

**3KA3 System Analysis & Design  
Fall 2012 Course Outline  
DeGroote School of Business  
McMaster University**

**COURSE OBJECTIVE**

This course introduces the process and methodology for system analysis and design. Students will be able to learn the process of system development, the traditional structural approach and modern object-oriented approach for system analysis and design, system development strategy and new trends of system development. Through class discussion, hands-on assignments and team project, students will learn how to translate business requirement into information systems that support a company's short- and long-term objectives.

**INSTRUCTOR AND CONTACT INFORMATION**

|   |   |
|---|---|
| <p><b>Dr. Yufei Yuan</b><br/><b>Instructor</b><br/><a href="mailto:yuanyuf@mcmaster.ca">yuanyuf@mcmaster.ca</a><br/>Office: DSB A204<br/>Office Hours:<br/>Tuesdays 1:30-2:20 pm<br/>Tel: (905) 525-9140 x23982</p> | <p><b>Zhiling Tu</b><br/><b>Teaching Assistant</b><br/><a href="mailto:tuz3@mcmaster.ca">tuz3@mcmaster.ca</a><br/>Office: DSB A211<br/>Office Hours:<br/>To be arranged<br/>Tel: (905) 525-9140 x 26034</p> |
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**Classroom: KTH 109**

**Class hours: Tuesdays 2:30 – 5:20 pm**

**COURSE ELEMENTS**

|                 |     |               |     |             |     |                   |     |
|-----------------|-----|---------------|-----|-------------|-----|-------------------|-----|
| Credit Value:   | 3   | Leadership:   | Yes | IT skills:  | Yes | Global view:      | Yes |
| Avenue:         | Yes | Ethics:       | Yes | Numeracy:   | No  | Written skills:   | Yes |
| Participation:  | Yes | Innovation:   | Yes | Group work: | Yes | Oral skills:      | Yes |
| Evidence-based: | Yes | Experiential: | Yes | Final Exam: | Yes | Guest speaker(s): | Yes |

**COURSE DESCRIPTION**

This course aims to develop an understanding of system analysis in a rapidly changing world. Approaches to systems analysis and design will be described, including traditional structural approach and modern object-oriented approach. Alternative development approaches such as adaptive development methodology and Model-Driven Architecture will also be discussed. Student will learn from lectures, as well as hands-on assignments and a team project for a real-world business analysis. Through the course students will learn how to translate business requirement into information systems that support a company's short- and long-term objectives.

## LEARNING OUTCOMES

The course provides basic understanding and practical skills of system analysis and design. It will help students to work in information systems related field in the future. The course will cover the following topics

- The need for system analysis and the role of system analysts
- Information systems development lifecycle
- System analysis approaches and methodologies
- Requirement analysis using structured approach and object-oriented approach
- System design and development strategy
- System architecture and user interface design
- Security and reliability issues
- Advances of system development approaches

## RECOMMENDED COURSE MATERIALS AND READINGS

Y. Yuan, Lecture Notes available at <http://avenue.mcmaster.ca/>

G. B. Shelly, T. J. Cashman, H. J. Rosenblatt, *Systems Analysis and Design*, 9th Edition, Thomson, 2012.

## OPTIONAL COURSE MATERIALS AND READINGS

Reference Textbook (Reserved in INNIS Library)

[R1] J. W. Satzinger, R. B. Jackson, and S. D. Burd, *Systems Analysis and Design in a Changing World*, Forth edition. Thomson, 2007,

[R2] J. A. Hoffer, J. F. George, and J. S. Valacich, *Modern Systems Analysis and Design*, Fifth Edition, Prentice Hall, 2008.

[R3] J. Conallen, *Building Web Applications with UML*, Addison-Wesley, 2000.

Reference Materials on the Web

IT Job Market <http://www.itjobuniverse.ca/>

IT World Canada <http://www.itworldcanada.com/>

InfoWorld <http://www.infoworld.com/index.html>

Tech Republic <http://techrepublic.com.com/>

Visible Analyst <http://www.visible.com/>

Microsoft Visio <http://office.microsoft.com/en-us/visio/default.aspx>

Unified Modelling Language <http://www.uml.org/>

IBM Rational Unified Process <http://www-306.ibm.com/software/awdtools/rup/>

Oracle on Demand <http://www.oracle.com/ondemand/index.html>

Outsourcing <http://www.outsourcing.com/>

Extreme Programming <http://www.extremeprogramming.org/>

|                   |
|-------------------|
| <b>EVALUATION</b> |
|-------------------|

Learning in this course results primarily from reading materials, in-class discussion, assignment, team projects, and exams.

### **Components and Weights**

The components of the course grade will be weighted as follows, tentatively. The instructor reserves the right to modify the weightings to adjust for more or less material covered during the semester.

| COMPONENT                     |            | PERCENT |
|-------------------------------|------------|---------|
| Assignments:                  | Individual | 30%     |
| Requirement gathering         | 7.5%       |         |
| Structured analysis           | 7.5%       |         |
| Object-oriented analysis      | 7.5%       |         |
| Interface and database design | 7.5%       |         |
| Project:                      | Team work  | 30%     |
| Proposal                      | 5%         |         |
| Presentation                  | 10%        |         |
| Report                        | 15%        |         |
| Final Exam                    | Individual | 40%     |
|                               | Total      | 100%    |

NOTE: The use of a McMaster standard calculator is allowed during examinations in this course. See McMaster calculator policy at the following URL:

<http://www.mcmaster.ca/policy/Students-AcademicStudies/examinationindex.html>

### **Grade Conversion**

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme.

| LETTER GRADE | PERCENT | LETTER GRADE | PERCENT |
|--------------|---------|--------------|---------|
| A+           | 90-100  | C+           | 67-69   |
| A            | 85-89   | C            | 63-66   |
| A-           | 80-84   | C-           | 60-62   |
| B+           | 77-79   | D+           | 57-59   |
| B            | 73-76   | D            | 53-56   |
| B-           | 70-72   | D-           | 50-52   |
|              |         | F            | 0-49    |

## **Communication and Feedback**

Students who are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential and anonymous email to the respective Area Chair ([hassank@mcmaster.ca](mailto:hassank@mcmaster.ca)) or Associate Dean ([adbusac@mcmaster.ca](mailto:adbusac@mcmaster.ca)).

Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Administrative Assistant.

Instructors are required to provide evaluation feedback for at least 10% of the final grade to students prior to Week #8 in the term.

Instructors may conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery.

Students who wish to have a course component re-evaluated must complete the following form:

[http://www.mcmaster.ca/policy/Students-AcademicStudies/Form\\_A.pdf](http://www.mcmaster.ca/policy/Students-AcademicStudies/Form_A.pdf)

In order for the component to be re-read:

- the component must be worth 10% or more of the final grade in the course
- students pay a fee of \$50 in Gilmour Hall #209 (receipt is then brought to APO)
- the Area Chair will seek out an independent adjudicator to re-grade the component
- an adjustment to the grade for the component will be made if a grade change of three points or greater on the 12 point scale (equivalent to 10 marks out of 100) has been suggested by the adjudicator as assigned by the Area Chair
- if a grade change is made, the student fee will be refunded

## **ACADEMIC DISHONESTY**

It is the student's responsibility to understand what constitutes academic dishonesty. Please refer to the University Senate Academic Integrity Policy at the following URL:

<http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf>

This policy describes the responsibilities, procedures, and guidelines for students and faculty should a case of academic dishonesty arise. Academic dishonesty is defined as to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. Please refer to the policy for a list of examples. The policy also provides faculty with procedures to follow in cases of academic dishonesty as well as general guidelines for penalties. For further information related to the policy, please refer to the Office of Academic Integrity at:

<http://www.mcmaster.ca/academicintegrity>

## **REQUESTING RELIEF FOR MISSED ACADEMIC TERM WORK**

Students may request relief from a regularly scheduled midterm, test, assignment or other course component in the following two ways: a) for absences from classes lasting up to five (5) days or b) for absences from classes lasting more than five (5) days.

**a) For absences from classes lasting up to five (5) days**

Students must use the MSAF (McMaster Student Absence Form). This is an on-line, self-reporting tool, for which submission of medical or other types of supporting documentation is normally not required. Students may use this tool to submit a maximum of one (1) request for relief of missed academic work per term. Students must follow up with their course instructors regarding the nature of the relief within two days of submitting the form. Failure to do so may negate the opportunity for relief. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in his/her course.

**b) For absences from classes lasting more than five (5) days**

Students cannot use the MSAF. They **MUST** report to the APO to discuss their situation and will be required to provide appropriate supporting documentation.

Students who wish to submit more than one request for relief of missed academic work per term cannot use the MSAF. They must report to the APO and discuss their situation with an academic advisor. They will be required to provide supporting documentation and meet with the Director.

The MSAF cannot be used during any final examination period.

Students who require accommodations to meet a religious obligation or to celebrate an important religious holiday must make their requests in writing within three weeks of the start of term to the APO.

Students seeking relief due to: work-related (for part-time students only) commitments; representing the university at an academic or varsity athletic event; and/or conflicts between two (or more) overlapping scheduled midterm exams, have the option of applying for special exam arrangements. Such requests must be made to the APO at least ten (10) working days before the scheduled exam along with acceptable documentation. There will be only one common sitting for the special exam. Instructors cannot themselves allow students to unofficially write make-up exams/tests. Adjudication of the request must be handled by the APO.

## **STUDENT ACCESSIBILITY SERVICES**

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for course work at the outset of term. Students must forward a copy of such SAS accommodation to the instructor normally, within the first three (3) weeks of classes by setting up an appointment with the instructor. If a student with a disability chooses NOT to take advantage of an SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. The SAS website is:

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for examinations on or before the last date for withdrawal from a course without failure (please refer to official university sessional dates). Students must forward a copy of such SAS accommodation to the instructor immediately upon receipt. If a student with a disability chooses NOT to take advantage of an SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. The SAS website is:

<http://sas.mcmaster.ca>

## **POTENTIAL MODIFICATIONS TO THE COURSE**

The instructor and 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. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

## **RESEARCH USING HUMAN SUBJECTS**

Research involving human participants is premised on a fundamental moral commitment to advancing human welfare, knowledge and understanding. As a research intensive institution, McMaster University shares this commitment in its promotion of responsible research. The fundamental imperative of research involving human participation is respect for human dignity and well-being. To this end, the University endorses the ethical principles cited in the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans:

<http://www.pre.ethics.gc.ca>

McMaster University has mandated its Research Ethics Boards to ensure that all research investigations involving human participants are in compliance with the Tri-Council Policy Statement. The University is committed, through its Research Ethics Boards, to assisting the

research community in identifying and addressing ethical issues inherent in research, recognizing that all members of the University share a commitment to maintaining the highest possible standards in research involving humans.

If you are conducting original research, it is vital that you behave in an ethical manner. For example, everyone you speak to must be made aware of your reasons for eliciting their responses and consent to providing information. Furthermore, you must ensure everyone understands that participation is entirely voluntary. Please refer to the following website for more information about McMaster University's research ethics guidelines:

<http://reo.mcmaster.ca/>

Organizations that you are working with are likely to prefer that some information be treated as confidential. Ensure that you clarify the status of all information that you receive from your client. You **MUST** respect this request and cannot present this information in class or communicate it in any form, nor can you discuss it outside your group. Furthermore, you must continue to respect this confidentiality even after the course is over.

## COMMERCE 3KA3 System Analysis & Design Fall 2012 Course Schedule

### COURSE SCHEDULE

| Week | Date    | Topic  | Readings  |
|------|---------|--|---|
| 1    | Sep. 11 | Introduction   | Ch. 1, [R1] Ch. 1-2   |
| 2    | Sep. 18 | Preliminary investigation and systems requirement gathering          | Ch. 2, 3  |
| 3    | Sep. 25 | Traditional structured approach to requirement analysis              | Ch. 4, 5<br>Assignment 1 Requirement collection due         |
| 4    | Oct. 2  | Modern object-oriented approach to requirement analysis              | Ch. 6<br>Project proposal draft due                         |
| 5    | Oct. 9  | Requirements evaluation and system development strategies            | Ch. 7<br>Assignment 2 Data flow diagram due                 |
| 6    | Oct. 16 | Interface design   | Ch. 8<br>Project proposal due                               |
| 7    | Oct. 23 | Database design  | Ch. 9<br>Assignment 3 Use case diagram due                  |
| 8    | Oct. 30 | System architecture  | Ch. 10  |
| 9    | Nov. 6  | Implementation and quality assurance                                 | Ch. 11,12<br>Assignment 4 database and interface design due |
| 10   | Nov. 13 | New trends in system development                                     | [R1] Ch. 17<br>Guest speaker                                |
| 11   | Nov. 20 | Lessons and success factors of system development and implementation | Literature review   |
| 12   | Nov. 27 | Project presentation   | Project report due  |





## **System Analysis Team Project**

### **Objective**

The objective of the student project is to do requirement analysis for an e-business initiative.

### **Regulations**

1. Students should form a team consisting of up to two people to do a term project. Good teamwork is essential for the success of the project. All team members will be graded equally for the project with the assumption that each member contributes a fair share to the project.
2. It is the students' responsibility to find a real world business application in electronic commerce or create one of your own. A project agreement should be signed with the company involved.
3. The project should be carefully selected to demonstrate the business value of the project and to be completed in a reasonable amount of time. It is better to complete a small high quality project than to leave a large project incomplete or poorly done.
4. The project proposal should be formally prepared with attached project agreement and approved by the instructor.
5. Students will make a presentation on the project at the end of the term
6. The final report of the project should be submitted in class as scheduled.

### **Project Proposal**

You need to form a team and select an interesting and valuable systems analysis project such as an e-commerce or mobile commerce applications. You can contact a real business or make your own business initiative. The project should be manageable, not too big and too complex so it can be accomplished in one term. You may discuss your idea with the instructor to get some advice. The proposal should include the project title, names of team members, the organization involved, and the brief description of the objective and the scope of the project. The proposal should be typed with no more than two pages. Handwriting is unacceptable.

### **Project Agreement**

If you do a project for a real business company, you need to follow the university ethics policy and sign an agreement with the company.

### **Project Presentation**

The project presentation will be evaluated by both the classmates and the instructor. The presentation is evaluated based on the real business value of the project and the quality of system analysis. PowerPoint should be used for presentation and the presentation file should be emailed to the instructor one day before the scheduled presentation date.

## **Project Report**

The project report should consist of the components highlighted in the project agreement. The report should be typed and submitted at the end of the class. You may share the report with the client and ask the client's comments. The project report should consist the following

**1. Project overview**

Introduce the background of the company; identify business problems and opportunities; and describe the objective and the scope of the project.

**2. Feasibility study**

Analyse economical, technical, and operational feasibility of the project.

**3. System requirement analysis**

Identify the requirement of the system. Identify major business events and things that need to be recorded.

**4. System modelling**

Model the system requirement by using traditional or object-oriented approach.

**5. Development strategy**

Make recommendations on outsourcing or in-house development

**6. System Architecture**

Describe the major client/server setting and communication networks.

**7. User interface design**

Illustrate the user interface for major functions

**8. Security and Performance Considerations**

Security requirement and performance requirement

## 3KA3 System Analysis Project Agreement

This proposal outlines a project to be undertaken by the **Project Group**, students taking Course 3KA3 at McMaster University, for the **Client**, \_\_\_\_\_

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### OBJECTIVE OF THE PROJECT

The Commerce course, 3KA3 – Systems Analysis & Design, is an advanced Information Systems course. The course teaches students basic concepts on systems analysis and design. The objective of the project for the **Project Group** is to conduct requirement analysis for an e-business initiative. The project will be presented in the class and evaluated by the instructor.

The objective of the project for the **Client** is to have students perform system analysis for an e-business initiative. The Client may want to start an e-business and wish to discuss with the Project Group about the idea and the company's needs. The Client also will provide necessary information voluntary in order to facilitate the Project Group to perform system analysis. The information that the Client may provide is indicated in the following section of the SCOPE OF THE WORK. The project report will be available for the Client to use upon Client's request.

**SCOPE OF THE WORK** (\* indicates that client may be involved to discuss or to provide some background information)

### Requirement Analysis for an e-business project

**1. Project overview \***

Introduce the background of the company; identify business problems and opportunities; and describe the objective and the scope of the project.

**2. Feasibility study \***

Analyse economical, technical, and operational feasibility of the project.

**3. System requirement analysis \***

Identify the requirement of the system. Identify major business events and things that need to be recorded.

**4. System modelling**

Model the system requirement by using traditional or object-oriented approach.

**5. Development strategy \***

Make recommendations on outsourcing or in-house development

**6. System Architecture**

Describe the major client/server setting and communication networks.

**7. User interface design\***

Illustrate the user interface for major functions

**8. Security and Performance Considerations\***

Security requirement and performance requirement

**FREE AND INFORMED CONSENT**

**Clients** are freely voluntary to participate; are made aware in advance about the nature of the study, what their tasks will be, and what procedures will be followed; are given the opportunity to ask questions and have their questions answered to their satisfaction; and have the right to withdraw consent and discontinue participation at any time without repercussion.

**PRIVACY AND CONFIDENTIALITY**

The **Project Group** agrees that any confidential information provided by the **Client** for the purposes of the project will be held in strict confidence at all times and will not be disclosed or used for personal benefit or for the benefit of third parties. Client's identity is not revealed in the reporting of the study's results, unless explicit permission of the Client is given. Some organizations may request anonymity in terms of the use of a pseudonym. Students will ask the client to specifically identify information that they want to have regarded as confidential and /or proprietary, and this list will be attached to the Project Proposal.

**LIABILITY**

It should be noted that members of the Project Group are undergraduate commerce students and are foregoing remuneration. The requirement analysis produced for this project is not in anyway presented as a professional service.

**CONTACT FOR ETHICAL CONCERNS**

For any ethical concerns, please contact the instructor Dr. Yufei Yuan (905) 525 9140 ext. 23982 or Michael J. Wilson, Research Ethics Officer, McMaster University, 905-525-9140 ext. 23142.

**PROJECT GROUP MEMBER PROFILES**

(Optional – include short biographies of group members)

**AGREEMENT**

The following parties agree to the terms outlined in the agreement,

For the **Project Group**:

For the **Client**:

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Name

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Name

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Signature

Date

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Signature

Date