Course Objectives:
- To provide an in-depth exposure on data abstraction and abstract data types
- To provide a thorough coverage of data structures such as lists, stacks, queues, trees, graphs and their implementation
- To provide an insight about algorithm efficiency and complexity
- To discuss recursion and its implementation
- To discuss different sorting and searching algorithms

Course Prerequisites:
- CS 202 and CS 215, with a grade of C or higher.

Time:
- Lecture: MWF 1:00-1:50 PM  Eng A207
- Lab: T 1:00-2:50 PM  Faner 1032

Instructor:
Tessema M. Mengistu
Office: Engineering A0405f
Phone: 453-6037
Email: tessema.mengistu@siu.edu
Web Page: http://www2.cs.siu.edu/~tmengistu/
Office Hours: MWF 2:30 -4:30PM or by appointment

TA:
Name: Shyam Kumar Reddy Velagala
Office: TBA
Phone: TBA
Email: v.shyamkumar@siu.edu

Text Book:
- *Data structures and Abstractions with Java*, Fourth Edition, by Frank M. Carrano, Pearson/Prentice Hall (Required)
Grading:
Lab assignments: 20%
Quizzes: 10%
Mid exam: 20%
Final Exam: 25%
Project: 25%

Course Tentative Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics Covered</th>
<th>Labs &amp; Exam</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Overview of Object Oriented Programming in Java</td>
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<tr>
<td>Week 2</td>
<td>Data Abstraction and Abstract Data Type (ADT)</td>
<td>Written Assignment 1</td>
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<tr>
<td>Week 3 &amp; 4</td>
<td>ADT and its Implementation</td>
<td>Lab Assignment 1 &amp; 2</td>
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<td>Week 5</td>
<td>Stack and its Implementation</td>
<td>Lab Assignment 3</td>
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<tr>
<td>Week 6</td>
<td>Algorithm Complexity</td>
<td>Written Assignment 2</td>
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<tr>
<th>Oct 07, 2016</th>
<th>Mid Exam</th>
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<tbody>
<tr>
<td>Week 7 &amp; 8</td>
<td>Queue and its Implementation</td>
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<tr>
<td>Week 9</td>
<td>Recursion</td>
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<tr>
<td>Week 10 &amp; 11</td>
<td>Sorting and Searching Algorithms</td>
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<tr>
<td>Week 12 &amp; 13</td>
<td>Tree and its Implementation</td>
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<tr>
<td>Week 14</td>
<td>Graph and its Implementation</td>
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<tr>
<th>Dec 16, 2016</th>
<th>Final Exam</th>
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Project Demonstration

Course Policy:

1. **Attendance.** Due to the nature of the course and the frequency of assignments, attendance is mandatory. You are responsible for all announcements and for all material presented in the lectures. Come prepared for class. Read the assigned material in advance of lectures. If you have to miss class, please consult with your class members so that you can find out what happened in class.
2. **Assignments.** There are several lab assignments and homework sets. Lab assignments involve programming, and homework sets contain questions that require written answers. Additional help sessions for each lab assignment may be scheduled after the assignment is posted. Please make sure that your programs are properly documented and indented. Your solution to the homework sets can be hand-written or typed. You must talk to the instructor, not the TAs, for any grade appeal about an assignment, and it must be made within one week after the assignment is handed back.

3. **Exams.** There will be one midterm exam and one final exam, midterm lasts 1 hour and 2 hours for the final. All exams are closed-book (unless otherwise specified). Additional review and Q&A sessions may be scheduled prior to the exams. The time and location of the midterm exam is to be announced. There will be no make-ups except under very special circumstances. Any reason for a make-up must be approved by the instructor.

4. **Programming Environment.** All programs in lab assignments must compile and run in at least the Java SE 6 environment. You can compile and run your source code from the command line or you can choose to use any IDE you prefer, for example Eclipse, NetBeans, DrJava or BlueJ. All of the necessary software can be freely installed on your PC. For any technical questions regarding software installation, lab assignments, Java programming, and development environment, please consult the TA first. Programs that cannot be compiled or run will receive zero points.

5. **Collaboration and Plagiarism.** All homework and lab assignments are to be done individually unless otherwise specified. You are allowed and even encouraged to verbally discuss the assignment material with your classmates or consult others for debugging assistance, but you must prepare the solution on your own. Plagiarism and other anti-intellectual behavior are not tolerated and are subject to severe penalties. For more information, please carefully read the Departmental Policies on Academic Dishonesty available at [http://www.cs.siu.edu/dishonesty.shtml](http://www.cs.siu.edu/dishonesty.shtml)

6. **Project.** A project is an integrated part of this course. You are required to form a group of three (maximum) and develop a program by applying the concepts discussed in class. The title of the project should be submitted and approved by the instructor before you start working on it. The time for submitting a title and the final program is to be announced.

7. **Time Management.** This course is an extremely time-demanding course. Please plan your time wisely, and start work on the assignments as soon as they are available. Nevertheless, this course is probably the most important and useful course in your Computer Science education.
IMPORTANT DATES *

Semester Class Begins: ..............................08/22/2016
Last day to add full-term course (without Dean’s signature): 08/28/2016
Last day to withdraw from the University with a full refund: 09/02/2016
Last day to drop a full-term course for a credit/refund: ..................09/04/2016
Deadline to apply to graduate at the end of this term: ..................09/16/2016
Last day to drop a full-term course (W grade, no refund): 10/30/2016
Final examinations: ........................................12/12—12/16/2016
Commencement: ..............................................12/17/2016

Note: For more detailed information on the above deadlines, please visit http://registrar.siu.edu/calendars. For add/drop dates that apply to shorter-than-full-term courses, please look at the Schedule of Classes search results at http://registrar.siu.edu/schedclass/index.php

FALL SEMESTER HOLIDAYS
Labor Day Holiday 09/05/2016
Fall Break 10/08—10/11/2016
Veterans Day Holiday 11/11/2016

WITHDRAWAL POLICY ~ Undergraduate only
Students who officially register for a session must officially withdraw from that registration in a timely manner to avoid being charged as well as receiving a failing grade for those classes. An official withdrawal must be initiated by the student, or on behalf of the student through the academic unit, and be processed by the Registrar’s office. For the proper procedures to follow when dropping courses and when withdrawing from SIU visit: http://registrar.siu.edu/students/withdrawal.php

INCOMPLETE POLICY ~ Undergraduate only
An INC grade may be assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments for the course. An INC must be changed to a completed grade within one full semester (undergraduates), and one full year (graduate students), from the close of the term in which the course was taken or graduation, whichever occurs first. Should the student fail to complete the remaining course requirements within the time period designated, the incomplete will be converted to a grade of F and such grade will be computed in the student's grade point average. For more information visit: http://registrar.siu.edu/grades/incomplete.php

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit more than once. For students receiving a letter grade of A, B, C, D, or F, the course repetition must occur at Southern Illinois University Carbondale. Effective for courses taken Summer 2013 or later, only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. This policy will be applied to all transferrable credit in that only the last grade will be used to calculate grade point average. Only those courses taken at the same institution are considered repeats under this policy. See full policy at http://registrar.siu.edu/students/repeatclasses.php

GRADUATE POLICIES
Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please refer to the graduate catalog at http://gradschool.siu.edu/about-us/grad-catalog/

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 contact DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. http://disabilityservices.siu.edu/

PLAGIARISM
Student Conduct Code http://srr.siu.edu/student-conduct-code/

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu

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: call (618) 453-1492, email siukcares@siu.edu, or http://salukicares.siu.edu/

SIU’S EARLY WARNING INTERVENTION PROGRAM (EWIP)
Students enrolled in courses participating in SIU’s Early Warning Intervention Program might be contacted by University staff during a semester. More information can be found at the Core Curriculum’s Overview webpage: http://corecurriculum.siu.edu/program-overview/

EMERGENCY PROCEDURES
We ask that you become familiar with Emergency Preparedness @ SIU. Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness @ SIU website, and through text and email alerts. To register for alerts visit: http://emergency.siu.edu/

STUDENT MULTICULTURAL RESOURCE CENTER
The Student Multicultural Resource Center serves as a catalyst for inclusion, diversity and innovation. As the Center continues its work, we are here to ensure that you think, grow and succeed. We encourage you to stop by the Center, located in Grinnell Commons, to see the resources available and discover ways you can get involved on the campus. Visit us at http://inclusivexcceledge.siu.edu/

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://math.siu.edu/courses/course-help.php

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/

MILITARY COMMUNITY
There are complexities of being a member of the military community and also a student. Drill schedules, calls to active duty, complications with GI Bill disbursement, and other unforeseen military and veteran related developments can complicate academic life. If you are a member of the military community and in need of accommodations please visit Veterans Services at http://veterans.siu.edu/

Additional Resources:

ADVISEMENT: http://advisement.siu.edu/
SIU ONLINE: https://online.siu.edu/
SALUKI SOLUTION FINDER: http://solutionfinder.siu.edu/
MORRIS LIBRARY HOURS: http://libguides.lib.siu.edu/hours