pronouns can be a way to affirm someone's gender identity, but they can also be unrelated to a person's identity. They are simply a public way in which people are referred to in place of their name (e.g. "he" or "she" or "they" or "ze" or something else). In this classroom, you are invited (if you want to) to share what pronouns you go by, and we seek to refer to people using the pronouns that they share. The pronouns someone indicates are not necessarily indicative of their gender identity. This statement was found at trans.umd.edu and you can visit that site to learn more.