

**California State University Channel Islands**  
**New Course Proposal**

Program Area: Computer Science

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**1. Catalog Description of the Course.**

**IT 151 DATA STRUCTURES FOR IT (3)**

Three hours of lecture in the lab per week

Prerequisites: COMP 150 or equivalent

Introduction to data structures and the algorithms that use them. Review of composite data types such as arrays, records, strings and sets. Topics include: abstract data types, stacks, queues, linked lists, trees and graphs, recursion, and time complexity. No credit given toward Computer Science Degree.

**2. Mode of Instruction.**

	<u>Units</u>	<u>Hours per Unit</u>	<u>Benchmark Enrollment</u>
Lecture	3	1	24
Seminar	0	0	0
Laboratory	0	0	0
Activity	0	0	0

**3. Justification and Learning Objectives.**

Justification: BSIT required course.

Learning Objectives:

Students who successfully complete this course should:

- 1.Be able to identify abstract data types.
- 2.Be able to analyze simple computer program design.
- 3.Be able to use link lists.
- 4.Be able to use tree structures in an algorithm.
- 5.Be able to use arrays in a computer program.
- 6.Be able to use stacks and queues.
- 7.Be able to analyze recursion in a computer program.
- 8.Be able to represent graphs in a computer program.
- 9.Be able to analyze the time complexity of an algorithm.

**4. Is this a General Education Course?**

No.

**5. Course Content in Outline Form.**

Topics:

- 1.Arrays and Vectors.
- 2.Linked Lists.
- 3.Binary Trees.
- 4.Heaps, Heapsort.
- 5.Graphs.
- 6.Algorithm design.
- 7.Debugging and Testing Code
- 8.Abstract Data Types

**6. Cross-listed Courses.**

None.

**7. References.**

<u>Title</u>	<u>Author</u>	<u>Publisher</u>	<u>Year</u> <u>ISBN</u>
1. Data Abstraction and Problem Solving With Java, Walls and Mirrors	Carrano and Prichard	Addison Wesley	2001 0201702207
2. Data structures in Java	Dale, Joyce, Weems and Rebelsky	Jones and Bartlett	2002 0763710792

**8. Faculty Qualified to Teach This Course.**

Qualified Faculty: Smith,Wolfe

**9. Frequency.**

Projected semesters to be offered: Fall, Spring

**10. New Resources Required.**

- a. New Equipment needs: Use of existing computer lab.
- b. New Library needs: none
- c. New Space/Facilities needs: none

**11. Program Modifications.**

None.

**12. Proposer of Course.**

Proposer: Smith, Wolfe Date: 7/13/2004