



## UNIVERSITY OF NEW YORK IN TIRANA Course Syllabus

**Course** : Data Structures (3 Credit Hours)  
**Professor** : Vijaya Raju.M  
**Office Hours:** By Appointment.  
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### Course Description

Students will be expected to perform mainly Algorithm Analysis and write C or C++ programs, ranging from very short programs to more elaborate systems.

**Prerequisite: Programming in C++ .**

### Text Book :

Data Structures & Algorithm Analysis in C++, Mark Allen Weiss, II<sup>nd</sup> Edition.  
Data Structures Through C, Kanetkar Y, BPB Publications, ISBN 817656706X

### Required Additional Materials

Students will be provided hand outs and extra notes as and when required.

### Content of the Course

#### Course Schedule (subject to change)

##### 1: Introduction:

Data representation, statement types. Problem Solving and Design Basics. Flow Control, IF statement, Switch statement. Programming Conventions for class work. More Design techniques, Debugging Basics.

##### 2: Problem Solving Approaches

Arrays, Repetition statements. More Debugging Techniques.

- 3: List Processing**  
Multi-dimensional Arrays. Searching, Peek at pointers. Functions, Scope.  
Linked-Lists, More Design methodology.
- 4: More Functions**  
How and when to use functions, Multi-dimensional Arrays,  
  
Introduction to Pointers and More problem solving.
- 5: Aggregate Data Types**  
Structures, Introduction to Dynamic allocation.
- 6: Midterm Exam: TBA**
- 7: More linked lists, Introduction to Doubly-Linked Lists,**
- 8: Doubly-Linked Lists, Circular Linked Lists, cont.**  
**Software packages, Intro to Stacks**
- 9: Stacks, Intro to queues, Circular Queue, Priority Queue**
- 10: Sorting Analysis**
- 11: Trees, Binary Trees, AVL ,B-Trees,**
- 12: Spanning Tree, Dijkstras's Algorithm, Heap**
- 13: Introduction to Memory Management, File Organisation**

### **Course Requirements**

**Participation:** Participation extends beyond mere attendance. Expect your instructor to keep track of how often you contribute to class discussion (as a whole), particularly during the panel discussion section. You may miss up to three classes without penalty - your first two absences count whether you have a good excuse or not. Each absence beyond the first three will cost you points off of your participation grade. The only exceptions to this rule are severe illness (doctor's note required) and UNYT approved trips/activities. Appropriate documentation for absences beyond the first three is necessary the class day directly before or after the one you miss. In general: this class is intensive and interactive. Missing class could seriously affect your grade! Students are reminded not to approach the instructor for copies of the previous week's materials during immediately before, during, or immediately after class. Students are expected to collect materials from their classmates or see the instructor during consultation hours.

**Exams:** Two examinations will be taken, a midterm and a final exam covering all course content during the final examination period. Test format may combine a mixture of short answer, true/false, matching, sort answer, and one or two essay questions covering *all* readings, lecture, hand-out and class discussion content.

**Final Examination: TBA**

### General Requirements

Late assignments and absence from tests will not be tolerated. In the event of illness or emergency, contact your instructor IN ADVANCE to determine whether special arrangements are possible. The University's rules on academic dishonesty (e.g. cheating, plagiarism, submitting false information) will be strictly enforced. Please familiarize yourself with the STUDENT HONOUR CODE, or ask your instructor for clarification.

### Criteria for Determination of Grade, including Evaluation Methods

Attendance & Quizzes/Seminars	10%
Assignments(Home & Lab Practice)	25%
Midterm	30%
Final	35%
Total	100%

### Grading Scale

Letter Grade	Percent (%)	Generally Accepted Meaning
A	96-100	Outstanding work
A-	90-95	
B+	87-89	Good work, distinctly above average
B	83-86	
B-	80-82	
C+	77-79	Acceptable work
C	73-76	
C-	70-72	
D+	67-69	Work that is significantly below average
D	63-66	
D-	60-62	
F	0-59	Work that does not meet minimum standards for passing the course

## **Bibliography (Additional Readings)**

### **C Programming References**

1. The C Programming Language - Second Edition Kernighan Brian W. Prentice Hall ISBN. 0-13-110362-8
2. The C Answer Book - Second Edition Tondo Clovis L.; Gimpel , Scott E. Prentice Hall ISBN 0-13-109653-2
3. Handbook of Algorithms and Data Structures in C (2/E) Gonnet G.H. and Baeza-Yates R. Addison Wesley ISBN. 0-201-41607-7
4. Practical Algorithms for Programmers Bin stock, Andrew and Rex, John Addison Wesley ISBN. 0-201-63208-X
5. Algorithms in C Sedgwick, Robert Addison Wesley ISBN. 0-201-51425-7
6. Data Structures and Program Design in C Kruse, Robert L. , Leung, Bruce P., Tondon Clovis L. Prentice Hall ISBN 0-13-726332-5.

### **Technology Expectations**

- Software Required: GNU C/C++ Compiler, Cygwin.
- Students can get all the Lecture Slides, notes and other links at the course webpage. The link for the course web page will be provided on the day of the first class.
- Students must keep copies of all assignments and projects sent by e-mail.
- Assignments are to be word-processed. Continuing and regular use of e-mail is expected.

**Prepared by**

**Vijayaraju.M**