COMP 264: Introduction to Computer Systems (Section 001)
Spring 2026 Course Information & Syllabus

Instructor: R. I. Greenberg

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Office Hours: In Doyle Center Room 216 : Monday 12:30–1:45pm; Wednesday and Friday 11:15am–12:15pm. These are guaranteed times to find me except as announced in advance or at `http://bit.ly/RIGcal`. You should also feel free to look for me at other times or make appointments. Email any time is generally the best way to reach me.

Phone: (773)508-3782
Email: rig@cs.luc.edu **Home page:** `http://rig.cs.luc.edu/~rig`
Departmental tutoring schedule: See `http://www.luc.edu/cs/resources/tutoring`.

Lectures: Monday/Wednesday/Friday 11:30am–12:20pm in Mundelein 1410.
Lecture notes and handouts are generally available on the course web site. The handouts are numbered sequentially, starting with handout 1.

Course Objectives: This course studies the hierarchy of abstractions and implementations that constitute a modern computer system, with a particular focus on issues of interest to programmers, typically including some systems programming instruction.

Prerequisites: COMP 141 and (COMP 170 or MATH/COMP 215) and (coreq or prereq of COMP 163 or MATH 201); COMP 163 coreq or prereq and COMP 170 prereq preferred.

Outcomes: Understanding of system issues that affect the performance, correctness, or utility of user-level programs.

Prerequisites: COMP 170. (It is also helpful to have taken COMP 150 and/or 163.)

Textbook: Randal E. Bryant and David R. O'Halloran. *Computer Systems: A Programmer's Perspective.* Pearson Prentice Hall, 3rd edition, 2015.

Course Requirements: There will be several assignments, several in-class quizzes, two 50 minute in-class tests, and a 120 minute final exam. The weightings within the semester grade will be: Assignments: 20%, Quizzes 10%, Tests 1–2: 20% each, and Final exam 30%.

Homework: Only homework turned in by the due date is guaranteed to be graded. Any special circumstances that cause difficulty in meeting the deadlines should be brought to the attention of the instructor in advance. Homework must be handed in by the start of class on any due date, since solutions may be discussed in the same class on occasion. Homework will generally be submitted through a specified online mechanism.

Exams: The midterm exams, tentatively scheduled for week 6 and week 12, are 50 minutes long. The final exam is scheduled for Monday, April 27 at 1:00–3:00pm.

Collaboration: *No* collaboration is permitted on exams. *Collaboration* on homework is acceptable, but *copying* is not! (Safeguard your files and printouts.) You may discuss solution techniques with other students, but you must write up your solutions independently. If you obtain a solution through research, e.g., in the library or online, cite your source completely and write up the solution in your own words. Students should keep in mind the University's Academic Integrity policy (see below).

University Policies: Note the policies regarding • Academic Integrity: Open 3rd foldout at `https://catalog.luc.edu/academic-standards-regulations/undergraduate`, • Religious Holidays: `https://www.luc.edu/academicaffairs/stories/archive/honoringstudentreligiousobservances.shtml`
• Accessibility Support: See "Student Support" section at
`https://www.luc.edu/media/lucedu/online/officeofonlinelearning/OOL%20Syllabus%20Update_v5.docx`
• Title IX: `https://www.luc.edu/equity/otherresources/resourcesforfacultystaff/syllabuslanguage`

Tentative Course Outline and Approximate Weekly Schedule:

(Note the University's academic calendar at `http://www.luc.edu/academics/schedules`.)

Recommended sections of the text to read are shown in brackets. (When selected sections or subsections are listed, it is assumed that you will include the introduction of the corresponding chapter or section.)

1. (1/12) Administrivia. Overview of big ideas.
   Computer representation of information [1.1].
   Program translation [1.2–1.3].
2. (1/21) Additional overview [1.4–1.8].
   Chap. 1 remainder (esp. Amdahl's Law) [1.9–1.10].
   Quiz 1 (1/23–26) through "Memory Hierarchy" section of notes in Administrivia/Intro unit in Sakai.
3. (1/26) Information storage/representation, boolean algebra, bit and logical operations [2.1].
   Quiz 2 (1/30–2/2) on "Information Storage" unit in Sakai.
4. (2/2) Integer representation and arithmetic [2.2–3].
   Quiz 3 (2/4–6) on integer representations and arithmetic.
   Floating-point representation [2.4.1–2.4.3].
5. (2/9) Floating point operations and rounding, etc. [2.4.4–2.5].
   Quiz 4 (2/9–11) on floating-point representation.
   Chap. 2 practice problems (like 2.1,3,4,8,14,16).
6. (2/16) Review of sample exam, etc. for Exam 1.
   Sakai "Machine-Level Rep. of Programs Part 1": introduction [3.1–2].
   Sakai "Machine-Level Rep. of Programs Part 1": data manipulation [3.3–5].
   Exam 1 (2/20) on Chapters 1–2.
   Quiz 5 (2/20–23) on "Machine-Level Programs Part 1".
7. (2/23) Chap. 3 practice problems like 3.1, 3.6, and 3.8.
   Sakai "Machine-Level Rep. of Programs Part 2": control [3.6].
   Sakai "Machine-Level Rep. of Programs Part 3": procedures [3.7].
8. (3/9) Sakai "Machine-Level Rep. of Programs Part 3": arrays [3.8].
   Chap. 3 practice problems like 3.36 and 3.37.
   Sakai "Machine-Level Rep. of Programs Part 4": heterogeneous data structures and alignment [3.9].
   Chap. 3 practice problems like 3.44.
   Sakai "Machine-Level Rep. of Programs Part 4" pointers, GDB, buffer overflow [3.10,3.12].
   Quiz 6 (3/13–15) on "Machine-Level Programs" Parts 2–4.
9. (3/16) More on working with pointers, especially linked lists.
   More on memory allocation and memory bugs. [Selected content from 9.9–12; reading most recommended is 9.9 through 9.9.2 and 9.11.]
   Program performance optimization: Intro [5.1–2].
10. (3/23) Example program and optimizations [5.3–6].
    Quiz 7 (3/25–27) on optimization so far.
    Instruction scheduling and pipelining [5.7].
11. (3/30) Review for Exam 2.
    More on performance optimization [5.8–12].
12. (4/8) Exam 2 (4/8) on Chapter 3.
    Storage technologies [6.1].
    Locality, memory hierarchy, cache memories [6.2–4].
13. (4/13) Cache memories continued [6.2–4].
    Quiz 8 (4/15–17) on optimization remainder and memory hierarchy so far.
14. (4/20) Cache-friendly code [6.5].
    Chap. 6 practice problems (like 6.9, 6.16, 6.38, 6.39).
    If time, Optimization addendum, esp. profiling example. [5.13–15] and/or discussion of virtual memory [9.1–6].