

CST301 - Advanced Programming Concepts

(3 credit hours)

Course Syllabus

Course Description

This course will continue with concepts of using a programming language introduced in the CST201 Programming course. The course will focus on advance programming techniques building on the basic ideas of programming. This will include building and incorporating in programming code, various array types and other advance data structures, understanding and building objects and using objects and classes built with objects. The student will also build a graphical user interface (GUI) within a coded program. The idea of recursion will be explained, and exception handling will be reiterated. This course will qualify a student to sit for the Microsoft 98-381 Intro to Programming Using Python certification exam through the Microsoft Corporation to obtain a Microsoft Technology Associate (MTA) certification or other comparable certification.

Course Learning Outcomes

By the end of this course, you will be able to:

1. Explore and design various advanced data structures in a programming language.
2. Build a software program using programming code and advanced data structures.
3. Identify elements of programming language.
4. Investigate advanced object-oriented programming.
5. Build and code a graphical user interface (GUI) in a programming language.

Prerequisites/Corequisites

CST201 or concurrent

Required Textbook(s) and Resources

For this course you will need to obtain the following materials:

Gaddis, T. (2021). Starting out with Python (5th ed.) Pearson/Prentice Hall. ISBN: 9780136719199. [etext]

Be sure to also review the weekly **Explore** sections for additional library or web resources. For access to databases, research help, and writing tips, visit the [Tiffin University Library](#). You

might consider registering for one of the library's many webinars on library research, source evaluation, copyright, and other topics, at the [Library Events - Upcoming Events](#) web page. For further assistance email a librarian, at: library@tiffin.edu.

Time Commitment

Effective time management is a critical element to your academic success. To do well in this class plan your time wisely to maximize your learning while completing assignments. Because of our accelerated, seven-week term, TU online courses are designed with the expectation that you dedicate a little over **six (6)** hours per credit hour to course activities and preparation **each week**. For successful completion of a three-credit, seven-week online course you should reserve roughly **twenty (20) hours per week**.

To help plan your time and keep on track toward successful course completion, note the distinctive rhythm of assignment due dates:

1. All times assume Eastern Time (GMT-4).
2. Weeks begin at 12:00 a.m. ET on Monday and end at 11:55 p.m. ET on Sunday.
3. Unless otherwise noted, initial assignments or discussion posts are due by **11:55 p.m. ET on Wednesdays**.
4. Additional assignments or follow-up discussion posts are due by **11:55 p.m. ET on Saturdays, and**
5. Major assignments and reflections are typically due by **11:55 p.m. ET on Sundays**.

Learning Activities

Assessments for this course consist of six discussion forums; weekly lab assignments; four Python programs; a mid-term; and a final exam. Read all instructions carefully.

Grading

The chart below identifies the individual contributions from each type of activity, per week.

Activity	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Total
Discussions	25	25	25	25	25	25	--	150
Labs	25	25	30	30	25	25	30	190
Programs	--	100	100	--	100	--	100	400
Exams	--	--	--	120	--	--	140	260
Total	50	150	155	175	150	50	270	1000

Grading Scale

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	< 60%

Please see the [Academic Bulletin](#) for grade appeal information.

Course Outline and Weekly Checklist

Topic	Learning Activities (Due by 11:55 p.m. ET on day designated)
Start Here	<input type="checkbox"/> MON: Activity 1.1 (Forum 1): Course Anticipation
Week 1: Lists & Tuples	<input type="checkbox"/> WED: Activity 1.2 (Forum 2): Data Structures <input type="checkbox"/> SAT: Forum Responses (Activities 1.1 and 1.2) <input type="checkbox"/> SUN: Activity 1.3: Chapter 7 Lab Assignments <input type="checkbox"/> Begin Program 1 (due Week 2)
Week 2: Advance String Concepts	<input type="checkbox"/> WED: Activity 2.1: Python Program Lists (Program 1) <input type="checkbox"/> WED: Activity 2.2 (Forum): String Methods <input type="checkbox"/> SAT: Forum Responses <input type="checkbox"/> SUN: Activity 2.3: Chapter 8 Lab Assignments <input type="checkbox"/> Begin Program 2 (due Week 3)
Week 3: Dictionaries and Sets	<input type="checkbox"/> WED: Activity 3.1 (Forum): Dictionaries and Sets <input type="checkbox"/> SAT: Forum Responses <input type="checkbox"/> SUN: Activity 3.2: Chapter 9 Lab Assignments <input type="checkbox"/> SUN: Activity 3.3: Files & Multidimensional Lists (Program 2)
Week 4:	<input type="checkbox"/> WED: Activity 4.1 (Forum): Object-Oriented Programming

Topic	Learning Activities (Due by 11:55 p.m. ET on day designated)
Classes	<input type="checkbox"/> THU: Activity 4.2: Midterm Exam <input type="checkbox"/> SAT: Forum Responses <input type="checkbox"/> SUN: Activity 4.3: Chapter 10 Lab Assignments <input type="checkbox"/> Begin Program 3 (due Week 5)
Week 5: Inheritance (Classes and Subclasses)	<input type="checkbox"/> WED: Activity 5.1 (Forum): Inheritance and Polymorphism <input type="checkbox"/> SAT: Forum Responses <input type="checkbox"/> SUN: Activity 5.2: Chapter 11 Video Lab <input type="checkbox"/> SUN: Activity 5.3: Classes and Objects (Program 3)
Week 6: GUI	<input type="checkbox"/> WED: Activity 6.1 (Forum): GUI Design Techniques <input type="checkbox"/> SAT: Forum Responses <input type="checkbox"/> SUN: Activity 6.2: Chapter 13 Video Lab <input type="checkbox"/> Begin Program 4 (due Week 7)
Week 7: Recursion	<input type="checkbox"/> THU: Activity 7.1: GUI Interface (Program 4) <input type="checkbox"/> SAT: Activity 7.2: Chapter 12 Lab Assignments <input type="checkbox"/> SUN: Activity 7.3: Final Exam

Tips for Success

Online learning requires self-discipline and self-direction. As seekers of the truth, we should be willing to challenge one another's academic work in a spirit of respectful comradery. Your course is a place for you to grow as you benefit from the expertise, experience, and diverse perspectives of your instructor and peers. Constructive feedback will challenge you to stretch your own thinking, thereby expanding your knowledge and understanding.

To get the most out of your learning experience, you should actively engage (participate) in **ALL** course activities. Course elements are arranged chronologically. To complete a week, simply work your way "down the page" through all of the course materials and activities.

Your Instructor Will Expect You to:

- Thoroughly review orientation materials (Start Here) within the first 48 hours of the term.
- Monitor your TU email account **daily** for important updates and announcements.
- Take ownership of your learning experience and act in a proactive, self-directed manner. That means:

- Fully participate in all learning activities.
- Complete assignments as described in rubrics or other instructions.
- Submit all work on time and in the specified format (e.g. APA format for citations).
- Utilize and incorporate instructor provided feedback to improve your work.
- Ask questions so you can better understand course material or assignments.
- Use the highest standards of intellectual honesty and integrity. For more information, see the TU Library guide: [Digital Literacy: Netiquette and Internet Safety](#).
- Treat others respectfully and demonstrate "netiquette" (online politeness and respectfulness) at all times. TU celebrates cultural uniqueness and expects all students to be considerate and thoughtful throughout their learning experiences.

You Should Expect Your Instructors to:

- Post an introductory announcement/email at the beginning of each week to provide updates and help you prepare for the week's activities.
- Maintain an active and engaged presence in all course activities and throughout the course.
- Respond to your emailed questions within 48 hours, if not sooner.
- Clearly communicate any absences or expected non-participation due to extenuating circumstances. For example, "I will be traveling to attend a funeral this week and may not be able to respond to questions or participate in forums for a couple of days."
- When grading your work:
 - clearly indicate their grading approach (what they like to see in submitted work as well as what types of errors they tend to penalize more harshly),
 - thoroughly review and evaluate your submissions in a timely manner (in less than 5 days for most assignments), and
 - provide constructive feedback that indicates the strengths and weaknesses of your work and provides suggestions on how you can improve your performance on future assignments.
- Advocate for your success as a learner and help guide you toward successful completion of the course activities and most importantly, attainment of the course learning outcomes.

Accommodations (Disability Services)

The Office of Disability Services supports the institutional commitment to diversity by providing educational opportunities for qualified individuals with disabilities through accessible

programs and services in compliance with Section 504 of the Rehabilitation Act of 1973 and Title III of the Americans with Disabilities Act (ADA) of 1990. If you need reasonable accommodations due to a documented disability, contact the Office for Equity, Access, & Opportunity via email at disabilityservices@tiffin.edu or by calling 419-448-3021.

Technical Support

For Moodle support, either email moodlesupport@tiffin.edu or call the 24/7 Technical Support Call Center at 855-664-1200 (3430, Option 2, from on-campus). For non-Moodle support, contact the Tiffin University ITS helpdesk at the number above or submit a [support ticket](#).

Veterans

The Veteran and Military Resource Center assists veterans, active Military, and spouses of current service members in utilizing their education benefits. VMRC provides information regarding benefit processes and procedures, as well as support in navigating the transition from military to academic life by facilitating connections with the appropriate support services on campus. More information can be found on the Veteran and Military Resource Center website, at <http://www.tiffin.edu/va>.

Additional Support

If you need to consult an academic advisor refer to TU's [Meet the Team](#) page. For information about TU's peer tutoring program see the Murphy Center's [Tutoring Policies and Procedures](#) page.

Comments or Concerns

TU's online programs are designed to be student *driven*: to empower you with a voice and stake in your learning. Our courses feature multiple and varied ways that you can share feedback, and we invite you to become an active voice and help drive our improvement efforts. In addition to providing in-course feedback, we encourage you to submit questions or comments directly to the online team at online@tiffin.edu.