SYLLABUS   **Fall 2008**

CSC 200A Survey of Computer Science I   **3 credits DII**
Prerequisite(s): Fulfillment of the Basic Mathematics Competency Based Skills requirement and ability to use standard computer software (e.g., operating system features, word processing, email, and web browsers).

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Section	Time	Room	Final Exam
02	WF 11:00 – 12:15	MH 206	Dec 22nd , Monday 8:00am—10:00pm

Catalog description:
    This course provides an overview of several fundamental areas within the field of Computer Science, introducing basic vocabulary, central concepts, and typical applications. The areas surveyed include computer hardware, computer arithmetic, operating systems, programming constructs, programming languages, information storage and retrieval, databases, artificial intelligence, and the social context of computing. Three lecture hours per week.   This course satisfies the Computer Literacy Competency-Based Skills requirement.   Not open to students who have received credit for CSC 200.

Course Goals:
    The aims of this course are to help the student gain an appreciation for the breadth and variety within the computer science field and to be better prepared for the technical treatments presented in later courses. Specifically, the goals are:
- CG1: to acquaint the student with many of the major subdivisions within academic computer science;
- CG2: to provide a standard descriptive vocabulary for these topic areas;
- CG3: to provide a survey of the most important concepts in each topic area.

Course Objectives:
  Upon successful completion of this course the student will have demonstrated the ability to:
- CO1: use correct technical terminology to name and describe the principal hardware and software components of a computer system;
- CO2: understand and be able to carry out the conversion of text and numeric data between "human readable" form and binary form;
- CO3: understand and explain the instruction cycle ("fetch/execute cycle") and its role in the operation of a computer system;
- CO4: use correct terminology to describe the various measurements of capacity and speed relating to a computer system;
- CO5: name and understand the principal classifications of files and software, and the differences and distinctions among them;
- CO6: name and explain the four principal programming paradigms;
- CO7: understand syntax diagrams for the specification of language elements;
- CO8: name the principal functional components of an operating system and describe the main responsibilities of each one;
- CO9: give a general description of such topic areas as database systems and artificial intelligence;
- CO10: give a general description of such topics as software piracy, liability, privacy concerns, and computer security, and current thinking and controversies in each area.

Course Topics:

The department-standard list of topics and a general course bibliography can be found on the Computer Science Department website at http://cs.salemstate.edu/csc200A.htm. The topics include:

- introduction:
  - History of computing (survey)
  - What is a computer? (operational definition)
  - fundamental computer capabilities (read, write, store, compute, compare)
  - components of a typical computer
- the role of the computer
  - as a communication tool
  - as an information resource
  - as a problem-solving tool
  - as a real-time control mechanism
- computer hardware
  - logic gates and circuits
  - binary, octal, and hexadecimal numeration systems
  - machine representation of numbers
    - integers
    - 2's complement representation of signed integers
    - floating point numbers
  - computer arithmetic
  - CPU structure
  - main memory structure
  - secondary storage devices (disk, tape)
  - I/O devices and their operation
  - multiprocessor systems
  - parallel processing
- communicating with a computer
  - files (text vs. binary, sequential vs. direct)
  - organization of text data (items, fields, records, files)
  - coding of text (ASCII, Unicode, etc.)
  - markup languages, hypertext
  - machine language
    - memory addresses
    - program counter, instruction register
    - the instruction cycle
    - instruction set, operation codes
  - symbolic languages
    - assembly languages
    - high-level programming languages
      - language specification: syntax diagrams, EBNF
      - language translation: assemblers, compilers, interpreters
      - lexical analysis, parsing, code generation
    - programming paradigms
      - procedural, declarative, functional, object-oriented
    - programming languages, past and present
- problem-solving, program design and programming
  - data types, variables, constants
  - control structures
  - modules
  - problem analysis
  - requirements and specifications
  - solution design
  - algorithms
  - software testing and evolution

- the human dimension of software: clarity & convenience of use
- information storage and retrieval
  - goals
  - conceptual vs. physical organization of data
  - data structures
  - databases, database systems, and database management
- operating systems
  - the purposes of an operating system
  - resource allocation
  - system tools: editors, linkers, loaders, other utilities
  - scheduling
  - virtual memory
- artificial intelligence
  - goals and issues
  - expert systems
- the social context of computing
  - appropriate vs. inappropriate uses of a computer
  - computer crime
  - software as intellectual property (copyrights, licensing, piracy)
  - software errors and liability
  - codes of ethics for computer users and professionals
  - privacy, civil liberties

Text(s): (required) **Computer Science: An Overview**, 10th Edition, by J. Glenn Brookshear. Addison-Wesley.,2008. (ISBN: 0-321-52403-9)

Additional references:
- *Concepts in Computing*, by Kenneth Hoganson (2008). Jones and Bartlett Publishers.

Cell phones:
Turn the ringer off, or, better yet, *turn the phone off*.

Class Attendance:
Class attendance is highly recommended. You are responsible for all materials presented in class, quizzes, examinations, and other announcements. No excuses of any nature will be construed as relieving you from the responsibility for completion of the work assigned. Each student is responsible for completing all course requirements and for keeping up with all that goes on in the course (whether or not the student is present).

Final Grade:
Final grade will be determined using the following grading weights:

homework assignments	50%
quizzes	20%
midterm examination	12%
final examination	18%

Attendance is not used to calculate the final grade: however, note that you are at all times responsible for assignments and materials presented in class.

Submission Deadlines/Late Penalties:
There are specific due dates/times for any assignments and these assignments should be completed by the deadlines. A penalty of 10% will be applied for late submission for each day (including weekends and holidays).   All the assignments will be announced/given in class and through course website.

Exams/Quizzes:

There will be periodic quizzes (20% total), one midterm (12% total), and one final (comprehensive) exam (18% total). The lowest quiz grade will be dropped. The midterm will be held in week 8 depending on class progress. The final exam will be on December 22nd, Monday, 8:00am—10:00am. **Note:** Make-ups are given for missed quizzes or examinations only under exceptional and documented circumstances.

Missed Tests:

Missed tests will be made up *only under extreme conditions/emergency with the proper documentation*. Students who know in advance that they must be absent on an exam day for an excusable reason should notify the instructor prior to the exam day. Students who are absent on the day of the exam for an excusable reason should contact the instructor immediately following their absence. Makeup work will be permitted *only when* the instructor is presented with acceptable documentation for acceptable absences. It is your responsibility to notify your instructor of any excused absence as far in advance as possible.

Homework Assignments:

There will be a series of assignments from the textbooks and other sources. Reading assignments will be a part of the assignments. All assignments are due *at the beginning* of class on the dates to be set by the instructor. A 10% penalty will be imposed for each day (including weekends and holidays) an assignment submission is late.

One assignment with the lowest grade will be dropped from the final grading.

Please note that these assignments constitute 50% of the final grade.

Study Groups:

While I strongly encourage study groups, I require that each student hand in his/her answers in her/his own words - if two answers come out exactly the same, neither will receive credit. Given the nature of most of the homework and essay questions, it will be almost impossible for two people to come up with the exact same answer UNLESS copying occurs.

"Salem State College is committed to providing equal access to the educational experience for all students in compliance with Section 504 of The Rehabilitation Act and The Americans with Disabilities Act and to providing all reasonable academic accommodations, aids and adjustments. *Any student who has a documented disability requiring an accommodation, aid or adjustment should speak with the instructor immediately*. Students with Disabilities who have not previously done so should provide documentation to and schedule an appointment with the Office for Students with Disabilities and obtain appropriate services."

Please remember that if, for any reason, you decide to drop this course, you **MUST** do so officially through the Registrar's office. The last day to withdraw from a course this semester is **November 21st**.

> **Note:** This syllabus represents the intended structure of the course for the semester. If changes are necessary, students will be notified in writing and via emails sent by the instructor.