Shaw University
College of Graduate and Professional Studies
Department of Computer Information Sciences

Course Number: CSC201 Fall 2008
Course Name: Introduction to Programming (I)
Credit Hours: 3

Instructor’s Name: Dr. Wei Jin
Office Location and Number: Graphics Building#7
Classroom & Time: Science Building 301;
                      Section 01 – MWF 2-2:5pm; Section 2 – MWF 9:9:50am
Phone Number: (919) 546-8376
E-mail Address: wjin@shawu.edu
Office Hours:
    MW:    11am – 12:00pm
    Tue.:     9:30am – 3:30pm
    Fri.:      11am – 1pm

Shaw University Help Desk: 919-546-8587, helpdesk@shawu.edu

COMPUTER SCIENCE PROGRAM MISSIONS, GOALS AND LEARNING OUTCOMES

Mission Statement
The mission of the Bachelor of Science in Computer Science degree Program is to provide in-depth study of the fundamentals of computer science and important current issues as well as develops students’ analytical and problem-solving skills. We also attempt to instill in them the attitudes and values that will prepare them for a lifetime of continued learning and leadership. We aim to help students obtain productive employment or pursue advanced degrees in computer science and related technology fields.

Computer Science Program Goals
1. Increasing retention of Computer Science major students.
2. Graduating Computer Science students who are competent in their discipline.

Computer Science Program Learning Outcomes (PLOs)
1. Problem Solving and Critical Thinking in Computational Practice: Solve abstract and complex problems using software design methodology. Make informed choices among alternative solutions. The student will be able to:
   b. Implement an algorithm by creating a tested and debugged programmatic solution.
c. Examine and analyze alternative solutions to a problem.
d. Develop abstract models to simulate complex systems.
e. Determine correctness and efficiency of a system design and implementation.

2. **Knowledge of Advanced Computing Topics:** Demonstrate understanding of the principles and current technologies in computer architecture, operating systems, computer networks, database systems, programming languages and compilers.

3. **Communication and Interpersonal Skills:** Use written, oral and electronic methods for effective communication. The student will be able to:
   a. Document all aspects of a system precisely and clearly.
   b. Use written, oral, and electronic communication to convey technical information effectively.
   c. Devise effective user interfaces.
   d. Work cooperatively in teams and with others.

4. **Ethical and Professional Responsibilities:** Discern and articulate the impact of technologies on society. The student will be able to:
   a. Plan for and ensure the security, privacy, and integrity of data.
   b. Recognize the ethical, legal, and social implications of computing.
   c. Demonstrate an understanding of the Association of Computing Machinery (ACM) Code of Professional Ethics.
   d. Analyze the impact that computing has on the global society.
   e. Recognize the need for continuing professional development.

**TEXT**

**Required Textbooks:** Problem Solving, Abstraction, and Design Using C++ (4th or 5th Edition) by Frank L. Friedman  Elliot B. Koffman. Publisher: Addison Wesley

**Supplementary Materials:** Lecture notes and online exercises can be found on Blackboard under the course named “Introduction to Programming (I)”

**Hardware Requirements:** A PC with MS Windows Operating System

**Software Requirements:** Borland C++, Internet Explore, and Flash Player

**COURSE DISCRIPTION:**

**Prerequisites and Corequisites:** MAT112. No programming or computer science experience is required. Students should have sufficient facility with high-school mathematics to solve simple linear equations and to appreciate the use of mathematical notation and formalism.

**Course Description:** This course introduces the fundamental concepts of procedural programming. Topics include data types, control structures, functions, arrays, files, and the
mechanics of running, testing, and debugging. The course also offers an introduction to the historical and social context of computing and an overview of computer science as a discipline.

**Topics:**

- **Fundamental programming constructs:** Syntax and semantics of a higher-level language; variables, types, expressions, and assignment; simple I/O; conditional control structures; functions and parameter passing (call-by-value and call-by-reference); structured decomposition
- **Algorithms and problem-solving:** Problem-solving strategies; the role of algorithms in the problem-solving process
- **Fundamental data structures:** Primitive types; arrays; records; strings and string processing
- **Machine level representation of data:** Bits, bytes, and words; numeric data representation and number bases; representation of character data
- **Human-computer interaction:** Introduction to design issues
- **Software development methodology:** Fundamental design concepts and principles; structured design; testing and debugging strategies; test-case design; programming environments; testing and debugging tools
- **Social context of computing:** Professionalism, codes of ethics, and responsible conduct; copyrights, intellectual property, and software piracy.

**Student Learning Outcomes (SLOs):** After taking this course, students are expected to be able to

1. Explain how an instruction is executed in a classical von Neumann machine.
2. Understand how a program interacts with a user and design proper program-user interface.
3. Analyze and explain the behavior of simple programs involving the fundamental programming constructs covered by this unit.
4. Modify and expand short programs that use standard conditional control structures and functions.
5. Design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, standard conditional structures, and the definition of functions.
6. Choose appropriate conditional constructs for a given programming task.
7. Apply the techniques of structured (functional) decomposition to break a program into smaller pieces.
8. Describe the mechanics of parameter passing.
9. Discuss the representation and use of primitive data types and strings.
10. Write programs that use primitive data types and strings.
11. Be able to use one programming environment to edit, compile, debug, and test programs.
13. Be able to work on programming projects cooperatively in teams.
<table>
<thead>
<tr>
<th>Student Learning Outcomes (SLOs)</th>
<th>Assessment of Student Learning Outcomes (Assessment Tools)</th>
<th>Linkage to Program Learning Outcomes (PLOs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exam Questions</td>
<td>1c, 2</td>
</tr>
<tr>
<td>2</td>
<td>Exam Questions and Programming Projects</td>
<td>1c, 3g</td>
</tr>
<tr>
<td>3</td>
<td>Exam Questions</td>
<td>1c, 1e</td>
</tr>
<tr>
<td>4</td>
<td>Exam Questions and Programming Projects</td>
<td>1b</td>
</tr>
<tr>
<td>5</td>
<td>Exam Questions and Programming Projects</td>
<td>1a, 1b, 1c</td>
</tr>
<tr>
<td>6</td>
<td>Exam Questions and Programming Projects</td>
<td>1a, 1b, 1c</td>
</tr>
<tr>
<td>7</td>
<td>Exam Questions and Programming Projects</td>
<td>1a, 1b, 1c</td>
</tr>
<tr>
<td>8</td>
<td>Exam Questions and Programming Projects</td>
<td>1a, 1b, 1c</td>
</tr>
<tr>
<td>9,10</td>
<td>Exam Questions and Programming Projects</td>
<td>1a, 1b, 1c, 1d</td>
</tr>
<tr>
<td>11</td>
<td>Exam Questions and Programming Projects</td>
<td>1b</td>
</tr>
<tr>
<td>12</td>
<td>Exam Questions, Reflect Papers</td>
<td>6g, 6h, 6j</td>
</tr>
<tr>
<td>13</td>
<td>Peer Evaluation</td>
<td>3f, 3h</td>
</tr>
</tbody>
</table>

**Class Participation:**
Class participation is required and you are expected to communicate with other students on team projects, learn how to navigate in Bb, and keep abreast of course announcement. Use the assigned college or university e-mail address as opposed to personal e-mail address. Address technical problems immediately by contacting the HELP desk (919)-546-8587 and observe course netiquette at all times. For example: Always include a subject line before making a comment because; remember without facial expressions some comments may be taken the wrong way. Be careful in wording your emails, the use of emoticons might be helpful in some cases.

**Attendance and Punctuality:**
Attendance and punctuality will be weighed in determining your final grade. Students are expected to attend all class discussion group work and to be on time for the class discussion group. If a student is late to class (15 minutes or more) or leaves class early (15 minutes or more) or missing class, it will have the following adverse effect on his/her grade:

- Grade lowered by one grade if 3 times absent or 6 times late (or leaving class early).
- Student will be withdrawn from the course, or take a grade of "F," if 5 or more times absent or 8 or more times late (or leaving class early).
Students absent the week before a quiz or assignment will be expected to take the quiz with the class. Students will be expected to make up any work they may have missed because of their absence or tardiness.

Grade Evaluation:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Announced Quizzed and Exams</td>
<td>20%</td>
</tr>
<tr>
<td>Comprehensive Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Attendance and Unannounced Quizzes</td>
<td>10%</td>
</tr>
</tbody>
</table>

Course Schedule (Lectures, Assignments, and Exams):

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Topics</th>
<th>Assignments &amp; Exams</th>
<th>SLOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Introduction &amp; Ethics</td>
<td></td>
<td>12,13</td>
</tr>
<tr>
<td>1 (8/25)</td>
<td>CPU vs. Memory and Machine Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (9/2)</td>
<td>Basic Statements and Data Types</td>
<td>Week-1 Quiz</td>
<td>1,2,3,5,9,10,11</td>
</tr>
<tr>
<td>3 (9/8)</td>
<td>Problem Solving Using Basic Statements</td>
<td>Week-2 Quiz</td>
<td>2,3,5,7,10,11</td>
</tr>
<tr>
<td>4 (9/15)</td>
<td>Arithmetic Expression and Debugging</td>
<td>Assignment 3</td>
<td>2,3,5,10,11</td>
</tr>
<tr>
<td>5 (9/22)</td>
<td>Review of Week 2-4 w/ Challenging Problem Solving (including team projects)</td>
<td>Assignment 4 Assignment 5 Assignment 6 Exam 1</td>
<td>2,3,5,10,13</td>
</tr>
<tr>
<td>6 (9/29)</td>
<td>If statement</td>
<td>Assignment 7</td>
<td>1,3,4,5,6,10</td>
</tr>
<tr>
<td>7 (10/6)</td>
<td>Logic Expression and Multibranch If Statement</td>
<td>Assignment 8 Assignment 8 Midterm Grade</td>
<td>3,4,5,6,10</td>
</tr>
<tr>
<td>8 (10/13)</td>
<td>Problem Solving Using If Statement</td>
<td>Assignment 9</td>
<td>3,4,5,6,7,10</td>
</tr>
<tr>
<td>9 (10/20)</td>
<td>Switch Statement and Review of Week 6-10</td>
<td>Assignment 11</td>
<td>1,3,4,5,6,10</td>
</tr>
<tr>
<td>10 (10/27)</td>
<td>Introduction to Functions and Problem Decomposition (including team projects)</td>
<td>Assignment 13</td>
<td>3,4,5,7,8,10, 13</td>
</tr>
<tr>
<td>11 (11/3)</td>
<td>Parameters and Function Prototype</td>
<td>Assignment 14</td>
<td>3,4,5,8,10</td>
</tr>
<tr>
<td>12 (11/10)</td>
<td>Review of Week 12-14, Comprehensive Review</td>
<td></td>
<td>3,4,5,10</td>
</tr>
<tr>
<td>13 (11/17)</td>
<td>Final Exam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Note: Assignments are always due the Friday of the following week after it is assigned. Late submission will incur 20% penalty each week. There will be a maximum of two-week extension for each assignment.

PLAGIARIZING/CHEATING:

Plagiarizing (using another’s work as your own, whether you change variable names or keep it in the original names) and cheating are serious offenses and will be cheated as such. A student who plagiarizes or cheats --- whether giving or receiving information --- will receive a grade of zero on that particular exam or assignment.

LIBRARY:

It is imperative that you familiarize yourself with the instructional materials that are available to you in the James E. Cheek library on campus. Not only are there numerous books, periodicals, magazine articles, encyclopedias, and newspapers on hand for your perusal in our Library. There are course textbooks and related instructional materials that your professors have placed On Reserve for you as well. In addition, there you will have access to state-of-the-art computers and laptops, which help to place the world virtually at your fingertips. Don’t wait another day. Become a regular patron at the James E. Cheek Library here on the campus of Shaw University. You’ll become a far better scholar, a more capable and well-rounded intellectual, and a sharper and more competitive individual. It’s your library. Use it!

STUDENT CLASSROOM DECORUM EXPECTATIONS:

To enhance the learning atmosphere of the classroom, students are expected to dress and behave in a fashion conducive to learning in the classroom. More specifically, students will refrain from disruptive classroom behavior (e.g., talking to classmates on cell phones, ipods or similar electronic devices; disrespectful responses to teacher instructions; swearing; wearing clothes that distract from academic learning such as, but not limited to, wearing body-revealing clothing and excessively baggy pants; hats/caps, and/or headress). Students who exhibit the behaviors described above, or similar behaviors will be immediately dismissed from class on the occurrence of the third documented offense. The student will be readmitted to class only following a decision by the department chair. The student may appeal the decision of the department chair to the Dean of the College offering the course, and, subsequently, to the Office of the Vice President for Academic Affairs, and then to the President of Shaw University. The decision of the President will be final. Failure to follow the procedures herein outlined will result in termination of the appeal, and revert to the decision of the department chair.

Each behavior construed by the teacher/professor as not contributing to learning will be recorded, properly documented, and appropriately reported to the student and to the chair of the academic department offering the course. The report will be in written form with a copy provided to both the student and the department chair. The faculty member should retain a copy for his/her own records.
Additional student behavior codes may be found in Student Affairs especially in the Shaw University Student Handbook.

REFERENCES

- The ACM Code of Ethics (http://www.acm.org/about/code-of-ethics)