| | |
|---|---|
| **COURSE TITLE BLACKBOARD SITE** | MCS 1514 Computer Science 1 Spring 2011 – http://my.ltu.edu and select CRN 3807 |
| **INSTRUCTOR** | Dr. Ghassan Azar Director, Computer Science Programs College Professor Department of Math and Computer Science gazar@ltu.ed (248) 204-3659 Office hours on Wimba TBA |
| **SCHEDULE** | Semester starts 1/10/11 and end 5/7/11 See http://www.ltu.edu/registrars_office/calendar_final_exam.index.asp for LTU academic calendar information. |
| **LEVEL/ HOURS PREREQUISITE** | Undergraduate  4 credit hours Undergraduate level MCS 1102 Minimum Grade of D- or Undergraduate level MCS 1142 Minimum Grade of D- or Undergraduate level MCS 1603 Minimum Grade of D- or Undergraduate level MCS 1623 Minimum Grade of D- or Undergraduate level MCS 1632 Minimum Grade of D- |
| **REQUIRED TEXT** (See Blackboard for additional resources) | Gary Bronson, *Program Development and Design Using C++, Third Edition*, Course Technology, 2006, ISBN 0-619-21677-8 Available for online purchase through LTU Bookstore at: http://lawrence-tech1.bkstore.com/bkstore/TextbookSelection.do?st=489 |
| **ADDITIONAL RESOURCES** | LTU Online student resources: http://www.ltu.edu/ltuonline/ |
| **TECHNICAL SUPPORT** | Technical support for using Blackboard is provided by the Helpdesk, 248.204.2330 or helpdesk@ltu.edu |

**Description of Course:**

This course is intended to give students a solid foundation in object-oriented design and programming concepts using ANSI C++.  Students will learn algorithm development, problem solving, and computer science concepts. The material is presented via a depth-first linear progression that guides students through procedural orientation, object-orientation, and data structures.

Specific topic coverage includes:  Introduction to Computers and Programming; Problem Solving Using C++; Assignment, Formatting, and Interactive Input; Selection Structures; Repetition Statements; Modularity Using Functions; Completing the Basics; Introduction to Classes; Class Functions and Conversions; Inheritance and Dynamic Memory Allocation; I/O

File Streams and Data Files; Arrays; C-strings; Addresses, Pointers, and Arrays; Structures; The Standard Template Library; and Additional Capabilities

**COURSE SCHEDULE FOR TRADITIONAL SEMESTER COURSES**

This fully online course begins with a partial week online course orientation period to familiarize yourself with the online learning environment and to meet online or via the phone with your instructor.  Each subsequent week starts on a Monday and ends on a Sunday.

| Dates | Modules | Topics / Readings | Assignments Due |
|---|---|---|---|
| Prior to Semester Start and 1/10 – 1/16 | Module 0 | Overview of textbook Online Learning Orientation Course Orientation and group formation | Course orientation Instructor conversation |
| Week of Jan 17 – 23 | Module 1 | Chapter 1 – 2 | Bb Discussion Board |
| Week of Jan 24 – 30 | Module 2 | Chapter 3 – 4 | Bb Discussion Board |
| Week of Jan 31 – 2/6 | Module 3 | Chapter 4 – 5 | Bb Discussion Board |
| Week of Feb 7 -13 | Module 4 | Chapter 5 – 6 and project 1 | Bb Discussion Board |
| Week of Feb 14 – 20 | Module 5 | Chapter 11 -12 Mid-Term Exam | Bb Discussion Board |
| Week of Feb 21 – 27 | Module 6 | Chapter 7 and projects 2 | Bb Discussion Board |
| Week of feb 28 – 3/6 | Module 7 | Project's & mid-term review | Bb Discussion Board Project 1 is due |

| Dates | Modules | Topics / Readings | Assignments Due |
|---|---|---|---|
| Week of Mar 14 – 20 | Module 8 | Chapter 8 and project 3 | Bb Discussion Board |
| Week of Mar 21 – 27 | Module 9 | Chapter 9 | Bb Discussion Board<br>Project 2 is due |
| Week of Mar 28 – Apr 3 | Module 10 | Chapter 10 and project 4 | Bb Discussion Board |
| Week of Apr 4 – 10 | Module 11 | Chapter 12 | Bb Discussion Board |
| Week of Apr 11 – 17 | Module 12 | Chapter 13 | Bb Discussion Board<br>Project 3 is due |
| Week of Apr 18 – 24 | Module 13 | Chapter 14 | Bb Discussion Board |
| Week of Apr 25 – May 1 | Module 14 | Review of Chapter 1 - 14 | Bb Discussion Board<br>Project 4 is due |
| Week of May 2 – 8 | Module 15 | Final Exam Week | Bb Discussion Board |
|  |  |  |  |

**STUDENT EVALUATION**
The course has ten homework assignments, blackboard participation, 5 quizzes, 4 projects, mid-term and final exams totaling 1900 points. Letter grades are awarded based on the total number of points achieved. Points are deducted for late assignments.

**Course Grading:**

|  | Percent |
|---|---|
| **4 Programming projects @ 5% each** | **20%** |
| **10 Homework** | **10%** |
| **5 Quizzes   @ 2% each** | **10%** |
| **Blackboard communication** | **20%** |
| **Mid-term Exam** | **10%** |
| **Final Exam** | **40%** |
| **Participation** | **10%** |
|  |  |
| **Total Possible points** | **120%** |
|  |  |
|  | **95% = A** |

| Class Points | Letter Grade |
|---|---|

| 95 and above | A |
|---|---|
| 90 – 94.99 | A- |
| 87 – 89.99 | B+ |
| 83 – 86.99 | B |
| 80 – 82.99 | B- |
| 77 – 79.99 | C+ |
| 73 – 76.99 | C |
| 70 – 72.99 | C- |
| 67 – 69.99 | D+ |
| 63 – 66.99 | D |
| 60 – 62.99 | D- |
| Below 60 | F |

**Key to Success:**
- **Have a positive attitude about learning and the class.**
- **Attend all class sessions and be punctual.**
- **Read the textbook and work the exercises.  Check your answers.**
- **Complete and turn your assignments on time.**
- **DO YOUR OWN WORK.  Work with your "study buddy." Ask for help when needed**
- **Don't expect to understand every topic the first time it is presented; review often; spend as much time as necessary to master the material.**

**EDUCATIONAL GOALS**

**General Objectives**:
- To provide the basic foundation of program design.
- To introduce C++ programming language
- To code and run programs in C++.

**Specific Objectives:**
- History of computing; Introduction to basic computer architecture
- Computer software and programming languages (syntax diagram, etc.)
- Software design methodologies (top-down design, software life cycles, etc.)
- Introduction to algorithm design; Creating and developing programs
- Introduction to object-oriented programming concepts
- C++ Basics: how to compile, linking and run, and multiple file compilation
- C++ Syntax and Semantics; data types, variables, assignments, scope rules, and operators
- Basic inputs and outputs: cin and cout;  file stream I/O
- Flow of control: decisions and Iterations
- Functions (predefined functions, passing parameters, functions that return values, function overloading)
- Structs as data aggregates
- Classes and objects

- Introduction to friend functions; overloading operators
- Arrays
- Introduction to pointers and dynamic arrays

**STUDENT LEARNING OBJECTIVES / OUTCOMES**
- There will be 16 modules.
- Program design and Examples will be demonstrated in class.
- Students will have homework and lab assignments to be done outside class.
- Students will be involved in the classroom by questioning to stimulate thought, interest and reinforce previous points.
- Whenever possible students will discuss each other's programs and suggest ways for improving these programs. Each programming assignment must be done by **ONE** student only with **NO** outside help. A zero will be given for work not completed by the student.


**Academic Integrity:**
Per the academic honor code, students are expected to conform to a high standard of honesty and integrity in this course. Copying someone else's work or any other form of **cheating** is **strictly prohibited**. Permitting or tolerating such behavior is also prohibited. The minimum penalty for any offense is a 0 on that assignment. The culprits may be subject to additional sanctions, up to and including expulsion from school for serious offenses.

**PREREQUISITE SKILLS**
Undergraduate level MCS 1102 Minimum Grade of D- or Undergraduate level MCS 1142 Minimum Grade of D- or Undergraduate level MCS 1603 Minimum Grade of D- or Undergraduate level MCS 1623 Minimum Grade of D- or Undergraduate level MCS 1632 Minimum Grade of D-

**INSTRUCTIONAL METHODS AND COURSE ORGANIZATION**

**Blackboard Learning Environment** – Blackboard at my.ltu.edu contains the syllabus, all assignments, reading materials, streaming videos, narrated PowerPoint mini-lectures, podcasts, written lecture notes, chapter quizzes, links to Web resources, and discussion forums. You will submit all assignments via Blackboard, and are expected to participate regularly in discussion topics. Please take time to familiarize yourself with the organization of the Blackboard site. You will want to check the site frequently for announcements reminding you of new resources and upcoming assignments.
**Student/Instructor Conversations** – Students keep in touch with the instructor via e-mail messages, telephone conference calls, and IM conversations.
**Self-Assessments** – Pre- and post- self-assessment tools will help students measure their entering skills and progress during the course.
**Required Reading** – Textbook chapters should be read according to the schedule outlined in the syllabus. Chapters will be discussed online.
**Publisher Web Site** – Supplementary information for the course is available at **www.course.com**. The Web site contains class notes, PowerPoint slides, class announcements, the course syllabus, test dates, and other information for the course.
**Assignments** –

**10 Homework assignments**

**Programming assignments for the Course:**

| Assignment | Assigned on | Collected on |
|---|---|---|
| **(1)** | **2/7** | **3/6** |
| **(2)** | **2/21** | **3/21** |
| **(3)** | **3/14** | **4/11** |
| **(4)** | **3/28** | **4/27** |

Programs will be graded for scope, correctness, style, documentation, and timeliness. A program that "works" will not receive full credit unless it is well written, properly documented, and efficient in terms of memory space used and execution speed. Late projects will not receive full credit. Unless otherwise specified, projects turned in late will lose 5% per day late and will not be accepted after one week late. You MUST submit .cpp files for your assignments.

**CLASS POLICIES AND EXPECTATIONS**

Students are expected to follow with each module on a regular basis and participate in the discussions. They are responsible for all the material presented therein. Formal participation records will be maintained. Participation is highly correlated with performance on the projects and the exams.

*I plan to offer you a valuable learning experience, and expect us to work together to achieve this goal. Here are some general expectations regarding this course:*

Each student has a LTU email account. If you wish to use a different email address for this course, please **change your email address in Blackboard under "Blackboard Tools", then "Personal Information"** and send an email to me so I can store your address in my email directory.

Readings, discussion forum participation, and written assignments must be completed according to the class schedule. It is important to contact the instructor as needed to discuss personal needs regarding course requirements and assignments.

It is essential that all students actively contribute to the course objectives through their experiences and working knowledge.

All assignments must be submitted on schedule, via Blackboard, and using Microsoft Office compatible software. If you need to submit an assignment via email, contact the instructor in advance.

Assignments must be completed to an adequate standard to obtain a passing grade. Requirements for each assignment are detailed in this syllabus.

Be prepared to log into Blackboard at least once each day. Please focus your online correspondence within the appropriate Blackboard discussion forums so that your colleagues can learn from you.

At midterm and at the end of the course, you will be invited to participate in a University evaluation of this course. Your feedback is important to the University, to LTU Online, and to me as an instructor, and I encourage you to participate in the evaluation process.

It is important for you as students to know what to expect from me as your instructor:

- I will be available to you via e-mail and phone, and will promptly reply to your messages.
- I will be available to you for face-to-face appointments as requested.
- I will maintain the Blackboard web site with current materials, and will resolve any content-related problems promptly as they are reported to me.
- I will send out a weekly e-mail update to all class members to guide upcoming work and remind you of assignment due dates.
- I will return all assignments to you promptly, and will include individualized comments and suggestions with each assignment.
- I will hold our personal written or verbal communications in confidence. I will not post any of your assignments for viewing by the class without requesting your approval in advance.
- I will treat all members of the class fairly, and will do my best to accommodate individual learning styles and special needs.
- If any of these points need clarification, or when special circumstances arise that require my assistance, please contact me so that we can discuss the matter personally.

**PRACTICAL GUIDELINES FOR CLASS LOAD EXPECTATIONS**

A three-credit course generally requires at least nine hours per week of time commitment. Here are some practical guidelines to help schedule your time commitments for this online course:

- A 14-week semester (the Summer semester is compressed into 10 weeks) would require at least 126 hours of time commitment to successfully complete all readings, activities, assignments, and texts as described in this syllabus.
- You should reserve at least 6 hours per week to read the required textbook chapters and resources, participate in online discussions, review presentation materials, and work through online quizzes. This effort will total at least 84 hours over the course of the semester.
- You should organize your remaining time to roughly correspond with the point value of each major assignment. This means that you should plan to spend at least:
  - 8-9 hours preparing your case study review;
  - 24-40 hours working with your group on the three parts of your semester-long project;
  - 8-9 hours working on the various components of your reflective consolidation (final exam).

These guidelines may not reflect the actual amount of outside time that you – as a unique individual with your own learning style – will need to complete the course requirements. The number of hours each week will vary based on assignment due dates, so please plan ahead to insure that you schedule your academic, work, and personal time effectively. The following graphic can be used to guide you in planning your weekly course work to remain on schedule:
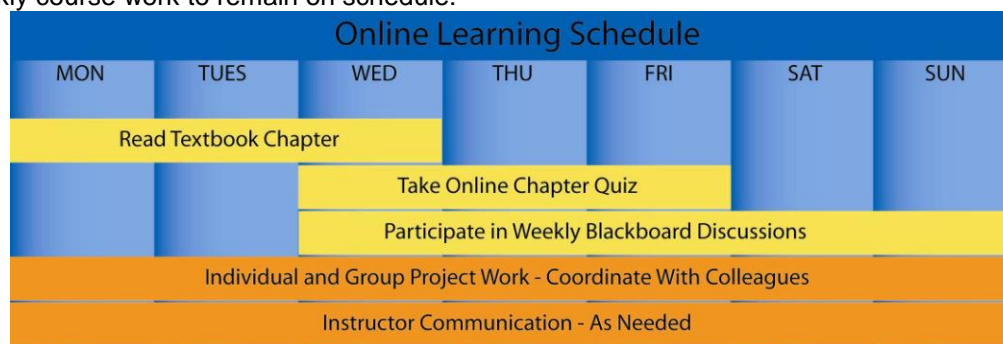
## Quizzes and Online Participation (30 points)

Each student is expected to actively participate in online activities. Class participation is evaluated to a maximum of 10 points based on:

-Actively participating in Blackboard discussion forums, responding to questions posted by the instructor, and interacting positively with other students.

### Leadership Transcripts

The leadership transcript enables students to track co-curricular activities that are undertaken above and beyond the requirements of the LTU curriculum. The leadership transcript serves students by enhancing the leadership portfolio; providing the opportunity for a transcript of distinction; enhancing their resumes; and assisting in articulating leadership experience. It can be accessed by logging on to Banner Web and clicking the Student and Financial Aid tab. Leadership Activities is located at the bottom of the list.

### SYLLABUS ADDENDA

Please see the LTU Online "Current Students" web site http://www.ltu.edu/ltuonline/ for comprehensive information about Lawrence Tech's academic services, library services, student services, and academic integrity standards. The content of this web site is explicitly included as syllabus requirements.

The LTU Online "Current Students" web site also includes grading rubrics used by your instructor to evaluate written assignments, discussion forum participation, and group assignments. Please note that the SafeAssign anti-plagiarism product will be used for written assignments submitted for this course. Please see the instructions included on the LTU Online web site regarding the use of the SafeAssign product.