MATH 3380, Spring 2023
Algorithms for Applied Math

Instructor Information

Professor:	Dr. Stephen Graves
Office:	RBN 4011
Email:	sgraves@uttyler.edu
Dept. Phone:	903-565-5839

The preferred method of contact is via Canvas.
uttyler.instructure.com

Class Meeting Times

Section	Days	Times	Location
001	MoWe	08:00 – 08:55	RBN 4019

Office Hours

MoWeFr	10:15 — 11:15	RBN 4011

Otherwise by scheduled appointment.

1. COURSE INFORMATION

1.1. Official Course Description. Study of applications selected from descriptive statistics, combinatorics, numerical methods, and matrices utilizing the computer.

1.2. Course Prerequisites. MATH 2414 completed with a grade of C or better, or concurrent enrollment.

1.3. Important Dates from Academic Calendar.

Date	Important Event	Note
9 Jan.	First day of classes	
16 Jan.	*MLK, Jr. Day*	*(No classes)*
23 Jan.	Census date	
10 Feb.	Personal Day	*(No class)*
13 – 18 Mar.	Spring break	*(No classes)*
23 Mar.	Withdrawal deadline	
7 Apr.	*Good Friday*	*(No class)*
24 – 29 Apr.	*Finals week*	*(No classes)*

2. COURSE CONTENT

2.1. Textbook. The primary textbook will be the source of lecture notes and assignment problems; the others are provided so you can have an additional explanation of topics if you need them.

Primary: *Algorithms for Applied Mathematics*[1]
  by S. J. Graves
Reference: The Python Tutorial[2]
Reference: Google's Python Class[3]
Reference: How to Think Like a Computer Scientist: Python 3 Edition[4]
Recommended: *The 5 Elements of Effective Thinking*
  by Edward Burger and Michael Starbird
  ISBN 978-0691156668
  This inexpensive book can totally change how you view learning and I recommend it to anyone who thinks they might struggle with course material, whether or not they're in my classes.

2.2. Student Learning Outcomes. Students should be able to successfully:

- Implement and apply basic numerical algorithms.
- Implement and apply basic symbolic algorithms.
- Be able to differentiate between types of algorithms and to both apply and assess them in different contexts.
- Be comfortable enough using the computer to explore mathematics to select a topic of mathematical interest and complete a programming project on that topic.

3. COURSE POLICIES

3.1. Academic Honesty. *All work submitted must be your own.* If this is determined not to be the case, you will be referred to the Director of Judicial Affairs, with a consequence appropriate to the level of the infraction. You will be reminded of the UT Tyler Honor Code on every exam.

  Submitting the assignments or lecture notes of another student is **plagiarism** and will result in an earned grade of 0 **for the category**, not just the assignment. Cheating on an exam will result in an F for the **course**. Posting copyrighted material to the internet without the prior written permission of the copyright holder is **illegal**.

3.2. Civil Environment. The free exchange of ideas is a central part of a university education. Class will be conducted in a polite and professional manner and I expect students to behave politely and professionally. *Disruptive behavior will not be allowed and is judged at my sole discretion.* Persistent incivility will result in your removal from the classroom.

3.3. Canvas & Email. You are expected to check Canvas at least daily, and also expected to check your university email. **All at-home work will be submitted via Canvas**.

3.4. Personal Electronics. Students are required to have access to a device capable of accessing Canvas and a device capable of scanning hand-written work for upload to Canvas. It will also be *extremely helpful* if you have your own laptop and bring it to class *every day*. If you do not have a laptop, you can use classroom and lab computers and save your work on a USB drive. **Other electronics should be stowed in your bag**.

3.5. Late & Missed Work. Late work will not be accepted. Missed lecture notes and weekly assignments will count as 0s. In the event that a student misses a single in-class exam, the

final exam grade will increase to cover the missing points. Students missing more than one in-class exam fail the course.

4. University Policies

The University has many policies required to be included on syllabi. As these policies can change, please find the most recent version online.[5]

5. Course Structure

The course content will be tentatively organized by week in Canvas modules; this is subject to change as our use of class time necessitates. Your grade will be calculated in **percentage points (PP)**: lecture notes (5 PP), projects (25 PP), and exams (70 PP).

5.1. **Grade Scale.** Student letter grades will be recorded based upon their earned percentage points (PP). The grade scale will be no stricter than the standard:

PP Range	$[0, 60]$	$(60, 70)$	$[70, 80)$	$[80, 90)$	$[90, \infty)$
Letter	F	D	C	B	A

5.2. **Lecture Notes, 5 PP.** Students who consistently attend class and participate by writing notes and asking questions outperform students who do not. In order to encourage attendance, you will be required to scan and upload your handwritten course notes before 23:59 on the same day as class. *When that you miss class, make sure to obtain lecture notes **from a classmate** and submit them before the deadline. Notes will not be provided by the instructor.* Each day's notes will be graded as a 0 (no meaningful notes), 1 (halfway complete and meaningful notes), or 2 (complete and meaningful notes). The notes *do not need to be an exact transcript of class to be complete*, but must contain all meaningful ideas from class.

There are 39 days for which notes can be submitted; at 2 points each that totals 78 points. Your grade x will be taken out of 70 points, and you will earn $5x/70$ PP for lecture notes.

> *Extra Credit.* If you receive $x > 70$ points from lecture notes, you will receive an additional $1/8$ PP per point above 70, for a maximum of 6 PP.
> This makes the formula $5 + (x - 70)/8$.

5.3. **Weekly Assignments, 25 PP.** There is no method of building algorithmic thinking so useful as working on mathematical problems that are outside your experience. To that end there are projects which will be assigned every week. You are encouraged to work together and even more strongly encouraged to contact me when you struggle, but working together *does not mean writing the same code as your classmate*. Your average grade on these projects will be scaled to its proportion of 25 PP.

5.4. **Exams, 70 PP.** There will be 2 in-class exams as well as a final exam; the midterms will be held on Monday, 3 February and Friday, 10 March. The final exam is scheduled according to the University finale xam calendar and *should be* held on Wednesday, 26 April from 08:00 – 10:00.

In-class exams each contribute 20 PP towards your final grade, while the final contributes 30 PP. All exams will be comprehensive, but will be skewed toward the newer material covered since the last exam.

> *Extra Credit.* A student who takes all exams and earns all nonzero scores will receive an additional 1 PP towards their grade.

Notes

1. https://github.com/sj-graves/algorithms-book/

2. https://docs.python.org/3/tutorial/index.html

3. https://developers.google.com/edu/python/

4. http://openbookproject.net/thinkcs/python/english3e/

5. Usually at https://www.uttyler.edu/academic-affairs/files/syllabuspolicy.pdf