MATH 3380.001, Spring 2024
Algorithms in Applied Math

Instructor Information

Professor:	Dr. Stephen Graves
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The preferred method of contact is via Canvas.
uttyler.instructure.com

Class Meeting Times

Section	Days	Times	Location
001	MoWeFr	08:00 – 08:55	RBN 3039

Office Hours

Mo	12:15 — 13:00	RBN 4011
We	09:05 — 09:50	RBN 4011
Fr	11:15 — 12:00	RBN 4011

1. Course Information

1.1. **Official Course Description.** Study of mathematical logic, sets, combinations, relations, functions, graphs and trees, Boolean algebra, and algebraic structures.

1.2. **Course Prerequisites.** A grade of C or better in Math 1325 or Math 2413 or equivalent and one high-level computer language. Students may not receive credit for both Math 2330 and Math 3425.

1.3. **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.

2. Important Dates

16 Jan.	First day of classes
29 Jan.	Census date
11 – 15 Mar.	Spring Break (No Classes)
25 Mar.	Withdrawal deadline
29 Mar.	Good Friday
29 Apr. – 3 May	Final exams
3 & 4 May	Spring Commencement

I will not hold classes on Good Friday.

3. Course Content

3.1. **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 E. Burger and M. Starbird[5]

3.2. **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 *homework* 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**.

3.3. **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.

3.4. **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**.

3.5. **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**.

3.6. **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.[6]

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. On every day of class that is not an exam day, make sure you attend, take notes, and submit them via Canvas.

*When you miss class, make sure to obtain lecture notes **from a classmate** and submit them before the deadline. **Missed notes will not be provided by the instructor.***

Each day's notes will be graded as 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.

Late notes receive 0 points. The grade for lecture notes will be computed as

$$\frac{(\text{Total Score for Submitted Notes})}{2 \times (\text{Notes Days} - 3)} \times 5.$$

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 final exam calendar and will be held on Wednesday, 1 May 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.

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. 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.

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