ECE 222 Syllabus
Fall 2014

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Email: lukepier@siu.edu                   Office Phone: (618) 453-4755

Office Hours: Monday 3-5pm, Tuesday and Thursday 2:30-4:30pm, or by appointment
Lecture: MWF, 12:00 – 12:50 p.m., ENGR E-136

Grading/Evaluation:
- Homework/Labs: 20%
- Final Project: 20%
- Exams (1-2): 40%
- Final Exam: 20%

A: 90-100; B: 80-89; C: 70-79; D: 60-69; F < 60

Classroom Policies:

A. Attendance Policy: In the event that you cannot attend class for an extended period of time due to a medical or family emergency you must inform the instructor promptly.

B. Homework Submission: Homework shall be submitted through SIU Online. All submitted code must follow good programming practices to receive full credit. This includes but is not limited to proper commenting of code, proper indentation, and proper variable naming.

C. Late Homework/Missed Exams: Late homework is not accepted. In the event you cannot attend an exam due to a legitimate reason, you must contact the instructor within 24 hours after the exam.

D. Final Note: The curriculum in this class is highly cumulative. That is to say you must fully understand each topic presented to understand the next topic. If you are struggling with a topic please visit my office hours. Do not wait until the day before the test to get help with the material. The number one mistake students make in this class is waiting too long to get help with fundamental materials, and failing to attend class.

\[\text{1 Pages 2 and 3 are for ABET}\]
1. **Course number and name**: ECE 222 Introduction to Procedural Programming and Data Structures

2. **Credits and contact hours**: 3 credits, Three 50-minute sessions per week

3. **Course Committee**: H. Ramaprasad, N. Botros, D. Kagaris

4. **Textbook(s), title, author, and year**:  

   **References or other supplemental materials**:  
   [1] www.cplusplus.com

5. **Specific course information**
   a. Catalog Description: Digital computation to solve basic problems in electrical and computer engineering. Design, implementation, testing and debugging of procedural programs using the C++ programming language. Introduction to basic data structures.
   b. Prerequisites: MATH 111 or equivalent
   c. Required for EE and CpE majors
   d. Professional Component {3 Credit Hours}

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6. **Instructional Objectives (with SO’s)**
   Upon completion of the course, the students should be able to:
   a. Understand the basics of computer programming (a, e, i, k)
   b. Know the basic concepts of numerical methods and their implementation using procedural programming in C++ (a, e, k)
   c. Be familiar with console input/output, operators and expressions, control structures, functions, function overloading and recursive functions, pointers and C-style structures. (a, k)
   d. Be familiar with simple data structures such as linked lists, stacks and queues. (a, k)
   e. Understand algorithm development and programming style. (a, c, e, i, k)
   f. Develop a good coding style and understand naming conventions. (c, g, k)
   g. Be able to design and implement procedural C++ programs. (a, c, e, g, k)

7. **Brief list of topics (class, lab and project) to be covered (with hours)**  
   a. Classroom Topic (Hours)
   - Introduction to programming. Structure of a simple C++ program using a “Hello world” example. Compiling, building and running a simple C++ program. {2 lectures}
   - Constants (literals, defined constants using assembler directives and declared constants). Variables and fundamental data types (bool, char, int, float, double). Variable specifiers (long/short, unsigned/signed). {3 lectures}

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2 subject to change at the instructor’s discretion. Students are responsible for announcements made in class and on D2L.
- Operators (assignment, arithmetic, logical, relational and bitwise). Operator precedence and expressions. {3 lectures}
- Console input/output (printf/scanf and cout/cin). {1 lecture}
- Conditional control structures (if-else). {2 lectures}
- Iterative control structures (for, while, do-while), nested loops. {3 lectures}
- Selective control structures (switch). Jumps (break, continue, exit). {1 lecture}
- Functions (prototype/declaration and definition). Scope of variables (local and global). Parameter passing (by-value, by-reference). {4 lectures}
- Function overloading, overload resolution, default values for parameters. {3 lectures}
- Recursive functions. {2 lectures}
- Arrays, character sequences using arrays. Multidimensional arrays. Passing arrays to functions. {3 lectures}
- Pointers. Relationship between pointers and arrays. Pointer arithmetic. Void and null pointers. {3 lectures}
- Dynamic memory allocation (malloc/free and new/delete). {2 lectures}
- C-style structures and pointers to structures. {3 lectures}
- Singly and doubly-linked lists using structures and pointers to structures. {4 lectures}
- Introduction to the concept of queues and stacks. {4 lectures}

8. **CAD and Computer Tools Used:** Visual Studio IDE
9. **Assessment of the Contribution to Student Outcomes**

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Student Outcomes (ABET criteria a-k) are quoted here:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function on multidisciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
University Policies

A. **Incomplete Grades:** An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within a time period designated by the instructor but not to exceed one year from the close of the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, not to exceed one year, or graduation, whichever comes first, the incomplete will be converted to a grade of F and the grade will be computed in the student’s grade point average. Students should not reregister for courses in which an INC has been assigned with the intent of changing the INC grade. Re-registration will not prevent the INC from being changed to an F.

B. **Academic Integrity:** You are expected to submit your original work and adhere to the academic policies as stated in the SIU Student Conduct Code: [http://srr.siu.edu](http://srr.siu.edu) (listed under Additional Links). Any act of academic dishonesty, cheating, or plagiarism in any form, including anonymous internet sources used in student papers, will be reported. These acts are taken seriously and the consequences may range from failing as assignment to expulsion from the university.

C. **SIU Email:** Your SIU email account is an official form of University communication. Your instructor will use SIU email as a primary means of electronic communication with students. Please make sure that you maintain a valid password and acquire the habit of regularly checking your SIU email account for important instructor and University announcements. You may view the official SIU Student Email Policy at: [http://policies.siu.edu/policies/email.html](http://policies.siu.edu/policies/email.html).

D. **Emergency Procedures:** SIU is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with SIU Emergency response Plan and building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT’s website at [http://www.bert.siu.edu/](http://www.bert.siu.edu/), the SIU Department of Public Safety’s website [www.dps.siu.edu](http://www.dps.siu.edu) (disaster dropdown and video, “Shots Fired”), and in the Emergency Response Guideline pamphlet. Know how to respond to each type of emergency. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.** The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.
E. **Supplementary Assistance:** SIU is committed to assisting students with disabilities. With the cooperation of SIU’s Disability Support Services (DSS), each student who qualifies for reasonable supplementary assistance has the right to receive it. Students requesting supplementary assistance must first register with DSS in Woody Hall, B-150, 618-453-5738 or 618-453-2293 (TTY), by email DSS@siu.edu, or http://disabilityservices.siu.edu/. Notice: If you have any type of special need(s) or disability for which you require accommodations to promote your learning in class, please contact me as soon as possible. The Office of Disability Support Services (DSS) offers various support services and can help you with special accommodations. You may wish to contact DSS to verify your eligibility and options for accommodations related to your special need(s) or disability.

**Student Services**

A. **Learning Support Services:** The Center for Learning Support Services (CLSS) assists students of all cultures, abilities, backgrounds and identities with enhancing their self-management and interdependent learning skills. Programs offered by CLSS include: group study sessions; math tutoring; academic coaching; early intervention program; and study skills seminars. For additional information please contact CLSS in Woody Hall, Room A-313, 618-453-2925, or www.tutoring.siu.edu.

B. **Writing Center:** The Writing Center offers free tutoring services and assistance with improving writing skills to all SIU undergraduate students and faculty. For center locations and hours, to schedule an appointment online, and to view information regarding the Online Writing Lab (OWL) contact the Writing Center at 618-453-1231 (Morris Library location); 618-453-2927 (Trueblood location), or www.write.siu.edu.

C. **Saluki Cares:** The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress-physical, emotional, financial or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. To make a referral to Saluki Cares click, call or send: http://salukicares.siu.edu/index.html; 618-453-5714, or siucares@siu.edu.