

*Engage, Empower, Excite, Educate*

**COURSE PLAN**

| **Course Information** | ***Enter course information into the cells below.*** |
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| **Course Title:** | Data Structures & Algorithms |
| **Course Code:** | INFO3135 |
| **Program:** | CPA3 - Computer Programming and Analysis |
| **School:** | ITY |
| **Term:** | 2025 Fall |
| **Prepared by:** | Michael Feeney (from Bestan Maaroof’s original) |

*The Course Plan provides an outline of topics that support the course learning outcomes and essential employability skills. It also provides an overview with respect to the scheduling of topics, required preparation for each topic and corresponding learning resources and evaluation items. Using the course plan will help you manage your time to get the most from the course and complete the evaluation items on time. Academic calendar dates are posted* [*here*](https://www.fanshawec.ca/admissions/important-dates/academic-calendars)*.*

| **Time** | **Topic** | **Delivery Details: Preparation and/or Learning Resource(s)** | **Delivery Details:**  **Evaluation** |
| --- | --- | --- | --- |
| Week 1  Sept 3-6  **Sept. 8th** | * Course introduction to algorithms and data structures * Pseudo Code * Review of pointers | Lecture Slides |  |
| Week 2  Sept 8-12  **Sept. 15th** | * Linear lists * Stack, queue, and smart array (std::vector) with array implementation | Lecture Slides | Quiz # 1 (2%) (week 1 content) |
| Week 3  Sept 15-19 | * Linear lists * Linked lists, stack and queue with linked implementation |  |  |
| Week 4  Sept 22-16 | * Sorting * Bubble, Selection, Insertion | Lecture Slides | Quiz # 2 (2%) |
| Week 5  Sept 29-Oct 3 | * Recursion * Merge Sort * Quick Sort | Lecture Slides | Project 1 assigned (15%)  Quiz # 3 (2%) |
| Week 6  Oct 6-10 | Template classes understanding and coding | Lecture Slides | In class assignment # 1 (2%) |
|  | **Wellness Break** |  | **No classes** |
| Week 7  Oct 20-24 | **Midterm** | See FOL | Midterm Test (20%) |
| Week 8  Oct 27-31 | * Maps and hashing understand the concepts of sets, maps (dictionaries), and hashing. | Lecture Slides |  |
| Week 9  Nov 3-7 | * Trees * Concepts and terminology associated with tree data structures. * Investigate common tree types, such as binary trees, heaps, and self-balancing trees. | Lecture Slides | Quiz # 4 (2%)  Project 1 due.  Project 2 assigned (15%) |
| Week 10  Nov 10-14 | * Graphs, Matrices * Traversal, insert, delete * Examine and understand common graph terms, coded representations, properties, traversals, and paths. | Lecture Slides | Quiz # 5 (2%) |
| Week 11  Nov 17-21 | * Searching, graphs, trees | Lecture Slides | In class assignment # 2 (2%) |
| Week 12  Nov 24-28 | * Trees, graphs, traversal, insert, delete | Lecture Slides | Quiz # 6 (2%) |
| Week 13  Dec 1-5 | * Case Studies in Algorithms * Asymptotic notation * Learn how to use asymptotic analysis to describe the efficiency of an algorithm. | Lecture Slides | Quiz # 7 (2%)  Project # 2 due |
| Week 14  Dec 8-12 | The C++ STL (Standard Template Library) | Lecture Slides | Quiz # 8 (2%) |
| Week 15  Dec 15-19 | Final Exam | See FOL | Exam (30%) |