Course Outline

1. COURSE INFORMATION

<table>
<thead>
<tr>
<th>Session Offered</th>
<th>Winter 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Name</td>
<td>Software Design</td>
</tr>
<tr>
<td>Course Code</td>
<td>SFTWRTECH 4SD3E</td>
</tr>
<tr>
<td>Date(s) and Time(s) of lectures</td>
<td>January 7th – April 7th, 2016 6:30 – 9:30pm</td>
</tr>
<tr>
<td>Program Name</td>
<td>Computing and Information Technology</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Mr. David Dhaliwal, B.Eng., M.A.Sc.</td>
</tr>
</tbody>
</table>

2. COURSE SPECIFICS

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Code</th>
<th>Type</th>
<th>Hours per term</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Classroom instruction</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>Laboratory, workshop or fieldwork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>Tutorial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td>Distance education</td>
<td></td>
<td></td>
</tr>
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</table>

Total Hours 39

<table>
<thead>
<tr>
<th>Resources</th>
<th>ISBN</th>
<th>Textbook Title &amp; Edition</th>
<th>Author &amp; Publisher</th>
</tr>
</thead>
</table>

Other Supplies Source

Avenue to Learn: http://avenue.mcmaster.ca

Prerequisite(s) Registration in Computing and Information Technology SFWRTECH3RQ3E – Software Requirements and Specification

Corequisite(s) None

Antirequisite(s) None

Course Specific Policies Consistent with the Bachelor of Technology’s policy to utilize e-learning as a complement to traditional classroom instruction, students are expected to obtain appropriate passwords and accounts to access Avenue to Learn for this course. Materials will be posted by class for student download. It is expected that students avail themselves of these materials prior to class.
### Assignments:
Assignments must be submitted at the agreed upon date and are due at the beginning of the class. Both a printed copy of the assignment and an Avenue to Learn submission with the appropriate document(s) for the assignment is required. **Late assignments will be penalized 2% per day.**

#### Example:
Assignment #1: 100 marks (20% of the 40% weight allocated to Assignments)
- If a student obtained 90 marks out of a possible 100 marks, and the assignment was submitted 2 days late.
- What this means is the following:
  o Each day late means 10 marks deducted per day, calculated as follows:
    - % per day means 2% of the 20% = 2/20
    - \( 2/20 \times (100 \text{ marks}) = 10 \text{ marks} \)
    - Each day late means 10 marks per day deducted
    - 2 days late, 10 marks per day equates to 20 marks to be deducted. 90 marks (original) – 20 marks (late) = 80 marks

**Revised Grade**
- 80 marks out of a possible 100 marks, and a total of 12% from a possible 15%.

### Software:
Students will be required to use Microsoft Office Visio to document models/diagrams for all assignments. **A penalty of 15 marks out of a possible 100 marks will be deducted for each Assignment where the above software is not used.**

### Final Exam:
The final examination covers the entire course and will be held during the regularly scheduled examination period.

### Departmental Policies
Students must maintain a GPA of 3.5/12 to continue in the program.

In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of “out-of-class” work for every scheduled hour in class. “Out-of-class” work includes reading, research, assignments and preparation for tests and examinations.

Where group work is indicated in the course outline, such collaborative work is mandatory.

The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.

Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class.

Instructor has the right to submit work to software to identify plagiarism.

### 3. SUB TOPIC(S)

| Week 1 | Review of the Course Outline  
*Introduction to Software Design*  
Chapter 1: Introduction  
Chapter 2: Overview of the UML Notation |
| Week 2 | Modeling – Class Diagrams and Database Design  
| Chapter 7: Static Modeling  
| ▪ Class Diagrams  
| Chapter 15: Designing Client/Server Software Architectures  
| ▪ Database Design |
| Week 3 | Modeling - Use Cases  
| Chapter 5: Overview of Software Modeling and Design Method  
| Chapter 6: Use Case Modeling  
| ▪ Unified Modeling Language (UML)  
| ▪ Use Cases and Use Case Diagrams |
| Week 4 | Modeling - Use Cases  
| Chapter 6: Use Case Modeling  
| ▪ Use Case Diagrams  
| Chapter 6: Use Case Modeling  
| ▪ Use Cases Descriptions |
| Week 5 | Modeling – Activity Diagrams  
| Chapter 6: Use Case Modeling  
| ▪ Activity Diagrams |
| Week 6 | Modeling – Activity Diagrams  
| Chapter 6: Use Case Modeling  
| ▪ Activity Diagrams  
| Overview of Object and Class Structuring  
| Chapter 8: Object and Class Structuring |

Mid-term recess (Monday, February 15 to Saturday, February 20)

| Week 7 | MID-TERM TEST (2.0 HOURS) – February 25th, 2016  
| *Assignment #1 Due - February 25th, 2016 |
| Week 8 | Modeling - Sequence Diagrams  
| Chapter 9: Dynamic Interaction Modeling  
| Chapter 11: State-Dependent Dynamic Interaction Modeling  
| ▪ Sequence Diagrams |
| Week 9 | Modeling - Sequence Diagrams  
| Chapter 11: State-Dependent Dynamic Interaction Modeling  
| ▪ Sequence Diagrams  
| Modeling - Statecharts  
| Chapter 10: Finite State Machines  
| ▪ Statecharts |
| Week 10 | Modeling - Statecharts  
| Chapter 10: Finite State Machines  
| ▪ Statecharts  
| Design Patterns  
| Chapter 12: Overview of Software Architecture  
| ▪ Design Patterns |
| Week 11 | Design Patterns  
| Chapter 12: Overview of Software Architecture  
| ▪ Design Patterns |
| Week 12 | Modeling - Sequence Diagrams |
Chapter 9: Dynamic Interaction Modeling  
Chapter 11: State-Dependent Dynamic Interaction Modeling  
- Sequence Diagrams

Week 13  
*Assignment #2 Due – April 7th, 2016*  
Assignment #2 – Presentations – April 7th, 2016

Classes end – Friday, April 8 2016  
Final examination period: Tuesday, April 12 2016 to Friday, April 29 2016  
All examinations MUST BE written during the scheduled examination period.

Note that this structure represents a plan and is subject to adjustment term by term. The instructor and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes.

4. **ASSESSMENT OF LEARNING *including dates***

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment #1-Design and Develop - Use Cases, Use Case Diagrams, Use Case Descriptions, Class Diagram, Database</td>
<td>20%</td>
</tr>
<tr>
<td>Thursday February 25th, 2016</td>
<td></td>
</tr>
<tr>
<td>Assignment #2- Design and Develop - Activity Diagrams, Sequence Diagrams, Statecharts</td>
<td>20%</td>
</tr>
<tr>
<td>Thursday April 7th, 2016</td>
<td></td>
</tr>
<tr>
<td>Mid-term Test</td>
<td>30%</td>
</tr>
<tr>
<td>Thursday February 25th, 2016</td>
<td></td>
</tr>
<tr>
<td>Final examination (tests cumulative knowledge)</td>
<td>30%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
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</table>

Percentage grades will be converted to letter grades and grade points per the University calendar.

5. **LEARNING OUTCOMES**

1. Design and develop use cases, and use case diagrams
2. Design and develop use case descriptions
3. Design and develop activity diagrams
4. Design and develop sequence diagrams
5. Design and develop statecharts
6. Design and develop class diagrams
7. Design and develop databases based on class diagrams

6. **POLICIES**

**Anti-Discrimination**

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.


**Academic Integrity**

You are required to exhibit honestly and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act of fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the
various kinds of academic dishonesty please refer to the Academic Integrity Policy, located at:

The following illustrates only three forms of academic dishonesty:
1. Plagiarism. E.g. the submission of work that is not own or for which other credit has been obtained
2. Improper collaboration in group work
3. Copying or using unauthorized aids in tests and examinations.

Requests for Relief for Missed Academic Term Work (Assignments, Mid-Terms, etc.)

The McMaster Student Absence Form is a self-reporting tool for Undergraduate Students to report absences DUE TO MINOR MEDICAL SITUATIONS that last up to 3 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period.

You may submit a maximum of 1 Academic Work Missed requests per term. It is YOUR responsibility to follow up with your Instructor immediately (NORMALLY WITHIN TWO WORKING DAYS) regarding the nature of the accommodation.

If you are absent for reasons other than medical reasons, for more than 3 days or exceed 1 request per term you MUST visit your Associate Dean’s Office (Faculty Office). You may be required to provide supporting documentation.

This form should be filled out immediately when you are about to return to class after your absence.
http://www.mcmaster.ca/msaf/

E-Learning Policy

Consistent with the Bachelor of Technology’s policy to utilize e-learning as a complement to traditional classroom instruction, students are expected to obtain appropriate passwords and accounts to access Avenue To Learn for this course. Materials will be posted by class for student download. It is expected that students will avail themselves of these materials prior to class. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail account, and program affiliation may become apparent to all other students in the course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about this disclosure please discuss this with the course instructor. Avenue can be accessed via http://avenue.mcmaster.ca.

Communications

It is the student’s responsibility to:
- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student’s designated primary e-mail account via their @mcmaster.ca alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student’s @mcmaster.ca alias.
- Check the McMaster/Avenue email and course websites on a regular basis during the term.

Turnitin (Optional)

This course will be using a web-based service (Turnitin.com) to reveal plagiarism. Students submit their assignment/work electronically to Turnitin.com where it is checked against the internet, published works and Turnitin’s database for similar or identical work. If Turnitin finds similar or identical work that has not been properly cited, a report is sent to the instructor showing the student’s work and the original source. The instructor reviews what Turnitin has found and then determines if he/she thinks there is a problem with the work. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld.
Protection of Privacy Act (FIPPA)
The Freedom of Information and Protection of Privacy Act (FIPPA) applies to universities. Instructors should take care to protect student names, student numbers, grades and all other personal information at all times. For example, the submission and return of assignments and posting of grades must be done in a manner that ensures confidentiality.
http://www.mcmaster.ca/univsec/fippa/fippa.cfm

Academic Accommodation of Students with Disabilities Policy
Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information consult McMaster’s policy for Academic Accommodation of Students with Disabilities

Students must forward a copy of the SAS accommodation to the instructor of each course and to the Program Administrator of the B.Tech. Program immediately upon receipt. If a student with a disability chooses NOT to take advantage of a SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. http://sas.mcmaster.ca

Student Code of Conduct
The Student Code of Conduct (SCC) exists to promote the safety and security of all the students in the McMaster community and to encourage respect for others, their property and the laws of the land. McMaster University is a community which values mutual respect for the rights, responsibilities, dignity and well-being of others. The purpose of the Student Code of Conduct is to outline accepted standards of behavior that are harmonious with the goals and the well-being of the University community, and to define the procedures to be followed when students fail to meet the accepted standards of behavior. All students have the responsibility to familiarize themselves with the University regulations and the conduct expected of them while studying at McMaster University.