CIS 3330-110, 10371, C++ Programming

Spring 2023
Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

Course Dates: Jan 17, 2023 to May 12, 2023
Modality: This course meets face-to-face, with supplemental materials made available online through the A&M-Central Texas Canvas Learning Management System [https://tamuct.instructure.com/].
Location: Founder's Hall 307

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Dr. Khaldoon Dhou
Office: FH 323
Phone: 254-519-5437
Email: kdhou@tamuct.edu

You can either email or send me a Canvas message. I don't have any preference

Office Hours

Monday: 1-2PM, 3:15-4 PM

Tuesday: 1-3:30 PM

Wednesday: 1-2PM, 3:15-4 PM

Office hours can be either in person or we can meet virtually via MS Teams. I am very flexible when it comes to meeting my students. Feel free to email me and I can schedule a time to meet with you.

Student-instructor interaction

You should expect my response to your email (on Canvas message) within 48 hours (if not faster). If you don't hear back from me within 24 hours, never hesitate to send me a reminder. I am open to meeting.

Emergency Warning System for Texas A&M University-Central Texas
SAFEZONE. SafeZone provides a public safety application that gives you the ability to call for help with the push of a button. It also provides Texas A&M University-Central Texas the ability to communicate emergency information quickly via push notifications, email, and text messages. All students automatically receive email and text messages via their myCT accounts.

Downloading SafeZone allows access to push notifications and enables you to connect directly for help through the app.

You can download SafeZone from the app store and use your myCT credentials to log in. If you would like more information, you can visit the SafeZone website [www.safezoneapp.com].

To register SafeZone on your phone, please follow these 3 easy steps*:*
1. Download the SafeZone App from your phone store using the link below:
   - [iPhone/iPad](#): [https://apps.apple.com/app/safezone/id533054756]
   - [Android Phone / Tablet](#)
     [https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp]
2. Launch the app and enter your myCT email address (e.g. {name}@tamuct.edu)
3. Complete your profile and accept the terms of service

For updates on COVID information, please monitor the University [website](#)
[https://www.tamuct.edu/covid19/]

COURSE INFORMATION

Course Overview and description
This is an accelerated study of structured C++ programming using microcomputers. Course covers syntax, operators, functions, standard input/output, arrays, pointers, and structures in C++.

Prerequisite: CIS 3303 or approval of department head
Course Objective or Goal

To ensure students are competent in a programming language (C++)

Student Learning Outcomes

A student successfully completing this course should have a firm understanding of the C++ language and programming logic, design, programming, and troubleshooting:

SLO1: Demonstrate a mastery of syntax and features of the C++ Programming Language:

    1.1 Variables and constants – declaration, initialization, and assignment;

    1.2 Expressions; math, relational and logic operators;

    1.3 Interactive input;

    1.4 Simple text file operations;

    1.5 C++ syntax for program structures – sequence, decision, loop

    1.6 Using standard library functions;

    1.7 Creating programmer-defined functions

    1.8 Arrays, Pointers, Strings, Control Structures, Pre-defined Classes.

SLO2 Apply principles of program design and logic

    2.1 Structured programming use sequence, decision, and loops;

    2.2 Functional abstraction;

    2.3 Modular design using functions.

SLO3 Apply principles of program logic to isolate errors:

    3.1 Debuggers included with the Integrated Development Environment

    3.2 Setting breakpoints and watch variables

    3.3 Using output to report program progress.

SLO4 Demonstrate a general understanding of code security

    4.1 Understand the key concepts in code security

    4.2 Explain the ethical aspects behind code security

SLO5 Examine the major ethical issues

    5.1 Apply the main ethical principles in decision-making

    5.2 Understand the relationship between ethics and coding

Program Learning Outcomes (PLOs)

PSLO 1: Demonstrate proficiency in written communications on technical subjects appropriate to the discipline

PSLO 2: Recognize a reasoned resolution to an ethical challenge in computing context

PSLO 3: Design appropriate computing solutions to business problems

PSLO 4: Apply knowledge to address the IT security needs of an organization

PSLO 5: Apply mathematical foundations, algorithmic principles, and computer science theory in building computational systems

Relationship between SLOs and Program Learning Outcomes (PLOs): The following presents the relationship between the CLOs and PLOs:

	Program Learning Outcomes				
	PLO 1	PLO 2	PLO 3	PLO 4	PLO5
SLO 1.1	X				
SLO 1.2	X				X
SLO 1.3	X		X		
SLO 1.4	X		X		X
SLO 1.5	X		X		X
SLO 1.6	X		X		X
SLO 1.7	X		X		X
SLO 1.8	X		X		
SLO 2.1	X		X		X
SLO 2.2	X		X		
SLO 2.3	X		X		X
SLO 3.1	X		X		
SLO 3.2	X		X		
SLO 3.3	X				X
SLO 4.1				X	
SLO 4.2		X		X	
SLO 5.1		X			
SLO 5.2		X			

Competency Goals Statements (certification or standards)

NA

Required Reading and Textbook(s)

Title: C++ Programming: From Problem Analysis to Program Design, 8th Edition
Author: D.S. Malik
ISBN-13 : 978-1337102087
Publisher: Cengage

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer

COURSE REQUIREMENTS

Exams: There will be one exam that is worth 25 points (25%). Details about the exam will be provided to you in the class

Assignments: During the semester, you will get different assignments that measure your understanding to the material and help you gain programming skills. Multiple submissions before

the deadline are allowed. You need to zip the files before submission if the assignment has multiple files. Before you submit any assignment, run it on your computer and make sure it works. In addition, you need to submit a screenshot to prove that your code works. Assignments are worth 50 points (50%)

Final Exam Project: There will be a final project that is worth 25 points (25%). The details will be provided later in the class.

Grading Criteria Rubric and Conversion

The final grade for the course will be based upon the following:

Item	Points	Percentage
Midterm	25	25%
Assignments	50	50%
Final Exam Project	25	25%
Total	100	100%

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Posting of Grades
All student grades will be posted on the Canvas Grade Book and students should monitor their grading status through this tool. Grades will be posted within 7 days after of the due date

Grading Policies

I do not accept late work. However, I firmly believe that there are situations where a student cannot submit the work on time (i.e. sickness). If you believe you have a legitimate reason that did not allow you to finish the work and submit it by the deadline, please come and talk to me and depending on the situation, I can make an exception for you to make up the work. I will judge this on a case-by-case basis and it is up to me to accept your excuse or not. I always advise students to start working on the assignments as soon as they get them.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar
Below is a tentative schedule that is subject to change by instructor

Weeks	Topics	Assignments Due
Week 1 **Jan 7 – Jan 22**	Chapter 1	Assignment 1
Week 2 **Jan 23 – Jan 29**	Chapter 2	Assignment 2
Week 3 **Jan 30 – Feb 5**	Chapter 3	Assignment 3
Week 4 **Feb 6 – Feb 12**	Chapters 4-5	Assignment 4
Week 5 **Feb 13 – Feb 19**	Chapters 4-5	Assignment 5
Week 6 **Feb 20 – Feb 26**	Chapters 4-5	Assignment 6
Week 7 **Feb 27 – Mar 5**	Chapter 6	Assignment 7
Week 8 **Mar 6 – Mar 12**	Chapter 6 Midterm	Assignment 8
Week 9 **Mar 13 – Mar 19**	Spring Break No classes	
Week 10 **Mar 20 – Mar 26**	Chapter 6 Final Exam Project	Assignment 9
Week 11 **Mar 27 – Apr 2**	Chapter 7	Assignment 10
Week 12 **Apr 3 – Apr 9**	Chapter 8	Assignment 11
Week 13 **Apr 10 – Apr 16**	Chapter 8	Assignment 12

Week 14 Apr 17 – Apr 23	Chapter 9	Assignment 13
Week 15 Apr 24 – Apr 30	Chapter 12	Assignment 14
Week 16 May 1 – May 7		Final Exam Project

Important University Dates

January 17, 2022	Martin Luther King, Jr Day (University Closed)
January 18, 2022	Add, Drop and Late Registration Begins for 16- and First 8-Week Classes $25 Fee assessed for late registrants
January 18, 2022	Classes Begin for Spring Semester
January 20, 2022	Deadline for Add, Drop, and Late Registration for 16- and First 8-Week Classes
January 25, 2022	Deadline to Drop First 8-Week Classes with No Record
February 1, 2022	Deadline for Teacher Education Program Applications
February 2, 2022	Deadline to Drop 16-Week Classes with No Record
February 25, 2022	Deadline to Drop First 8-Week Classes with a Quit (Q) or Withdraw (W)
March 11, 2022	Classes end for 1st 8-Weeks Session
March 15, 2022	Deadline for Clinical Teaching/Practicum Applications
March 15, 2022	Deadline for Faculty Submission of First 8-Week Final Class Grades (due by 3pm)
March 14-18, 2022	Spring Break (No Classes - Administrative Offices Open)
March 21, 2022	Class Schedule Published for Summer Semester
March 21, 2022	Add, Drop, and Late Registration Begins for Second 8-Week Classes $25 Fee assessed for late registrants
March 21, 2022	Classes Begin for Second 8-Week Session
March 23, 2022	Deadline for Add, Drop, and Late Registration for Second 8-Week Classes

March 25, 2022	Deadline for Spring Graduation Application for Ceremony Participation
March 28, 2022	Deadline to Drop Second 8-Week Classes with No Record
April 1, 2022	Deadline for GRE/GMAT Scores to Graduate School Office
April 1, 2022	Deadline for School Counselor Program Applications
April 4, 2022	Registration Opens for Summer Semester
April 8, 2022	Deadline to Drop 16-Week Classes with a Quit (Q) or Withdraw (W)
April 16, 2022	Deadline for Final Committee-Edited Theses with Committee Approval Signatures for Spring Semester to Graduate School Office
April 29, 2022	Deadline to drop Second 8-week Classes with a Quit (Q) or Withdraw (W).
May 13, 2022	Deadline to Withdraw from the University for 16- and Second 8-Week Classes
May 13, 2022	Spring Semester Ends
May 13, 2022	Deadline for Applications for Tuition Rebate for Spring Graduation (5pm)
May 13, 2022	Deadline for Spring Degree Conferral Applications to the Registrar's Office. $20 Late Application Fee.
May 14, 2022	Spring 2022 Commencement at Bell County Expo 7 PM
May 16, 2022	Classes Begin for Minimester
May 17, 2022	Deadline for Faculty Submission of 16-Week and Second 8-Week Final Class Grades (due by 3pm)

TECHNOLOGY REQUIREMENTS AND SUPPORT

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. **We strongly recommend the latest versions of Chrome or Firefox browsers. Canvas no longer supports any version of Internet Explorer.**

Logon to A&M-Central Texas Canvas [https://tamuct.instructure.com/] or access Canvas through the TAMUCT Online link in myCT [https://tamuct.onecampus.com/]. You will log in through our Microsoft portal.

Username: Your MyCT email address. Password: Your MyCT password

Canvas Support

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select "Chat with Canvas Support," submit a support request through "Report a Problem," or call the Canvas support line: 1-844-757-0953.

For issues related to course content and requirements, contact your instructor.

Online Proctored Testing

A&M-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum

computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

Other Technology Support

For log-in problems, students should contact Help Desk Central, 24 hours a day, 7 days a week

> Email: helpdesk@tamu.edu
> Phone: (254) 519-5466
> Web Chat: [http://hdc.tamu.edu]
> *Please let the support technician know you are an A&M-Central Texas student.*

UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES

Academic Accommodations

At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier-free education. The Warrior Center for Student Success, Equity and Inclusion is responsible for ensuring that students with a disability receive equal access to the university's programs, services and activities. If you believe you have a disability requiring reasonable accommodations, please contact the Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information, please visit our Access & Inclusion Canvas page (log-in required) [https://tamuct.instructure.com/courses/717]

Academic Integrity

Texas A&M University-Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. All academic misconduct concerns will be referred to the Office of Student Conduct. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more information regarding the student conduct process, [https://www.tamuct.edu/student-affairs/student-conduct.html].

If you know of potential honor violations by other students, you may submit a referral, [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

Drop Policy

If you discover that you need to drop this class, you must complete the Drop Request Dynamic Form through Warrior Web.

[https://federation.ngwebsolutions.com/sp/startSSO.ping?PartnerIdpId=https://eis-

prod.ec.tamuct.edu:443/samlsso&SpSessionAuthnAdapterId=tamuctDF&TargetResource=https%3a%2f%2fdynamicforms.ngwebsolutions.com%2fSubmit%2fStart%2f53b8369e-0502-4f36-be43-f02a4202f612].

Faculty cannot drop students; this is always the responsibility of the student. The Registrar's Office will provide a deadline on the Academic Calendar for which the form must be completed. Once you submit the completed form to the Registrar's Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar's Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant, experiencing pregnancy-related conditions, and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. Students should seek out assistance as early in the pregnancy as possible. For more information, please visit Student Affairs [https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these requirements and guidelines online, please visit the website [http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender–including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Associate Dean in the Division of Student Affairs at (254) 501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

Tutoring

Tutoring is available to all A&M-Central Texas students, both virtually and in-person. Student success coaching is available online upon request.

If you have a question, are interested in becoming a tutor, or in need of success coaching contact the Warrior Center for Student Success, Equity and Inclusion at (254) 501-5836, visit the Warrior Center at 212 Warrior Hall, or by emailing WarriorCenter@tamuct.edu.

To schedule tutoring sessions and view tutor availability, please visit Tutor Matching Services [https://tutormatchingservice.com/TAMUCT] or visit the Tutoring Center in 111 Warrior Hall.

Chat live with a remote tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional cost. This tool provides tutoring in over 40 subject areas except writing support. Access Tutor.com through Canvas.

University Library & Archives

The University Library & Archives provides many services in support of research across campus and at a distance. We offer over 350 electronic databases containing approximately 631,525 eBooks and 75,149 journals, in addition to the 97,443 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place virtually through WebEx, Microsoft Teams or in-person at the library. [Schedule an appointment here](https://tamuct.libcal.com/appointments) [https://tamuct.libcal.com/appointments]. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our [Library website](https://tamuct.libguides.com/index) [https://tamuct.libguides.com/index]

University Writing Center

University Writing Center: Located in Warrior Hall 416, the University Writing Center (UWC) at Texas A&M University–Central Texas (A&M–Central Texas) is a free service open to all A&M–Central Texas students. The hours of operation are from 10:00 a.m.-5:00 p.m. Monday thru Thursday in Warrior Hall 416 (with online tutoring available every hour as well) with satellite hours available online only Monday thru Thursday from 6:00-9:00 p.m. and Saturday 12:00-3:00 p.m.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. In addition, students may work independently in the UWC by checking out a laptop that runs the Microsoft Office suite and connects to WIFI, or by consulting our resources on writing, including all of the relevant style guides. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via WCOnline [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring appointment with your favorite tutor.

OTHER POLICY STATEMENTS

A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Wellness and Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the Title IX webpage [https://www.tamuct.edu/compliance/titleix.html].

Behavioral Intervention

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, please make a referral to the Behavioral Intervention Team. Referring your concern shows you care. You can complete the referral online

[https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2].

Anonymous referrals are accepted. Please see the Behavioral Intervention Team website for more information [https://www.tamuct.edu/bit]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5805.

Copyright Notice

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.

Please analyze the scenario below, and use the Code of Ethics and Professional Conduct (ACM) to illustrate whether it is ethical.

"Volkswagen intentionally programmed turbocharged direct injection (TDI) diesel engines to activate some emissions controls only during laboratory emissions testing. The programming caused the vehicles' nitrogen oxide output to meet US standards during regulatory testing but emit up to 40 times more nitrogen oxide in real-world driving."

PSLO 2: Recognize a reasoned resolution to an ethical challenge in computing context

Competence (sub competence)	Exceeds expectations	Meets expectations	Needs improvement	None (no response)
Event identification or ethical self-awareness: • *Recognize that there is an event to which to react.* • *Ethical issues recognition or define the event as having an ethical dimension.*	Student discusses in detail/analyzes both core beliefs and the origins of the core beliefs. Student can recognize ethical issues when presented in a complex, multilayered (gray) context AND can recognize cross-relationships among the issues.	Student states both core beliefs and the origins of the core beliefs. Student can recognize ethical issues when issues are presented in a complex, multilayered (gray) context OR can grasp cross-relationships among the issues.	Student states either their core beliefs or articulates the origins of the core beliefs but not both. Student can recognize basic and obvious ethical issues but fails to grasp complexity or interrelationships.	No response submitted.
Significance of event from ethical perspective or identifying event as ethically significant: • *Decide that the ethical dimension is significant.* • *Understanding different ethical perspectives/concepts from a theoretical point of view*	Student can recognize ethical issues as more important and significant than other pertinent issues when presented in a complex, multilayered (gray) context AND can recognize cross-relationships among the issues. Student names the theory or theories, can present the gist of said theory or theories, and accurately explains the details of the theory or theories used.	Student can recognize ethical issues as more important and significant than other pertinent issues when issues are presented in a complex, multilayered (gray) context OR can grasp cross-relationships among the issues. Student can name the major theory or theories she/he uses, can present the gist of said theory or theories, and attempts to explain the details of the theory or theories used, but has some inaccuracies.	Student can recognize basic and obvious ethical issues as more important and significant than other pertinent issues but fails to grasp complexity or interrelationships. Student only names the major theory she/he uses.	No response submitted.

Identifying and evaluating different ethical rule(s) and perspectives/concepts: *Evaluation of different ethical perspectives/concepts.* *Figure out what abstract ethical rule(s) might apply to the problem (including any codes of ethics relevant to the situation).*	Student states a position and can state the objections to, assumptions and implications of and can reasonably defend against the objections to, assumptions and implications of different ethical perspectives/concepts, and the student's defense is adequate and effective. Student names the ethical rule(s), and accurately explains the details of the rule(s) used.	Student states a position and can state the objections to, assumptions and implications of, and respond to the objections to, assumptions and implications of different ethical perspectives/concepts, but the student's response is inadequate. Student names the ethical rule(s) and explains the details of the rule(s) used but has some inaccuracies.	Student states a position but cannot state the objections to and assumptions and limitations of the different perspectives/concepts. Student only names the rule(s) she/he uses.	No response submitted.
Apply and act: *Decide how these abstract ethical rules apply to the problem to suggest a concrete solution.* *Prepare to counteract contextual forces that might lead one not to act in an ethical manner.*	Student discusses in detail/analyzes the ethical rule in the context of the problem. Student suggests/discusses in detail/analyzes contextual forces that might lead one not to act in an ethical manner.	Student discusses in some detail/analyzes the ethical rule in the context of the problem. Student suggests/discusses in some detail/analyzes contextual forces that might lead one not to act in an ethical manner.	Student identifies but do not explain the ethical rule(s) which might apply to the problem. Student identifies that there is a need to counteract the contextual forces that might lead one to not act in an ethical manner but do not include any explanation or discusses ways to counter these contextual forces.	No response submitted.

The above rubric is based on

1. Sternberg, R. (2012). Teaching for ethical reasoning. *International Journal of Educational Psychology*, *1*(1), 35-50
2. https://www.ideaedu.org/idea-notes-on-learning/developing-ethical-reasoning-and-or-ethical-decision-making/
3. Association of American Colleges & Universities ethical reasoning rubric: https://www.aacu.org/ethical-reasoning-value-rubric accessed from https://resources.depaul.edu/teaching-commons/teaching-guides/feedback-grading/rubrics/Documents/aacu-value-rubrics/EthicalReasoning.pdf

Programming challenge Internet Service provider

An Internet service provider has three different subscription packages for its customers:
Package A: For $9.95 per month 10 hours of access are provided. Additional hours are $2.00 per hour.
Package B: For $13.95 per month 20 hours of access are provided. Additional hours are $1.00 per hour.
Package C: For $19.95 per month unlimited access is provided.

Write a program that calculates a customer's monthly bill. It should ask the user to enter the letter of the package the customer has purchased (A, B, or C) and the number of hours that were used. It should then display the total charges.

Requirements: Please include a Flowchart and the pseudocode for your program

PSLO 3 Rubric

Designing appropriate computing solutions to business problems

	Exceed expectations	Meets expectations	Needs improvement	NA
Outlining the problem ⌡ Objectives ⌡ Domain knowledge	The student was able to identify the objectives of the problem The student understood and applied domain knowledge to the issue presented	The student was able to identify the objectives of the problem The student was not able to completely apply domain knowledge needed to solve the problem	The student was able to identify the objectives of the problem The student was not able to apply domain knowledge needed to solve the problem	The student was not able to identify the objectives of the problem The student was not able to apply domain knowledge needed to solve the problem
Planning the solution ⌡ Flowchart ⌡ Pseudo-code/program ⌡ Other appropriate visual representation	The student was able to create a visual and/or an associated program facilitating problem solving efforts	The student was able to create a visual and/or an associated program, but has minor issues The student was able to develop a visual and/or an associated program to solve the problem, but the visual and/or an associated program has some vagueness	The student was able to create a visual and/or an associated program, but the visual and/or an associated program chart has major issues The student was able to develop a visual and/or an associated program to solve the problem, but the visual and/or an associated program was very vague	The student failed to create a visual and/or an associated program that guides in solving the problem The student was not able to develop a visual and/or an associated program to solve the problem
Proficiency ⌡ Representation ⌡ Problem solving	The student developed a representation that	The student developed a representation	The student developed a representation	The student failed to develop a representation

	can aid in solving the problem	that can aid in solving the problem, but it has minor issues	that can aid in solving the problem, but is has major issues	that can aid in solving the problem
Problem evaluation ⟩ Accuracy ⟩ Reliability	The student successfully evaluated the issue/solution for accuracy and reliability	The student evaluated between 70-80% of the issue/solution	The student evaluated between 50-70% of the issue/solution	The student failed to evaluate the issue/solution

Programming challenge RainFall

Write a RainFall program that stores the total rainfall for each of 12 months into an array of doubles. The program should have methods that return the following:
- the total rainfall for the year
- the average monthly rainfall
- the month with the most rain
- the month with the least rain

Input Validation: Do not accept negative numbers for monthly rainfall figures.

PSLO 5: Apply mathematical foundations, algorithmic principles, and computer science theory in building computational systems

Description: Students will be able to apply appropriate computer science theory in solving specific problems

Sub-Competency/Criteria	Expert (Exceeds expectations)	Good (Meets expectations)	Fair (Needs Improvement)	NA
Understanding of the Assignments: ⟩ *Understands the Problem* ⟩ *Understands the Requirements*	⟩ Student's work shows complete understanding of problem ⟩ Student's work shows understanding of all requirements	⟩ Student's work shows understanding of problem ⟩ Student's work shows understanding of most requirements	⟩ Student's work shows slight understanding of the problem ⟩ Student's work shows slight understanding of the requirements	⟩ No response
Application of Appropriate Theory/Technique*:* ⟩ *Uses Appropriate Mathematical or Computer Science Theory/Technique* ⟩ *Provides solution with good efficiency*	⟩ Applies most appropriate computer science theory, or technique in solving the problem ⟩ The most efficient solution and easy to follow	⟩ Basic application of some computer science theory, or technique in solving the problem ⟩ A logical solution that is easy to follow but it is not the most efficient.	⟩ Does not use appropriate computer science theory, or technique in solving the problem ⟩ A difficult and inefficient solution.	⟩ No response
Correctness ⟩ Cover all possible testcase scenarios	⟩ Executes without errors. ⟩ 'Robust design' with extensive testing.	⟩ Executes with minor errors ⟩ Evidence of a few cases tested	⟩ Executes with errors ⟩ Evidence of only one or few case tested	⟩ No response

Style and Readability
  ʃ *Documents Program*
  ʃ *Uses meaningful variable names*
  ʃ *Organize the code*
	ʃ Complete documentation with numerous internal comments
	ʃ using all variables with descriptive names
	ʃ Excellent use of white space.
	ʃ Organized work.
		ʃ Some documentation, but sparse internal comments
		ʃ using some variables with descriptive names
		ʃ White space makes program easy to read.
		ʃ Clear work.
			ʃ Little or no documentation; few or no internal comments
			ʃ using variables without descriptive names
			ʃ Poor use of white space (indentation, blank lines) making code hard to read.
			ʃ Disorganized and messy
				ʃ No response