

PROG 2400: DATA STRUCTURES

History

1. Apr 15, 2022 by Amy Blagden (amy.blagden)
2. Aug 3, 2022 by Amy Blagden (amy.blagden)
3. Jan 13, 2023 by Kristine Jacobsen (kristine.jacobsen)

Viewing: PROG 2400 : Data Structures

Last approved: Fri, 13 Jan 2023 09:13:31 GMT

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Change Type

Minor

Change Justification: Why is this change(s) necessary?

Learning outcomes updated to ensure industry relevancy and support academic scaffolding and sequencing of skills and knowledge. Redundant LO removed.

Change Impact: What is the impact of the change(s)?

No impacts.

Name of Proposer

kristine.jacobsen

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Effective Term

Fall 2024(Term 1248)

Subject Area

PROG - Programming

Catalog Nbr

2400

Course ID

011592

Academic Organization

ITDATANALT - IT and Data Analytics

Academic Group

TEEN - School of Technology and Environment

Curriculum Consultant

Kristine Jacobsen

School Manager

Julia Brandwin-Glait

Other Course Development Team Members

Faculty/Subject Matter Expert(s)

Faculty/Subject Matter Expert(s)

Darren Andrews

Career

Credit

Title (Short)

Data Structures

Title (Long)

Data Structures

Line of Business
Line of Business

Core

Course Description

This course presents fundamental data structures and algorithms with a pragmatic, application driven approach. Selected data structures are examined in detail together with implementation issues, and an in-depth discussion of their corresponding algorithms.

Credits

1.5

Hours

90

Grading Basis

60% (GRD)

Pre-Requisite(s)

PROG 2100

Instruction Mode / Course Delivery Method

In person

Attendance Type

Class Meeting

Components

Components	Final Exam	Primary
Independent Study (IND)	Yes	No
Discussion (DIS)	Yes	Yes
Computer Lab (CMP)	Yes	No

Post-Secondary Student Information System (PSIS) Course Data Requirements (Used by Institutional Research)
Delivered Under Contract

No

Retraining/Skills Upgrade

No

Brokered Course

No

Cost Recovery

No

Course Rationale

Data Structures exposes the learner to advanced methods of organizing and accessing data and allows the learners to apply that knowledge in an object-oriented context.

Course Outcomes and Objectives

In keeping with NSCC's approach to portfolio learning, learners will have demonstrated the ability to:

Outcome

1. Provide efficient implementations of selected data structures and related algorithms.

Objectives

1. Time complexity fundamentals.
2. Linked lists structures.
3. Linked list- and array-based implementations of stacks and queues.
4. Programming with recursion.
5. Binary trees: implementing binary search trees.

In keeping with NSCC's approach to portfolio learning, learners will have demonstrated the ability to:

Outcome

2. Compare and contrast various data structures with respect of their efficiency in different contexts.

Objectives

1. Linked lists vs Arrays.
2. Applications of queues and stacks.
 - a. Tree traversals.
 - b. Eliminating recursion.

In keeping with NSCC's approach to portfolio learning, learners will have demonstrated the ability to:

Outcome

3. Examine the time complexity of data structure algorithms through analysis of problems involving searching and sorting.

Objectives

1. Inefficient and efficient sorting algorithms.
2. Binary search and binary search trees.
3. Backtracking.
4. Hashing.
5. Databases, indexing and B-Trees.

Learning Outcomes Display (show only)

109: IT Programming (<https://www.nsc.ca/programadmin/?key=109>)

PLO 1: Use problem-solving techniques and systematic procedures to implement IT programming solutions.

PLO 2: Produce software to meet a technical specification.

PLO 3: Produce technical documentation to meet the steps of a software development process (requirements, design, implementation, testing).

PLO 5: Work within development platforms such as mobile, windows, and Web.

PLO 6: Work with programming languages such as Java, C++, Python, C#, PHP, JavaScript, and others.

Other Course Notes:

It is the responsibility of the student to review and understand all Nova Scotia Community College policies, most specifically the Student Community Standards, Academic Integrity, Student Appeals, Use of Copyright Materials, and Academic Accommodation policies. Policies directly applicable to

students are referenced in the student handbook. The policies and procedures can be found on the College website: <https://nscc.ca/policies> (<https://nscc.ca/policies/>)

If you have questions about policies and/or procedures, you are encouraged to ask Faculty, your Academic Chair or Staff at Student Services.

Workplan

A workplan for this course is attached and will be reviewed by your faculty member(s) within the first week of class study.

Summary of Changes

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Academic Year 2023-24

Learning Outcomes: revised

Key: 5544