Welcome
to
Data Structure and Algorithm Development – C

Instructor: Maninder Kaur Tatla

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Course: PROG20799

Instructor Information

- **Name:** Maninder Kaur Tatla

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- **Voice Mailbox:** 905-459-7533 Ext. 32568

- **Room:** B204

- **To Make an Appointment:**

  - Donna Newberry: Ext. 5134

  - Christina Spadafora: Ext. 5471

- **Office Hours:**

  - Monday: 11am – 12pm

Course Details

- **Course Name:** Data Structure and Algorithm Development – C

- **Course Code:** PROG20799

- **Course Description:**
  - You'll develop skills and knowledge of classic computer science data structures and algorithms.
  - You'll also learn the fundamentals of the C programming languages.
  - You'll gain hands on experience with these concepts through a series of programming assignments and examples.

Course Content

- C Fundamentals
- Compiler Setup
- Arrays and Strings
- User-Defined Types
- Pointers
- Dynamic Memory Management
- Dynamic Arrays
- Files
- Command-Line Arguments
- Make files
- Stacks
- Queues
- Recursion
- Linked Lists
- Searching
- Sorting
- Trees
- Binary Search Trees
- Graphs
- Hash Tables

Breakdown of Marks

Assignments (1 × 10% + 1 × 5%)	15%
Quizzes (5 X 2%)	10%
Project	15%
Mid-term	30%
Final	30%

Term Project

- There is one project in this course:

- Project is to be done in groups with no more than *2 - 3 (tentative) in a group*.

  - Select your groups wisely. The group mark is also each individual's mark.

- All course components are due as per the due date/time on SLATE.

- Work submitted after the due date/time is graded as a zero.

Course Information

- For the official course outline see the link in SLATE under Content, "Course Information"

- Class Plan is available on SLATE

- If you need extra accommodation, e.g. extra time for tests, please come talk to me
  - Register at Accessible Learning Services

Important Course Materials

- Read the required materials as listed on the class plan.
  - See "PPTs" under Content
- Take notes and pay attention.
- Complete in-class exercises.
- Assignments you've completed
- Go through the Quizzes
- **You will need to use all of these to succeed!**
    - Not everything will be in my slides

Textbooks

- Data Structure in C

  - By Kalicharan, N.

- To order:

  - Create an account on www. createspace. Com
  - Click on ' Store' from the drop-down menu on the top right-hand side
  - Search for "Data Structures in C" for the text to appear

Classroom Policies

Course Grading:

- To pass this course, you must meet the following **two** requirements:
  - Have a combined grade of **50% or higher** in exams.
  - Have a total grade of **50% or higher** including all assignments, exams, etc.

Attendance:

- Attendance, though not mandatory, is your responsibility.
- I will take daily attendances in class. But it will not be counted towards your grades.
- Class exercises, labs, quizzes and exams must be done on the days specified.
- Make-ups will not be given for in-class components except under special conditions (ex. doctor's note).

Classroom Policies

Late Arrival:

- Students are expected to arrive on time and remain in class for the entire period scheduled.

- If you arrive late to class, quietly take a seat.

- It is your responsibility to catch up with the material already covered.

E-Mails:

- E-Mails for this class will be sent through the SLATE e-mail system.

- It is your responsibility to read these e-mails when posted. You will be notified by e-mail of updates to class material, cancellations, changes to assignments/quizzes/exams and other pertinent information.

- **NOTE:** Not reading e-mails is not an excuse for missed information.

Classroom Policies

Mobile Equipment (Cell Phones, Music etc.):

- All mobile devices should be on silent mode during class lectures.

- Headphones are not allowed for use during exams and quizzes.

Classroom Behavior:

- Please be courteous to your fellow students and avoid visiting others or talking during lectures.

- Do not shout, yell, scream, or make noises in the class.

- If I find anyone disturbing the class, I may ask the student to leave the class.

Announcements:

- Any announcements with regards to PROG20799 will be posted here.
  - Exam, quiz, assignment reminders.
  - Any changes to assessments, lesson schedules.
  - Class cancellations.
- Check regularly!

Assignment Policies

Cheating:

- Strictly avoid plagiarism, copying, cheating

- Any attempt at cheating on an assignment/quiz/exam will result in a grade of zero for that particular assessment.

- Documentation on academic dishonesty can be found on SLATE.

Academic Dishonesty:

- Penalties apply to cases of academic dishonesty.

- Please see the official Sheridan policy:

  - https://policy.sheridanc.on.ca/dotNet/documents/?docid=622&mode=view

Assignment Policies

- The assignments will primarily be practice problems.

- You should not collaborate it with others by splitting the work and sharing answers.

- Feel free to ask me for help, if required.

- If someone in the class asks you for help on assignments, handle the situation as if you are a course instructor.

- Don't just give them an answer, but make sure they know how to find the answer on their own.

- **Note:** Due dates and special instructions for submission are specified in **SLATE → Content → Assignments**.

Assignment Policies

- Submit all assignments via SLATE unless otherwise specified.

- Usually have approximately 1 week to complete from the date assigned.

- Late submissions will be penalized 10% per day up to 3 days.

  - Submissions after 3 late days will NOT be accepted and a grade of zero (0) will be given.
  - **DO NOT WAIT UNTIL THE LAST MINUTE TO SUBMIT AN ASSIGNMENT.**
    - **Your submission is based on the SLATE timestamp!**
    - **One minute late will result in a 10% penalty!**
  - A late submission is better than no submission.

- If you have *legitimate* reason for missing a deadline, notify me ASAP via email.

  - **Do NOT wait until the due date (or after) to request an extension or provide reasoning – in most cases it will NOT be granted.**
  - Broken laptop is NOT a legitimate reason.

Evaluation Policies

Quizzes:

- If you arrive late, you will only be allowed the remaining time.
- If you leave the room, please hand in your quiz.
- No make-up Quizzes.

Tests:

- If you arrive late, you will only be allowed the remaining time.
- If you arrive late, and someone has left the room, you may not enter.
- If you leave the room, please hand in your test.
- If you miss the test, please contact me and explain your absence. Depending on the circumstances, I may allow a makeup test.
  - If you have a medical condition, please provide documentation.

Tips for Success

- Read the required materials as listed on the class plan.
- Take notes and pay attention.
  - Anything that is said or written on the whiteboard is fair game for quizzes and exams!
- Complete in-class exercises.
- Ask questions/clarification *in the class* – do not wait until exam time.
- Help each other.
  - Explain concepts learned in class.
  - Direct someone to where information can be found.
  - Sharing experiences on debugging techniques.
  - Sharing knowledge of development environment.

What I Expect of you in Class

- **REMEMBER:** You are paying to be here – use the time spent in class wisely.

- Respect fellow students and the professor.
    - Respect yourself.
    - Respect your professor.
    - Respect your fellow classmates.

What **NOT** to do While in Class

- While in Class You Should **NOT**
  - Use your laptop to play games, watch YouTube, check Facebook etc.
  - Work on tasks outside the scope of this class (for example other assignments that are due)

- Please turn off/mute all phones.
  - If you wish to talk on the phone, quietly leave the classroom.

- While I am speaking or presenting slides
  - LISTEN, take notes on paper or on your laptop
  - Don't use your laptop for anything not related to today's topic

Topics in PROG20799

- Introduction to C Programming
  - Setting up C development environment
    - Dev C++
  - C Fundamentals
    - Data types
    - Arrays
    - Strings
    - User-defined types
  - Pointers and dynamic memory management
    - What are pointers?
    - Dynamic arrays

Topics in PROG20799 (cont.)

- Data Structures
  - Linked Lists
    - Operations
    - Implementations
    - Applications
  - Stacks and Queues
    - Array-based implementations
    - List-based implementations

- Searching and Sorting
  - Complexity analysis
  - Big O notation
  - Algorithms for sorting data

Topics in PROG20799 (cont.)

- Data Structures (continued)
  - Trees
    - Binary trees
    - Balancing
    - Searching and sorting
  - Hashtables
    - Implementation
    - Complexity analysis
  - Graphs
    - Implementation
    - Searching algorithms

Any questions please?