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## COMP 141-01, Computer Science I: Programming Fundamentals, Fall 2004

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| Item Type     | Text  |
| Authors       | Ilinkin, Ivaylo   |
| Publisher     | Memphis, Tenn. : Rhodes College   |
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# CS 141

## Computer Science I: Programming Fundamentals

Fall 2004

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**Class  
Room:** Kennedy 201

**Class Hours:** MWF 11:00-11:50am

**Office  
Hours:** MWF 1:30-3:00pm, TR 9:30-  
11:00pm, or  
by appointment

(I get a lot of e-mail, so for quick response, please add the following in the subject line of your e-mails: "cs141: question")

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**Text:** The main textbook for the course is [A Computer Science Tapestry Exploring Computer Science with C++](#), 2nd ed, Astrachan

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### On-line information:

All the relevant information for the class is available at  
<http://www.rhodes.edu/mathcs/faculty/ilinkin/classes/Fall-2004/cs141/>

Please, check this page at least twice a day, since this will be the only source of relating last-minute pertinent information.

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### General course description:

CS 141 is a required course for Computer Science majors and should be taken during the first year. It is the first class in the sequence for majors and offers an introduction to the fundamental principles of programming, abstraction, and design.

Computer Science students need to acquire the reasoning and abstraction skills needed for designing algorithms and programs. This course teaches how to think as a computer scientist, by teaching the process of building abstractions to hide implementation details, of decomposing problems into simpler problems, and of controlling the intellectual complexity of designing large software systems.

This course will use the C++ programming language as the vehicle for exploration of fundamental computer science concepts. However, this is not a course about C++; it is about the Structure and Interpretation of Computer Programs.

The particular C++ environment that will be used is Microsoft Visual C++, which is available in the computer labs on Rhodes College campus. Check the postings at [Information Technology Services Labs](#) for hours of operation and location of the on-campus computer labs.

***Keep in mind that the source code that you submit for the homework assignments must compile successfully on the computers in the on-campus lab.***

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### **Prerequisites:**

CS 141 does not assume any previous programming knowledge; however you are expected to have reasonable high-school mathematics background and to appreciate the use of mathematical notation.

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### **What you should expect to learn from this course:**

Upon completing this course you should be able to

1. use good programming style in the programs you write
  2. use rudimentary data structures and design appropriate algorithms to solve a given problem
  3. explain and use basic principles of program design, such as abstraction to hide implementation details, and decomposition to control the intellectual complexity of the problem
  4. design, implement, and test a C++ program that solves a given problem, and have some basic understanding of the computational complexity of your program
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### **Reading material:**

The tentative plan for the semester is to cover sections from the following chapters, not necessarily in this order: 1, 2, 3, 4, 5, 8, 10, 11 (if time permits, we may cover sections from other chapters). Visit daily the "Readings List" section of the class webpage, as this will be updated frequently with the suggested readings.

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### **Workload:**

You should be prepared to spend at least 2-3 hours outside of the classroom for each lecture hour. You should expect to spend significant amount of preparation for this course working on a computer to try out example programs and to develop the programming assignments. ***The labs get busy fairly soon into the semester*** and you should plan ahead to ensure that you have access to a computer, if you do not already own one. You are encouraged to form study groups with colleagues from the class. The goal of these groups is to clarify and solidify your understanding of the concepts presented in class. In addition, study groups can provide for richer and more engaging learning experience. ***However, you are expected to turn in your own code that represents the results of your own effort.*** See the policy outlined in the "Scholastic Conduct" and "Assignments" sections of the syllabus, or talk to the instructor, if you are unsure about the expected level of collaboration.

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### **Attendance:**

Attendance is expected for each class period. If your absence from class deteriorates significantly, you may be referred to the dean and asked to drop the course. Late arrivals are disrespectful to your colleagues and hamper the learning process. Two late arrivals will count as one absence. If you are late, make sure you notify the instructor about your presence after class. Attendance, participation, and an apparent overall improvement trend may be considered in assigning a final grade.

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## Assignments, exams, and grading:

There will be several programming assignments during the semester. ***You are expected to work individually on the programming assignments.*** See the policy outlined in the "Scholastic Conduct" section of the syllabus, or talk to the instructor, if you are unsure about the expected level of collaboration. Note that a ***correctly working program may not receive full credit***, if it does not demonstrate good design and a well-thought out solution. Similarly, a program that fails occasionally, may receive a reasonable grade, if there is apparent design effort.

There will also be several practice assignments during the semester. You are allowed to work freely in a group with one or two other members from the class on the practice assignments. Each practice assignment will be awarded a grade Pass [full credit] or Fail [half credit].

Here are the relevant dates and how much each portion of your work will contribute to your final grade:

|                         |   |     |
|-------------------------|---|-----|
| Programming Assignments | Sep 9, Sep 30, Oct 21, Nov 4, Nov 19, Dec 6 | 39% |
| Practice Assignments    | Sep 16, Sep 23, Oct 14, Nov 28, Dec 3       | 6%  |
| Exam 1                  | Wed, Oct 6                                  | 15% |
| Exam 2                  | Wed, Nov 10                                 | 15% |
| Final Exam              | Sat, Dec 11, 8:30am                         | 25% |

***The exams will be closed-book and closed-notes, no calculators. The work you turn in on the exams must represent solely the results of your own individual effort.***

***Please, note the dates of the exams carefully, as make-ups will be given only under extreme circumstances.***

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## Late assignments:

NO late assignments will be accepted. Please, visit the "Assignments" section on the class webpage for specific information about the homework due dates and submission guidelines.

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## Grading:

Grading for this course is based on the scale below. For borderline cases, I may take into account attendance, participation, and an apparent trend of improvement during the semester.

|             |    |            |    |            |    |            |   |
|-------------|----|------------|----|------------|----|------------|---|
| [93%, 100%) | A  | [87%, 90%) | B+ | [75%, 80%) | C+ | [60%, 65%) | D |
| [90%, 93%)  | A- | [83%, 87%) | B  | [70%, 75%) | C  | [0%, 60%)  | F |
|             |    | [80%, 83%) | B- | [65%, 70%) | C- |            |   |

***However, you are expected to receive the equivalent of at least a C- on the final exam in order to pass the class. Also, each homework that is not turned in will have the effect of lowering your final grade by one grade bracket.***

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## Incompletes:

Incompletes (or make up exams) will in general not be given. These options will be considered only when a serious family or personal emergency arises and the student has already completed all but a small portion of the work. Incompletes will not be given for foreseeable events including a heavy course load or a poorer-than-expected performance. Verifiable documentations must be provided for the incomplete to be granted, and arrangements for the incomplete should be made as soon as possible.

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### **Withdraws:**

Please, keep in mind the following dates:

|                       |       |
|-----------------------|-------|
| Drop/Add Ends         | 08/31 |
| Extended Drop Ends    | 09/15 |
| Pass/Fail Option Ends | 09/15 |
| Withdraw Period Ends  | 10/29 |

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### **Scholastic conduct:**

Students at Rhodes are governed by the Rhodes Honor Code. Disrespecting the scholastic conduct expected on assignments or exams is equivalent to disrespecting the Honor Code tradition at Rhodes. In general, you are free to discuss the assignment with others and brainstorm high-level ideas **but** you must work out **your own solution** and write **your own code**. The discussion should **stop** as soon as it gets to the details of the solution or writing actual code. If group work is allowed on any of the assignments, this will be mentioned explicitly in the guidelines of the particular assignment or in the "Assignments, ..." section of the syllabus.

If you need help and are unsure about the level of co-operation you are receiving, please, see the instructor during office hours for clarification and help with the assigned material. Copying other's work, or letting another person copy your work is a serious situation that will be referred to the Honor Council and may result in failing the course.

For further general information on the expected scholastic conduct at Rhodes, please, see <http://www.rhodes.edu/CampusCommunity/HonorCode/index.cfm>