Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingstegnologie

School of Information Technology

Department of Computer Science

Program Design: Introduction (COS 110)

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Last Revision: 20 July 2015

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1 Overview

This study guide serves to inform you of the administrative matters of COS 110. The information contained in this study guide is subject to change at the discretion of the lecturers. Such changes will be communicated to students and an updated version of the study guide will then be made available. It is expected of students to familiarize themselves with the content of the latest study guide and to take note of any changes, should they occur.

1.1 Description and Related Modules

The focus is on object-oriented (OO) programming. The module will cover topics such as inheritance and multiple inheritance, polymorphism, operator overloading, memory management (static and dynamic binding), interfaces, encapsulation, re-use, etc. The module teaches sound program design with the emphasis on modular code, leading to well structured, robust and documented programs. A modern OO programming language is used as the vehicle to develop these skills. The module will introduce the student to basic data structures, lists, stacks and queues.

The knowledge obtained in this course is relevant to any and all other Computer Science modules that include a programming component.

1.2 Prerequisites

The prerequisites of COS 110 are: COS 131 or COS 132 or COS 153, as well as Maths level 5 or WTW 133. You may not register for COS 110 if you do not comply with the prerequisites.

2 Plagiarism policy

This department considers plagiarism to be a serious offence. Disciplinary action will be taken against students who commit plagiarism. For a formal definition of plagiarism, the student is referred to http://www.ais.up.ac.za/plagiarism/index.htm (from the UP Main page follow the Library quick link and then the Plagiarism link).

Please read the university's policy on plagiarism at: http://www.ais.up.ac.za/plagiarism/docs/policy_2010.pdf.

3 Study Material

3.1 Prescribed Textbook

The prescribed textbook for COS 110 is:

Title: Starting out with C++: From control structures through objects
Author: Tony Gaddis
Publisher: Pearson
3.2 Additional Material

Memos will not be made available. You need to attend lectures to gain access to any material used during classes. Additional material, including material used during lectures, may be uploaded to the course website at the discretion of the lecturers.

3.3 Programming Language and Operating System

All practical work must be done in C++ and must compile and run in the Informatorium under Linux, unless explicitly stated otherwise. To access Linux in the Informatorium, you will need an account and password. These can be arranged for at CosiTeam (Computer Science reception). All practical work must be submitted with a working makefile.

In COS 110 no IDE is prescribed and you may complete your coding assignments and practicals in any environment you deem fit. However, your programs must compile and run independent of any IDE, which may require some slight modifications on your part before you submit your final programs. Your programs must compile and run in the Informatorium on the command line from any directory.

All practical work will be assessed using the Department of Computer Science’s marking tool called Fitchfork.

3.4 Course Participation

In order to achieve your best result it is imperative that you participate in as many evaluation events as possible. Participation in course activities is vital to your success in COS 110. Failure to attend lectures or failure to complete evaluation events will have a negative impact on your final results.

4 Instructors

The staff that present and support this module are listed below, along with their contact details.

4.1 Course coordinator

Dr Mardé Helbig
Office: IT 5-44
Telephone: (012) 420 2755
Email: mhelbig@cs.up.ac.za

4.1.1 Lecturers

Ms Anna Rakitianskaja
Office: IT 5-40
Telephone: (012) 420 2156
Email: annar@cs.up.ac.za
4.1.2 Assistant Lecturers

Mr Phlippie Bosman
Email: phlippie.bosman@gmail.com

Mr Daniel Rmotsoela
Email: luti007@gmail.com

Mr Victor Kebande
Email: vickkebande@gmail.com

4.2 Contacting COS 110 Staff

The COS 110 staff contact details appear on the course website. Consultations with lecturers are available via email appointments only. Should you wish to meet with the lecturer, you are kindly requested to make an appointment to arrange a suitable time. To request an appointment, please send an email with the subject line: **COS110: Request for Appointment** directly to the lecturer. Only upon receiving a reply from the lecturer confirming the date and time of the appointment, may you consider the appointment confirmed.

When attempting to contact a lecturer, please consider the following:

- Emails are better than phone calls as the lecturer is not necessarily in his/her office at all times throughout the day.
- Expect a turnaround of 1-2 days on emails (in other words, plan to request an appointment at least three days in advance).
- Ensure that your student email account is not full, otherwise messages from your lecturer will bounce.

Teaching assistants will be available during practical and tutorial sessions in the respective venues for these events. Additional appointments or consultations may be arranged with them via email, subject to their availability.

5 Organisation

This module shall be conducted as discussed below.

5.1 Module website

The course website can be found at: www.cs.up.ac.za/courses/COS110. COS 110 does not have a ClickUP component and all web related activities will take place via the COS 110 course website.

The lecturers for COS 110 will communicate announcements through the course website and students are expected to consult the website regularly. Access to practical assignments and homework assignments will be available exclusively through website. All completed evaluation events, except for the written theory components, must be submitted through the appropriate links provided on the site. No other form of submission will be accepted.
A discussion board will be made available. Students may use this feature to interact with other students and ask for clarification on various administrative issues with regard to COS 110. All posts must be kept relevant to COS 110. Abuse of the discussion board may lead to the banning of guilty parties or the closure of the discussion board itself.

5.2 Lectures

It is important that you attend theory lectures as special cases and examples not explicitly covered in the prescribed book may be discussed in detail. All work covered during theory lectures is examinable. The onus rests with students to take notes during lectures. Three theory lectures are presented to each group every week. Lectures run concurrently over all groups. A detailed lecture schedule will be made available via the course website.

6 Assessment

COS 110 follows a continuous assessment model. As such there will be no formal semester mark and separate exam mark. All evaluation events will count directly towards your final mark. There are four types of evaluation events, namely: practicals, homework assignments, tutorials and exam opportunities. In order to pass COS 110 you need to obtain a final mark of at least 50%.

6.1 Final Mark Break-down

The evaluation events will contribute to your final mark as follows:

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Contribution to final mark (%)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practicals</td>
<td>10</td>
<td>Only 80% of your best practicals will count</td>
</tr>
<tr>
<td>Tutorials</td>
<td>10</td>
<td>Only 80% of your best tutorials will count</td>
</tr>
<tr>
<td>Homework Assignments</td>
<td>20</td>
<td>All homework assignments will count</td>
</tr>
<tr>
<td>Exam Opportunities</td>
<td>60</td>
<td>All exam opportunities will count</td>
</tr>
</tbody>
</table>

6.2 Practicals

Practical assignments are released on a weekly basis for completion within a 3 hour practical slot. You will be required to complete one practical assignment - the practical you complete will depend on which practical session you have booked for. Bookings for the practical sessions will be announced and opened on the course website.

It is imperative that you attend practical sessions to receive assistance with the completion of practicals. Announcements (if any) pertaining to a particular practical exercise will be made exclusively during the sessions. Failure to attend your session and seek help during that session will result in forfeiting the opportunity to query your mark for that particular practical. Roll call may be held at any time for the duration of the session.
6.3 Tutorials

You will have to complete a compulsory tutorial assignment on a weekly basis. Tutorials will cover work done prior to the exercise, but will exclude work covered by all previous tutorials. Tutorials will be in the form of a written worksheet.

Worksheets are handed out at the beginning of a tutorial session and must be handed in at the end of the session. Tutorial exercises should be completed individually, however the assistants may initiate a discussion class to address common issues. Everyone will be free to partake in the discussion.

6.4 Homework Assignments

Homework assignments are in the form of substantially large programming exercises and should be completed individually. There will be a total of four homework assignments throughout the semester, each contributing a total of 5% to your final mark. The deadlines for these assignments will not be extended and no excuses will be accepted for late submissions.

Homework assignments incorporate a component of self study to serve as enrichment and to test your ability to apply and generalize the knowledge you’ve obtained in the course. It is important that you follow the submission instructions and compile-and-run instructions for each assignment exactly. Failure to comply with these instructions will lead to the loss of the mark for the assignment.

6.5 Exam Opportunities

There are a total of three official exam opportunities, each contributing 20% to your final mark. Each of the exam opportunities will be a 2-hour written open book test. You will be allowed to take any paper based material into an exam opportunity, but no programmable devices will be allowed.

The opportunities will not cover the same work. Each will cover the work done prior to the event and exclude the work covered in the previous opportunities. The detailed scope for each examination opportunity will be announced in advance via the course website.

To gain entrance to the final exam opportunity (exam opportunity 3), you must have a final mark of at least 30%. Failure to comply with this requirement will lead to exam refusal. If you obtain a final mark during the course of the semester of 50% or above, then you have already passed the course. However, you are still required to write all of the exam opportunities or their respective sick opportunities. There is no subminimum for any of the exam opportunities.

6.6 Re-exam and Sick Exam Entry Requirements

The re-exam will have the same scope as exam opportunity 3 and replaces only the result of exam opportunity 3. All other evaluation events will still contribute towards your final mark.

If you are admitted to the re-exam, the highest final mark you can obtain for COS 110 is 50%. If you write the sick exam then you may achieve a result above 50%.

To gain entrance to the re-exam or sick exam you must have had exam entrance, missed exam opportunity 3 with a valid excuse or obtained a mark of 40 to 49 after writing the final exam opportunity.
7 Querying

Upon the release of marks, a query deadline for all new marks will be announced. No queries will be considered after the query deadlines. Each deadline will be associated with a set of evaluation events.

7.1 Tutorials and Exam Opportunities

A query form will be made available on the course website. If you would like to query your mark, you must print out and fill in this form, staple it to your script and hand it in before the expiration of the query deadline for the particular event.

For exam opportunity 3 you will be allowed to peruse your script. Detailed instructions will be announced before the perusal date. The only queries considered during this perusal are: if questions have been overlooked for marking or if there is a mark addition error. No discussions about the contents of your script will be allowed during the perusal session.

7.2 Assignments and Practicals

Persons responsible for each practical or homework assignment will be announced on the course website. All queries should be directed to the appropriate person before the query deadlines expire.

7.3 Additional Help

A detailed list of assistants will be published. Students are requested to contact the assistants with questions about the work. The assistants will refer any questions to the lecturers when and where appropriate.

8 Excuses

8.1 Tutorials and Practicals

Only a percentage of your best practicals and tutorials will count toward your final mark. As such, there is the opportunity to still achieve a good mark for a particular assessment component if few enough of these are missed. Therefore no excuses will be accepted for any of these events.

8.2 Homework Assignments

You will have substantially more time to complete homework assignments. You are required to plan your schedule accordingly to ensure that you do not miss any deadlines. No excuses for any homework assignments will be accepted.

8.3 Exam Opportunities

Missing the first two exam opportunities will require that a valid medical certificate be handed in at CosiTeam (Computer Science reception). The hand-in deadline is three days after the particular exam opportunity has taken place. No certificates will be accepted at a later date.
You must write your name, student number and the title of the missed opportunity on the certificate. No certificate without this information will be processed. You will qualify for the sick test only if you missed exam opportunities 1 or 2 with a valid excuse.

There will be one sick test covering the work of the first two exam opportunities. Only students with valid medical certificates indicating that these opportunities were missed due to illness will be allowed to write the sick test. The sick test result will be used as a substitute for the missed opportunity. The date and venue of this test will be announced at a later stage.

Failure to attend exam opportunity 3 should be taken up with Faculty. Your valid medical certificate should be handed in before the deadline at the EBIT Faculty, complying with the Facultys requirements regarding such cases.

9 Schedule

9.1 Lectures

There are three lecture groups for COS 110. The lectures for each group is scheduled as follows:

- Afrikaans group (Group 01 in UP timetable):
  - Tuesday 08h30, IT 2-25
  - Thursday 13h30, IT 4-2
  - Friday 08h30, IT 2-24

- English group 1 (Group 02 in UP timetable):
  - Wednesday 12h30, IT 4-1
  - Thursday 07h30, IT 4-1
  - Friday 09h30, IT 4-1

- English group 2 (Group 03 in UP timetable):
  - Monday 08h30, EMB 4-152
  - Thursday 15h30, IT 4-5
  - Friday 11h30, IT 4-5

9.2 Tutorials

The tutorial slot indicated in the UP timetable has been cancelled due to too many clashes with other courses and tests. The following three new slots are now available for the tutorial:

- Mondays: 16h30 to 17h20, Thuto 3-2
- Wednesdays: 16h30 to 17h20, Thuto 3-1
- Thursdays: 16h30 to 17h20, Thuto 3-1
9.3 Practical sessions are tentatively scheduled for:

- Tuesdays: 14h30 to 17h30, venue(s) to be announced on the course website
- Tuesdays: 16h30 to 19h30, venue(s) to be announced on the course website
- Wednesdays: 14h30 to 17h30, venue(s) to be announced on the course website
- Thursdays: 10h30 to 13h30, venue(s) to be announced on the course website
- Fridays: 14h30 to 17h30, venue(s) to be announced on the course website

The above scheduling information and/or changes thereof will be confirmed via the course website and the study guide will be updated accordingly.

9.4 Exam Opportunities

The exam opportunities are tentatively scheduled as follows:

- Exam Opportunity 1: 29/08/2015, 11h30-13h30, VD Bijl hall, Roos hall and Louw hall
- Exam Opportunity 2: 17/10/2015, 11h30-13h30, Centenary 1, 2, 3 and 4
- Exam Opportunity 3: 17/11/2015, 16h00-18h00, Venue to be announced

Any changes to the above schedule will be announced on the course website.