

# ECE 321 Syllabus<sup>1</sup>

## Spring 2014

**Instructor:** Dr. Harini Ramaprasad  
**Email:** [harinir@siu.edu](mailto:harinir@siu.edu)

**Office:** ENGR E-110  
**Office Phone:** 453-4755

**Office Hours:** Tue – 2pm to 4pm; Wed – 10am to 12pm; Fri – 10am to 12pm or by appointment

**Lecture:** MWF, 3:00 – 3:50 p.m., ENGR E-136

**Lab:** W, 4:00 – 4:50 p.m., ENGR E-136

### Grading/Evaluation:

Homework + Project	65%
Midterm Exam	15%
Final Exam	20%

A: 85-100; B: 70-84; C: 55-74; D: <55

### Classroom Policies:

- A. **Attendance:** I do not grade specifically on attendance, but I still expect you to attend. I will present material in class that may not be in the text, which you will be responsible for knowing. By signing up for this class you commit yourself to attend.
- B. **Lateness:** Coming late to class is disruptive and may be treated as an unexcused absence, especially if it is not the first time a student has done it.
- C. **Class Material:** Most class material will be available on the web site. You should check the website periodically for postings and announcements.
- D. **Homework:** Assignments may require you to work individually or in teams, as specified. In case of team assignments, one solution must be submitted for one team. All homework submissions must be made online.
- E. **Homework format:** Homeworks may include written assignments, programming assignments and a project. Assignments involving programming will be judged based on fulfillment of functional requirements, coding style and documentation. Functions should start with a comment explaining its functionality and I/O requirements. Longer algorithms may require comments within the code. Meaningful variable names are helpful if the length of their names is not excessive. Written reports are only required if explicitly stated in the assignment.
- F. **Group work:** Programming assignments will mostly be required to be carried out in groups. If a student's name appears on a solution set, it certifies that he/she has participated in solving the problems. You are responsible for collaborative work within your group. It is imperative to address lack of team work before turning in assignments to

---

<sup>1</sup> Pages 4 and 5 are for ABET

## ECE 321 Syllabus Spring 2014

ensure full credit. You may do so by first consulting the TA (and then the instructor) in case of problems that cannot be resolved in your group.

- G. **Peer evaluation:** Group assignments are graded based on the number of points assigned to your solution multiplied with a personalization factor. This factor is the average of the factors indicated by your peer group members for your contribution to the group assignment. For example, if you are assigned subproblem S and you handle the subproblem on your own, your peers should give you "100%" on the peer evaluation since you kept your promise to solve S. However, if you only solve part of S and other group members have to pick up your work and complete it (or S remains incomplete), your peers may give you a lower evaluation than 100%, say 50%.
- H. **Group change:** Group changes are only permissible through written request with justification within 48 hours after the due date of an assignment. Such requests have to be directed to the TA. New assignments are effective if and when the TA approves it. In extraordinary circumstances, exceptions may be granted if approved by the TA. If a member does not contribute his/her share toward the homework, other group members may elect to "fire" this member. As with group changes, this is only permissible within a 48 hour window after a due date and by written request to the TA with documented justification by each member favoring such an approach. Your justification should be based primarily on peer evaluations.
- I. **Late homework:** Late homeworks will not be entertained.
- J. **Academic Integrity:** Students are expected to maintain high standards of academic integrity and honesty. University guidelines regarding academic integrity will be followed. Cheating on homeworks and tests will result in disciplinary actions, up to the full penalties specified in the guidelines, and an automatic "F" grade for the course.
- K. **Tests:** There will be a midterm and a final exam. The responsibility for grading tests and homework assignments reside with the teaching assistants (TAs). If you believe an error has been made in grading, bring it to the TA who did the grading during his or her office hours. If you believe that you should have gotten more points than you got, write a statement making your case and take it to the TA. If you are not satisfied with the TA's decision, bring the statement to your course instructor, who will make the final decision.
- L. **Missed tests:** No make up tests will be permitted if you miss a test without either a certified medical excuse or prior instructor approval. Tests missed with certified medical excuses or prior instructor approval will be dealt with individually. If you miss the final exam without a valid excuse, a zero will be averaged into your grade.
- M. **Instructors' commitment:** You can expect your instructor to be courteous, respectful, and punctual; be well organized and prepared for lecture and other class activities;

## **ECE 321 Syllabus Spring 2014**

answer questions clearly and in a non-negative fashion; be available during office hours or notify you beforehand if she is unable to keep them; and grade uniformly and consistently according to the posted guidelines.

## ECE 321 Syllabus Spring 2014

1. **Course number and name:** ECE 321 Introduction to Software Engineering
2. **Credits and contact hours:** 3 credits, three 50-minute session per week, one 60 minute lab session per week
3. **Course Committee:** H. Ramaprasad, N. Botros, D. Kagaris
4. **Text book(s), title, author, and year:**

[1] C++ Primer Plus, Stephen Prata, Addison Wesley, Sixth Edition, 2012

### References or other supplemental materials:

[1] [www.cplusplus.com](http://www.cplusplus.com)

### 5. Specific course information

- a. (catalog description): Introduction to tools, concepts and techniques to develop complex software projects. The tools include object-oriented programming and advanced data structures. Concepts and techniques include introduction to principles of operating systems and introduction to software engineering, including requirements specifications, design methodology, and testing.
- b. prerequisites or co-requisites: ECE 222, ECE 225 with grade 'C' or better
- c. Required for CpE majors
- d. Professional Component {3 Credit Hours}

Mathematics	0	Sciences	0	General Ed.	0
Eng. Science	2	Eng. Design	1		

### 6. Instructional Objectives (with SO's), ex. The student will be able to explain the significance of current research about a particular topic. (a, b, h)

Upon completion of the course, the students should be able to:

- a. Understand advanced data structures and be able to choose suitable data structures (such as linked lists, queues, stacks and trees) for programs (a, c).
- b. Understand the principles of object-oriented programming, including encapsulation, inheritance and run-time polymorphism (a, e).
- c. Understand the principles of software engineering, with special focus on object-oriented design using C++ (a, c, e, i, k).
- d. Understand the principles of operating system design (c, i, k).

### 7. Brief list of topics (class, lab and project) to be covered (with hours)<sup>2</sup>

- a. Revision of procedural programming concepts. {3 lectures}
- b. Advanced data structures including linked lists, queues, stacks and trees: structure, supported operations, complexity of operations, traversal. *Case study 1:* Implementation of a data structure using procedural approach. {8 lectures}

---

<sup>2</sup> subject to change at the instructor's discretion

## ECE 321 Syllabus Spring 2014

c. Introduction to object-oriented programming: classes, objects and encapsulation.  
*Case study 2:* Implementation of a data structure using object-oriented approach.  
 {6 lectures}

d. Introduction to software engineering concepts: requirements engineering, object-oriented design and testing. {4 lectures}

e. *Case study 3*  
 Identification of case study {1 lecture}

Requirements engineering using UML use-case diagrams and sequence/scenario diagrams. {3 lectures}

Object-oriented design using noun and verb analysis, sequence/scenario diagrams and C-R-C cards. {5 lectures}

Object-oriented implementation; introduction to inheritance and run-time polymorphism; unit testing. {5 lectures}

f. *Case study 4:* Operating System design  
 Requirements discussion: modularity, information hiding, abstraction, user interface {3 lectures}

Design principles discussion: object-oriented approaches for achieving requirements. {3 lectures}

**8. Computer Tools Used:** Visual Studio IDE

**9. Assessment of the Contribution to Student Outcomes**

Outcome →	a	b	c	d	e	f	g	h	i	j	k
Assessed →	x		x		x				x		x

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

## **ECE 321 Syllabus Spring 2014**

- (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.

*"We emphasize student achievement and success because achievement and success are essential if we are to shape future leaders and transform lives."<sup>1</sup>*

<http://pvcaa.siu.edu/>

**IMPORTANT DATES \***

<u>Semester Class Begins</u> .....	<b>01/13/2014</b>
<u>Last day to add a class</u> (without instructor permission): .....	<b>01/24/2014</b>
<u>Last day to withdraw completely and receive a 100% refund:</u> .....	<b>01/26/2014</b>
<u>Last day to drop a course using SalukiNet:</u> .....	<b>03/23/2014</b>
<u>Last day to file diploma application</u> (for name to appear in Commencement program): .....	<b>03/28/2014</b>
<u>Final examinations:</u> .....	<b>5/5 – 5/9/2014</b>

\* Note: For outreach, online, and short course drop/add dates, visit Registrar's Academic webpage <http://registrar.siu.edu/>

**SPRING SEMESTER HOLIDAYS**

Martin Luther King, Jr.'s Birthday 01/20/2014  
Spring Vacation 03/08—03/16/2014

**WITHDRAWAL POLICY ~ Undergraduate only**

Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initiated by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit <http://registrar.siu.edu/pdf/ugradcatalog1314.pdf>

**INCOMPLETE POLICY~ Undergraduate only**

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 one semester following 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, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of F and the grade will be computed in the student's grade point average. For more information please visit:

<http://registrar.siu.edu/grades/incomplete.html>

**REPEAT POLICY**

An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. See full policy at

<http://registrar.siu.edu/pdf/ugradcatalog1314.pdf>

**GRADUATE POLICIES**

Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please visit

<http://gradschool.siu.edu/about-us/grad-catalog/index.html>

**DISABILITY POLICY**

Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements.

<http://disabilityservices.siu.edu/>

**STUDENT CONDUCT CODE**

[http://policies.siu.edu/other\\_policies/chapter3/conduct.html](http://policies.siu.edu/other_policies/chapter3/conduct.html)

**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. For information on Saluki Cares: (618) 453-5714, or [siucares@siu.edu](mailto:siucares@siu.edu),

<http://salukicare.siu.edu/index.html>

**EMERGENCY PROCEDURES**

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the **SIU Emergency Response Plan** and **Building Emergency Response Team (BERT)** programs. Emergency response information is available on posters in buildings on campus, available on BERT's website at [www.bert.siu.edu](http://www.bert.siu.edu), Department of Safety's website at [www.dps.siu.edu](http://www.dps.siu.edu) (disaster drop down) and the Emergency Response Guideline pamphlet. 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.*

**INCLUSIVE EXCELLENCE**

SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well as an essential preparation for any career. For more information please visit: <http://www.inclusiveexcellence.siu.edu/>

**MORRIS LIBRARY HOURS**

<http://www.lib.siu.edu/about>

**LEARNING AND SUPPORT SERVICES**

Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:

**Tutoring** : <http://tutoring.siu.edu/>

**Math Labs** [http://tutoring.siu.edu/math\\_tutoring/index.html](http://tutoring.siu.edu/math_tutoring/index.html)

**WRITING CENTER**

The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit <http://write.siu.edu/>

**AFFIRMATIVE ACTION & EQUAL OPPORTUNITY**

Our office's main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. For more information visit:

<http://diversity.siu.edu/#>

**Additional Resources Available:**

**SALUKINET:** <https://salukinet.siu.edu/cp/home/displaylogin>

**ADVISEMENT:** <http://advisement.siu.edu/>

**PROVOST & VICE CHANCELLOR:** <http://pvcaa.siu.edu/>

**SIU ONLINE:** <http://online.siu.edu/>

<sup>1</sup> Southern Illinois University Carbondale. (2013). *Pathways to Excellence: A Strategic Plan*  
Retrieved from [http://chancellor.siu.edu/common/docs/A\\_Strategic\\_Plan.pdf](http://chancellor.siu.edu/common/docs/A_Strategic_Plan.pdf)