Description: This course is offered for engineering students as a continuation of ES 1036. Emphasis is placed on Arrays, Pointers, Vectors and Object Oriented Programming such as Classes, Data Encapsulation, Inheritance and Polymorphism. Data Structure types such as Linked Lists, Stacks and Queues will be briefly introduced. The main language of this course is C++.

Instructor Information:

Instructor: Dr. Ali Bou Nassif, P.Eng.
Office: Middlesex College 365
Consultation hours: Tuesday 8:30 – 9:30 am or by appointment
Email: abounas<at>uwo.ca
Phone: 519-661-2111 Ext. 86856

Contact Hours: 3 lecture hours, 2 laboratory hours, 0.5 course

Lectures/ Lab Location and Time:

<table>
<thead>
<tr>
<th>Section</th>
<th>Component</th>
<th>Class Nbr</th>
<th>Days</th>
<th>Start Time</th>
<th>End Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>LEC</td>
<td>2588</td>
<td>Tu</td>
<td>9:30 AM</td>
<td>11:30 AM</td>
<td>NS-7</td>
</tr>
<tr>
<td>001</td>
<td>LEC</td>
<td>2588</td>
<td>Th</td>
<td>8:30 AM</td>
<td>9:30 AM</td>
<td>SEB-1200</td>
</tr>
<tr>
<td>002</td>
<td>LAB</td>
<td>3101</td>
<td>M</td>
<td>8:30 AM</td>
<td>10:30 AM</td>
<td>SEB-1015</td>
</tr>
<tr>
<td>003</td>
<td>LAB</td>
<td>3164</td>
<td>M</td>
<td>4:30 PM</td>
<td>6:30 PM</td>
<td>SEB-1015</td>
</tr>
<tr>
<td>004</td>
<td>LAB</td>
<td>2589</td>
<td>M</td>
<td>6:30 PM</td>
<td>8:30 PM</td>
<td>SEB-1015</td>
</tr>
<tr>
<td>005</td>
<td>LAB</td>
<td>4544</td>
<td>Th</td>
<td>4:30 PM</td>
<td>6:30 PM</td>
<td>SEB-1015</td>
</tr>
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</table>

There will be no class on Thursday October 30, 2014 (Fall Study Break)
Course Website: [http://www.csd.uwo.ca/Courses/CS1037a/](http://www.csd.uwo.ca/Courses/CS1037a/)

Students should check OWL (http://owl.uwo.ca) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. The missing of critical information due to your failure to check OWL cannot be used as a basis for appeal.

**Antirequisite:** CS 1027 A/B

**Prerequisites:** ES 1036 A/B

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

**Recommended Textbooks:**

- **Title:** Starting Out with C++: Early Objects  
  **Author(s):** Gaddis / Walters / Muganda  
  **Publisher:** Pearson  
  **Edition:** 8  
  **ISBN:** 9780133360929

- **Title:** Introduction to Programming with C++  
  **Author(s):** Y. Daniel Liang  
  **Publisher:** Pearson  
  **Edition:** Third  
  **ISBN:** 978-0-13-325281-1

- **Title:** Data Structures and Other Objects Using C++  
  **Author(s):** Michael Main and Walter Savitch  
  **Publisher:** Addison-Wesley  
  **Edition:** Fourth  
  **ISBN:** 978-0-13-212948-0

**Topics to be covered**

- a. Single-Dimensional and Multidimensional Arrays (2 weeks)  
- b. Pointers and Dynamic Memory Management (1.5 weeks)  
- c. Vectors (1 week)  
- d. Introduction to Object Oriented Programming in C++ (0.5 week)  
- e. Objects, Classes, Constructors and Destructors (2 weeks)  
- f. Data Encapsulation (1 week)  
- g. Single and Multiple Inheritance (1.5 weeks)  
- h. Polymorphism (1 week)  
- i. Data Structure: Linked Lists (0.5 week)  
- j. Data Structure: Stack (0.5 week)
k. Data Structure: Queue (0.5 week)

Upon successful completion of this course, students will be able to:

a. Solve different problems using the syntactical structures of C++ language
b. Understand and manipulate single-dimensional arrays, multi-dimensional arrays, pointers and vectors
c. Apply Object Oriented concepts such as Classes, Objects, Data Encapsulation, Inheritance and Polymorphism to software problems in C++
d. Understand and implement simple data structures such as Linked Lists, Stacks and Queues

Evaluation: In order to pass the course, a student must obtain at least 40% in each component (All assignments are considered as one component and all labs are considered as one component). A student who fails to obtain at least 40% in any component shall receive a final grade not greater than 45%. All assignments should be submitted as soft copies to the course website at Sakai/OWL. All assignments will be checked for plagiarism. Midterm and Final exams may include material from the textbook, lectures, labs and assignments. The midterm will be held in class (NS-7) during lecture hours (09:30am – 11:30am). Please note that the final exam will be cumulative. The date and the weight of each component are depicted in the following table:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Deadline/Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab (8 labs)</td>
<td>16%</td>
<td>Will be announced at OWL</td>
<td>During lab hours</td>
</tr>
<tr>
<td>Assignment 1</td>
<td>8%</td>
<td>Oct. 03, 2014 (tentative)</td>
<td>11:55 pm</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>8%</td>
<td>Oct. 24, 2014 (tentative)</td>
<td>11:55 pm</td>
</tr>
<tr>
<td>Assignment 3</td>
<td>8%</td>
<td>Nov. 21, 2014 (tentative)</td>
<td>11:55 pm</td>
</tr>
<tr>
<td>Mid-Term (closed book)</td>
<td>20%</td>
<td>Oct. 28, 2014 (confirmed)</td>
<td>09:30 – 11:30 (NS 7)</td>
</tr>
<tr>
<td>Final (closed book)</td>
<td>40%</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Assignments Submissions and Late Assignments Policy: The due dates of the assignments are shown in the table above. Please note that all these dates are tentative. The due dates will be confirmed when the assignments are posted at OWL. Students, who submit their assignments after the due date, will be penalized 10% a day (deduction of 10 marks regardless of the student’s grade) including weekends. No assignments will be accepted after the fourth day. It is the student’s responsibility to ensure that the correct version is submitted to OWL. No excuses will be accepted if an incorrect version is submitted instead. Students can resubmit their assignments until the due date. In this case, only the last version will be marked. Assignments will not be accepted if submitted to the professor’s email instead of OWL and will be deleted immediately and deemed un-submitted. Since an emergency might occur, two virtual coupons will be granted to every student at the beginning of the course. Students can use these coupons towards their late assignments. Each coupon will cancel a late day. A student can use (but not necessarily) the two coupons towards one assignment. When a student submits a late assignment, it is his or her responsibility to indicate that he or she will use these coupons. This can be done through the comment box in OWL when the students submit their assignments or can be done by emailing the instructor and the TA. These coupons cannot be used when the submission site is closed (after 4 days of the deadline). With respect to the labs, each lab must be completed during lab hours where students have to show the TA the results of each lab.
Assignment Locker: N/A.

Use of English: In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations for improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

Attendance: All classes, laboratories, and tutorials are mandatory unless otherwise stated. Any student who, in the opinion of the instructor, is absent too frequently from class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the department, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course.

Missed Test or Final Exam: If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible.

If you are a science student, the Academic Counselling Office of the Faculty of Science is located in WSC 191, and can be contacted at 519-661-3040 or scibmsac@uwo.ca. Their website is http://www.uwo.ca/sci/undergrad/academic_counselling/index.html.

A student requiring academic accommodation due to illness must use the Student Medical Certificate (https://studentservices.uwo.ca/secure/medical_document.pdf) when visiting an off-campus medical facility.

For further information, please consult the university’s medical illness policy at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

There are no make-up tests. If your faculty’s Academic Counselling Office has approved your circumstances, the value of the missed test will be reallocated as described on the previous page.

If you miss the Final Exam, contact your faculty’s Academic Counselling Office as soon as possible. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam) in May of 2015.

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

Cheating and Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations.

University policy states that cheating, including plagiarism, is a scholastic offence. The commission of a scholastic offence is attended by academic penalties, which might include expulsion from the program. If you are caught cheating, there will be no second warning.

All required papers may be subject to submission for textual similarity review to commercial plagiarism-detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents on the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between the University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, in the relevant section of the Academic Handbook: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf
The Computer Science’s take on Scholastic Offences can be seen at:
http://www.csd.uwo.ca/current_students/undergraduate_students/scholastic_offences.html

**Use of Electronic Devices:** Students may use laptops, tablet computers, or smart phones *only* to access the course OWL site during lectures and tutorials. Use of *nonprogrammable* calculators *only* is permitted during quizzes and examinations. No other electronic devices may be used at any time during lectures, tutorials, or examinations.

**Policy on Repeating All Components of a Course:** Students who are required to repeat a course must repeat all components of the course. No special permissions will be granted enabling a student to retain laboratory, assignment, or test marks from previous years. Previously completed assignments and laboratories cannot be resubmitted by the student for grading in subsequent years.

**Internet and Electronic Mail:** Students are responsible for regularly checking their Western e-mail and the course web site and making themselves aware of any information that is posted about the course.

**Accessibility:** Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2111 ext. 82147 for any specific question regarding an accommodation.

**Support Services:** Learning-skills counsellors at the Student Development Centre (http://www.sdc.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling. Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help. Additional student-run support services are offered by the USC, http://westernusc.ca/services.

The website for Registrarial Services is http://www.registrar.uwo.ca