

**Commerce 3KA3  
Systems Analysis and Design  
Winter 2022 Course Outline  
Information Systems Area  
DeGroote School of Business  
McMaster University**

**COURSE OBJECTIVE**

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

**INSTRUCTORS AND CONTACT INFORMATION**

<b>Esraa Abdelhalim</b>	<b>Rania Malik</b>
Instructor	Teaching Assistant
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Office: DSB - A211	Office:TBD
Office Hours: by appointment	Office Hours: by appointment

<b>Day/time</b> <i>(Eastern Time)</i>	<b>Location</b>	
	(if in-person)	(if online)
Co1: Friday (02:30 pm - 05:20 pm)	ABB B118	Zoom
Co2: Tuesday (02:30 pm-05:20 pm)	KTH 104	Zoom

**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: No	Guest speaker(s): Yes

## COURSE DESCRIPTION

This course aims to develop a holistic understanding of how information systems are being built. Starting from identifying the need for an information system to the maintenance of the system. In this course, different approaches (e.g., agile approach) to analyze systems requirements, and how to design a system and its databases will be discussed. Students will also learn about low-code platforms that can be used to develop such information systems. Students will learn through synchronous lectures, online and offline discussions, hands-on assignments, and a term project. Through the course, students will learn how to translate business requirements into information systems that support a company's short- and long-term objectives.

## LEARNING OUTCOMES

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

- The need for systems analysis and the role of systems analysts.
- Approaches for the development of information systems.
- Methods for gathering requirements to develop an information system.
- Approaches for analyzing systems requirements using traditional and new approaches.
- Designing Interface including effective output and input.
- Designing Databases.
- Designing human-computer interaction and data entry procedures.
- Quality assurance and implementation.

## COURSE MATERIALS AND READINGS

Avenue registration for course content, readings, and materials

<http://avenue.mcmaster.ca>

FREE

### Main Reference Textbook

- Kendall & Kendall, Systems Analysis and Design, 10<sup>th</sup> Edition, 2019

## EVALUATION

Learning in this course results primarily from reading materials, online and offline discussions, assignments, a term project, and exams.

### **Assignments**

The assignments are designed for students to gain hands-on experience of systems analysis and design techniques. Students should work on these assignments individually.

### **Midterm Exam & Quiz**

Exams and quizzes are used to test students' understanding of the systems analysis and design concepts. The coverage of the material and format of the exams will be determined in class. They are closed book and will be individually evaluated.

### **Term Project**

Students are required to do a project of requirement analysis for an e-business initiative. Students are expected to work in a group of 5-6 members.

### **Participation**

Participation of the course will take place synchronously and asynchronously (through Avenue to Learn). 20 marks are an evaluation of your participation in this portion. 10 marks will be accredited to the in-class participation and 10 marks will be accredited to the asynchronous participation. (*Note: this section is subject to change depending on the delivery mode of the course. Updates will be communicated as soon as they become available*)

### **In-Class Participation:**

In-class participation marks are based on the *quality* as well as the quantity of participation (with a greater emphasis on quality). Marks are NOT awarded for attendance only. Contributions are evaluated based on a three-point scale: 1) physically but not actively engaged; 2) some contribution; and 3) good contribution. Debate and challenge are important activities that help in the learning process, and the willingness of individuals to engage in such activities with their classmates is critical. The instructor will feel free to cold call on anyone at any time.

### **Opportunities for participation include:**

Asking questions; responding to questions posed by the instructor or other students; making relevant comments; and reflecting on the discussion that has occurred. Just raise your hand and wait for the instructor to acknowledge you before speaking. The instructor will strive to give all students equal contribution chances, but you have to show interest in participating by raising your hand.

**Opportunities for asynchronous participation include:**

Besides the synchronous classes, you have an opportunity to participate in the online discussions available on Avenue to Learn discussion forums. There will be two online discussion questions on Avenue to Learn for you to participate in. These discussion questions are shown as “reflections” in the course schedule of the course outline.

Please make sure to enter your discussion post into the discussion forum for your cohort. Your name is always linked to your comments (you cannot comment anonymously). Like in-class participation, the asynchronous participation marks are based on the quality as well as the quantity of participation (with a heavier emphasis on *quality*).

***Components and Weights***

<b>Assignments</b>		30%
Assignment 1 – Excel & Mendix	5%	
Assignment 2 – Data Flow Diagram	10%	
Assignment 3 – Interface Design	5%	
Assignment 4 – Database Design	10%	
<b>Midterm</b>		15%
<b>Quiz</b>		5%
<b>Project</b>		30%
Proposal	5%	
Presentation	10%	
Report	15%	
Bonus (if used Mendix or any other tool)	5%	
<b>Participation</b> (subject to change depending on delivery mode of the course)		
Synchronous		10%
Asynchronous		10%
<b>Total</b>		100%

**\*Note: All assignments must be handed in electronically through the course website by the deadline date and time specified for each component. The penalty for overdue assignments is 20% of the total assignment mark per day.**

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	00 - 49

### **Communication and Feedback**

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

Students who wish to correspond with instructor 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 Area Administrative Assistants.

Also please note that students should not send emails using Avenue to Learn site since email recipients do not see these emails except if they opened them from Avenue to Learn.

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

The instructor 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

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>

## ACADEMIC DISHONESTY

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>

Students may request relief from a regularly scheduled midterm, test, assignment or other course components in the following ways:

## REQUESTING RELIEF FOR MISSED ACADEMIC WORK

- For absences from classes lasting up to five (5) days; or**
- For absences from classes lasting more than five (5) days.**
- For conflicts arising from Faculty Office approved events**

- 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 as long as the weighting of the component is worth 29% of the final grade or less. Students must follow up with their course instructor 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.

If the value of the component is worth 30% or more, students must report to their Faculty Office (the APO for Commerce students) to discuss their situation and will be required to provide appropriate supporting documentation.

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

Students cannot use the MSAF. They MUST report to their Faculty Office (the APO for Commerce students) 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 possibly meet with the Manager.

**c) For conflicts arising from Faculty Office approved events**

Students unable to write a midterm at the posted exam time due to the following reasons: religious; work-related (for part-time students only); representing university at an academic or varsity athletic event; conflicts between two overlapping scheduled midterm exams; or other extenuating circumstances, have the option of applying for special exam arrangements. Please see the DeGroote Missed Course Work Policy for a list of conflicts that qualify for academic accommodation

<http://ug.degroote.mcmaster.ca/forms-and-resources/missed-course-work-policy/>

Such requests must be made to the Academic Programs Office at least ten (10) working days before the scheduled exam along with acceptable documentation.

Non-Commerce students must submit their documentation to their own Faculty Office and then alert the Academic Programs Office of their interest in an alternate sitting of the midterm.

The instructor cannot herself allow students to unofficially write make-up exams/tests. Adjudication of the request must be handled by the Academic Programs Office.

The MSAF cannot be used during any final examination period.

If a mid-term exam is missed without a valid reason, students will receive a grade of zero (0) for that component.

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.

**STUDENT ACCESSIBILITY SERVICES**

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:

<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.

**COURSE SCHEDULE**

WEEK	DATE	TOPIC AND ASSIGNMENTS
1	Jan.11 (Co2) Jan.14 (Co1)	<ul style="list-style-type: none"> <li>▪ Overview of Course Outline and Expectations</li> <li>▪ Introduction to Systems Analysis and Design</li> </ul> <p><b>Deliverables: Due Jan. 21<sup>st</sup> – 11:30 pm</b></p> <p><b>1- Assignment (1):</b> - Build an App from Excel using Mendix (Upload a Screenshot of Completion with your profile name)</p> <p><b>2- Reflection 1:</b> -Document your opinion of using Mendix to build an App via Excel. What things you liked or disliked (if any)</p>
2	Jan.18 (Co2) Jan. 21 (Co1)	<ul style="list-style-type: none"> <li>▪ Systems Development Life Cycle (SDLC)</li> <li>▪ The Agile Approach - Part 1</li> </ul> <p><b>Deliverables: Due Jan. 28<sup>th</sup> – 11:30 pm</b></p> <p><b>1- Reflection 2:</b> - <i>Read</i> the case “<i>Improving Efficiency in Knowledge Work</i>” uploaded on Avenue to Learn and <i>document</i> your opinion about the two approaches discussed. Make sure to mention at least two advantages and two disadvantages for each approach.</p> <p>2- <i>Submit</i> your group members' names.</p>
3	Jan. 25 (Co2) Jan. 28 (Co1)	<ul style="list-style-type: none"> <li>▪ The Agile Approach and Scrum - Part 2</li> <li>▪ Mendix Guest Speaker</li> </ul>
4	Feb. 1 (Co2) Feb. 4 (Co1)	<ul style="list-style-type: none"> <li>▪ Analyzing Systems using Data Flow Diagrams (DFDs)</li> <li>▪ Object-Oriented Approach (OOA) - Part 1</li> </ul> <p><b>Deliverables: Due Feb. 11 – 11:30 pm</b></p> <p>-Project Proposal</p>



5	Feb. 8 (Co2) Feb. 11 (Co1)	<ul style="list-style-type: none"> <li>▪ Object-Oriented Approach (OOA)- Part 2</li> <li>▪ Designing output</li> </ul> <p><b>Deliverables: Due Feb. 18<sup>th</sup> – 11:30 pm</b></p> <p><b>Assignment (2):</b> - Drawing a Data Flow Diagram (DFD)</p>
6	(Feb. 14 - 20)	Midterm recess
7	Feb. 22	Midterm Exam
8	Mar. 1 (Co2) Mar. 4 (Co1)	<ul style="list-style-type: none"> <li>▪ Designing Output &amp; Input</li> <li>▪ Designing Interface</li> </ul> <p><b>Deliverables: Due: March 11 - 11:30 pm</b></p> <p><b>Assignment (3):</b> - Designing an Interface</p>
9	Mar. 8 (Co2) Mar. 11 (Co2)	<ul style="list-style-type: none"> <li>▪ Entity Relationship Diagrams (ERDs)</li> <li>▪ Designing Databases (Part 1)</li> </ul>
10	Mar. 15 (Co2) Mar. 18 (Co1)	<ul style="list-style-type: none"> <li>▪ Designing Databases (Part 2)</li> <li>▪ Human Computer/Machine Interaction</li> </ul> <p><b>Deliverables: Due: March 25<sup>th</sup> - 11:30 pm</b></p> <p><b>Assignment (4):</b> - Designing a Database</p> <p><b>Quiz</b></p>
11	Mar. 22 (Co2) Mar. 25 (Co1)	<ul style="list-style-type: none"> <li>▪ Designing Data Entry procedures</li> <li>▪ Quality Assurance &amp; Implementation</li> </ul>
12	Mar. 29 (Co2) April 1 (Co1)	<ul style="list-style-type: none"> <li>▪ Project Presentation</li> <li>- Project Presentation File - <b>Due March 28, 11:30 PM</b></li> </ul>
13	Apr. 5 (Co2) Apr. 8 (Co1)	<ul style="list-style-type: none"> <li>▪ Guest speaker lecture</li> <li>▪ Project Presentation</li> <li>- Project Report - <b>Due April 10<sup>th</sup>, 11:30 PM</b></li> </ul>

## Systems Analysis and Design Term Project

### Objective

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

### Regulations

1. Students should form a team consisting of 5-6 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. If you find any problem coming up with ideas for your project, consult the instructor for help.
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 as the template uploaded on Avenue 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 as scheduled in the course outline.

### 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 application. 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 a brief description of the objective and the scope of the project. The proposal should be typed with no more than two pages using *Times New Roman font 12pt, double spaced*.

### Project Presentation

The project presentation will be evaluated by both the TA and the instructor. The presentation is evaluated based on the real business value of the project and the quality of the systems analysis and design. PowerPoint should be used for presentation and the presentation file should be uploaded on Avenue one day before the scheduled presentation date.