Course SCM 2160 - Supply Chain and Operations Management

Winter 2018

Instructor

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Introduction

Operations management concerns the management of the transformation of inputs into outputs. An operations manager is principally concerned with the design, planning, direction, and control of facilities, processes, and activities required to transform material, labour, capital, energy, and skills into goods and services.

Course Objectives

The major objective of this course is to introduce you to the fundamental concepts of operations management from a general management perspective. So, although you may not be involved in the direct management of operations in future employment, it will be useful to understand the problems and complexity faced by operations managers.

At the conclusion of this course, you should appreciate that operations management is not simply a set of well-understood "nuts-and-bolts" techniques. Rather, it is primarily a management discipline that is strategically important for survival in today's more competitive environment.

Course Material


package of cases and readings mainly from the Harvard Business School or the Richard Ivey School of Business

Methods of Instruction

Case Studies. requires active student participation.

Each of the teaching case studies for this course presents an operations management situation in which a decision must be made in light of a number of tradeoffs and alternatives. For days in which we do a case discussion, class time will be devoted to discussing the situation, the managerial and technical implications of various options, and action to be taken to implement preferred options. There is no one right answer to a case but there are definitely approaches that
address the issues and recognize the tradeoffs involved. Thus, the lack of a single correct answer does not imply that all suggestions are equally valid.

For each case discussion, you have been assigned some "Questions for Consideration." These questions are for guidance only, to help you focus on certain aspects of a particular case. At a minimum, you should be prepared to address each question in class.

Overall, putting yourself in the position of the decision maker, the real issue is what should be done and why? That is, as the decision maker, how do you plan to resolve the situation?

**Other Methods** may include article discussions, exercises, Lectures, Programming, demonstrations, mini-tests, site visits, and student presentations.

**Performance Evaluation**

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<table>
<thead>
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<tbody>
<tr>
<td>Class participation</td>
<td>17.5%</td>
</tr>
<tr>
<td>Mini Tests (Total of two tests 15% each)</td>
<td>30%</td>
</tr>
<tr>
<td>Class presentation</td>
<td>10%</td>
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<tr>
<td>Summaries</td>
<td>7.5%</td>
</tr>
<tr>
<td>Final examination content based</td>
<td>35%</td>
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</table>

**Participation.** (Rough guideline for class average score in participation is 62% - 68%)

Participation is very important. We expect you to be prepared for each and every class and to participate by making a "substantive contribution" in a fair number of classes during the term.

In general, a substantive contribution helps push the understanding of the class forward. Examples include, but are not limited to, being involved in a discussion of assigned material, arguing your point of view during a case discussion, asking a relevant question, suggesting an alternate viewpoint, or redirecting our attention to something else in need of discussion.

Thus, you do not have to be a top participant in each class, nor do you have to have the "right answer" when you do participate. Please do not hesitate to speak simply because you think your ideas might be challenged; this is the place for such challenges. The participation grade is intended to be a stimulant to discussion, not a deterrent.

Although we expect you to attend every class, attendance is not the same as participation. On **very rare and exceptional** occasions, you may be unprepared for a class and do not wish to be called upon. If so, you should let your instructor know before class (preferably by voicemail or e-mail), but please attend. You do not have to explain why you are unprepared; your instructor will simply expect more from you on other days.
We judge participation for each session on a scale of 0 to 4, where 4 indicates a substantive contribution for the day and 0 indicates no contribution. An average contribution, such as building on points made by others, is worth 1.

At the end of the course, overall participation will be determined by assigning grades to the best and worst participators and scaling others accordingly. **Note:** This makes it possible for everyone to do well in participation.

**Case summary:** As you will be preparing for all the cases before coming to the class as an added incentive you will be provided ¾ mark for each summary submitted prior to the start of the discussion in the class. This summary need only be 1 page hand written notes. You have to submit only 10 out of 11 summaries.

**Mini-Test.** Mini-test is multiple-choice test, based on assigned study material. Mini-test will be administered, first individually (75%) and then as a group exercise (25%). As it is important to master the course content, but scarce class time is best spent on other activities, I want you to "get ahead" so that you can make more informed contributions to other class activities. The mini-test procedure is a good, well-developed and well-tested method for doing this. The approach serves two purposes. First, it encourages you to be prepared to do your fair share in upcoming sessions. Second, it should raise your group's level of understanding of the assigned study material - beyond the level of any individual group member. More detail about the mini-test requirements and procedures will be specified in a separate handout.

**Content-Based Final Exam.** (Comprehensive) This exam will be designed to test your knowledge of the assigned readings and text material. They may consist of various types of questions (e.g., case scenario, essay style, short answer, multiple-choice, problems). The nature of exam will be made clear in class, as we approach exam time. However, for exams, note that the only electronic device allowed will be a calculator and the only other material allowed will be an English-language dictionary. Any other items require your instructor's permission well before the exam.

Also, please note the following statement from the University of Manitoba, Undergraduate Calendar, Academic Schedule:

> Students are reminded that they must remain available until all examination and test obligations have been fulfilled.

**Other Information and Requirements**

**Attendance.** We start on time and we expect you to attend each and every session. On those **very rare and exceptional occasions** when you cannot attend, let your instructor know in
advance (by voicemail or e-mail). You do not have to explain why you are not attending; your instructor will simply expect your contribution on other days.

**Class Seating and Name Cards.** Please choose a permanent seat at the beginning of our second session. As well, bring your name cards to each session. I need to objectively grade you for your class participation; this arrangement will help me do so.

**Study Groups.** During the first week, you should form study groups of five or six people. The purpose of these groups is to help you learn by discussing each case or session with others prior to class. As well, I may periodically ask you to perform other group tasks. Please submit lists of study group members at the beginning of our third session. Anyone not in a group will then be assigned arbitrarily to one.

**Operations Visits.** With your study group, you are encouraged to visit one operation in the Winnipeg area. Your group will be responsible for making all arrangements for the visit (including choosing a site and lining up contacts). During our second or third session, you will be asked to sign a release form concerning these site visits.

**Presentation Topics:** A 8 to 10 minutes presentation has to be given by each group the presentation topics can be:

1. Operations visit in Winnipeg area (most preferred).
2. Six Sigma Quality
3. Total Quality Management
4. Bench Marking
5. Taguchi
6. MBNQA
7. Poka Yoke
8. Kan Ban
9. Any other topic of your choice (Get clearance from the instructor)
Final grades are based on the student’s weighted mark and performance relative to other students. The following are the tentative grade cutoffs.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Cutoff</th>
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<tbody>
<tr>
<td>A+</td>
<td>92-100</td>
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<tr>
<td>A</td>
<td>82-91.9</td>
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<td>B+</td>
<td>77-81.9</td>
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<td>B</td>
<td>71-76.9</td>
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<td>C+</td>
<td>67-70.9</td>
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<td>C</td>
<td>61-66.9</td>
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<td>D</td>
<td>51-60.9</td>
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<td>F</td>
<td>0-50.9</td>
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These tentative cutoffs are subject to adjustment up or down depending on the relative performance of the current class compared to prior classes that have taken the course with the same instructor. The grades may also be compared with other instructors to maintain overall fairness.

Note: Submission of late assignment is not allowed. No make-up mini test will be held. No extension will be provided for group presentation. If you have a valid medical certificate for missing any of the exercises mentioned above your score will be adjusted to the final exam. You will be allowed to write a Def. final exam if you provide proper medical documentation to the administrative office.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Jan 4, 9</td>
<td>Introduction to the course</td>
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<td></td>
<td>Discussion: Preparing for a Case Discussion</td>
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<td></td>
<td><strong>Process Flow, Capacity, and Bottlenecks</strong></td>
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<td>Jan 11</td>
<td>Ch6: Process analysis; Case: process Fundamentals (Summary 1 on case due), Productivity Problems</td>
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<td>Jan 16</td>
<td>Ch4: Strategic Capacity Management; Case: Capacity Analysis Sample Problems (Summary 2 on case due)</td>
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<td>Jan 18</td>
<td>Ch7: Strategic process design; Case: Universal pulp and Paper west coast decision (Summary 3 on case due)</td>
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<tr>
<td>Jan 23</td>
<td>Discussion: Synchronous Operations (summary 4 on ch13, 14 and 15 of the book: The Goal; due)</td>
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<td>Jan 25, Jan 30</td>
<td>Case: National Cranberry Cooperative (Abridged) (Summary 5, Due)</td>
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<td>Feb 1</td>
<td>Mini Test 1 Material Covered in class discussion + Class notes + Ch 1, 2, 3, 4, 5, 6, 7</td>
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<td><strong>Quality Management</strong></td>
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<tr>
<td>Feb 6</td>
<td>Ch8: Managing Quality; Case: Deutsche Allgemeinversicherung (Summary 6 on case, due)</td>
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<td>Feb 8</td>
<td>Exercise: Quality tools + Statistical Process Control</td>
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<td><strong>Planning and Control</strong></td>
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<td>Feb 13</td>
<td>Ch 9: Aggregate sales and operations planning</td>
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<td>Case: MacPherson Refrigeration (Summary 7 on case due)</td>
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<td>Feb 15, 27</td>
<td>Ch11: Material Requirement Planning; Case: illustrious corporation</td>
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<td>Mar 1</td>
<td>Ch 10 Inventory control exercises</td>
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<td>Mar 6</td>
<td>Ch12: Lean Operation; JIT/ Toyota production system</td>
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<td><strong>Supply Chain Management</strong></td>
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<td>Mar 8</td>
<td>Ch13: supply chain strategy; Case: The ITC e-Choupal Initiative (Summary 8 on case, Due)</td>
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<td>Mar 13</td>
<td>Case: Zara IT and fast Fashion (summary 9 due)</td>
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<tr>
<td>Mar 15</td>
<td>Mini Test 2 (Material Covered in class discussions + Class notes from after MT1 + Ch 8, 9, 10, 11, 12, 13, 14)</td>
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<td><strong>Project Management and Forecasting</strong></td>
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<td>Mar 20</td>
<td>Ch 5: Project Management (Gantt Chart, Network Development, CPM)</td>
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<td>Mar 22</td>
<td>Case: IDEO product development (Summary 10 on case, Due)</td>
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<td>Ch3: Demand Management and forecasting</td>
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<td>Mar 27, 29 Apr 3</td>
<td>Presentations</td>
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<td>Apr 5</td>
<td>Case: Microlite S.A.: The Pan-Orient Decision (Summary 11 on case due)</td>
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<td></td>
<td>Ch2: Operations and supply Strategy</td>
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</table>

Final Exam is content based and Comprehensive + common for all sections
Note: Where ever chapters are mentioned before the cases, you are supposed to read both the chapter and the case before coming to the class. In the class we will discuss the case by using the fundamentals and theory of the said chapter

Daily Assignments (alphabetical order):
Note: We have attempted to match the content of cases and assigned readings to some degree. However, there is no implied direct match; readings may contain concepts that are not in a given case and vice versa. As well, for the reading assignments, notice the use of the terms study, read, and skim (where "study" means to gain enough understanding that you are ready to explain the material, "read" means to become familiar with the material as you would a news article, and "skim" means to be aware of the material).

Capacity Analysis: Sample Problems (case package)
Additional Reading: Study Jacobs et al., Chapter 4.
Instructions:
1. Study the example problems in the case. Ensure that you understand how the various calculations are made and why they make sense.
2. Be prepared to explain the concepts to the class or apply the concepts to similar material in class.

Deutsche Allgemeinversicherung (case package)
Additional Reading: Study Jacobs et al., Chapter 8.
Questions for Consideration:
1. Why is DAV using Statistical Process Control (SPC)? What are the primary challenges in applying SPC to a service industry compared with manufacturing?
2. If you were to explain (in about thirty minutes) the concept of a p-chart to, say, a group of bank tellers who have little background in SPC, how would you do it?
3. How large should each sample be for the experiment described by Schoss and Kluck?
4. The first twelve weeks of the data in Exhibit 4 represent the diagnostic period for the Policy Extension Group. What are the 3-sigma control limits for the process? In which of the subsequent weeks is the process out of control (if any)?
5. As Annette Kluck, what are your specific implementation plans? How do you intend to begin improving the performance of the operation?

IDEO Product Development (case package)
Questions for Consideration:
1. How would you characterize IDEO's process, organization, culture, and management?
2. As Dennis Boyle, what advice would you give to David Kelley and why? That is, should IDEO accept the Visor project as is (on a dramatically reduced schedule)? Should they try to persuade Handspring's management to change its aggressive launch schedule? Or, should they simply decline the project? Please consider both the IDEO and Handspring perspectives.

Illustrious Corporation (case package)
Additional Reading: Study Jacobs et al., Chapter 11.
Questions for Consideration:
1. What is the difference between dependent and independent demand?
2. As Nancy Barfield, prepare the operating plan for the next ten weeks. (There is a worksheet available with the case to help with your calculations.)
3. Does your plan indicate any potential problems? If so, what might you do about them?

The ITC eChoupal Initiative (case package)
Additional Reading: Study Jacobs et al., Chapter 13.
Questions for Consideration:
1. What was ITC's motivation for creating the eChoupal?
2. What were the old and new physical flows and information flows in the channel?
3. What principles did ITC employ as it built the newly-fashioned supply chain?
4. What barriers did ITC face in embarking on this project?
5. As Mr. Sivakumar, how do you plan to proceed to develop this platform for the future?

MacPherson Refrigeration Limited (case package)
Additional Reading: Study Jacobs et al., Chapter 11.
Questions for Consideration:
1. What are the relevant tradeoffs at MacPherson?
2. Construct an aggregate plan better than the ones shown in the case.
3. What criteria and assumptions did you use?
4. How flexible is your plan?
5. How would your plan change if MacPherson produced to order rather than to stock?
6. What effect does the timing of peaks have?
7. What effect would additional periods have?
Note: Before constructing your aggregate plan, please ensure that you adjust the data in the case according to any instructions handed out for your section. For your convenience, a spreadsheet will be made available to help with your trial-and-error aggregate planning attempts. You are not required to use the spreadsheet. It just makes life easier.

National Cranberry Cooperative (Abridged) (case package)
Additional Reading: Study Jacobs et al., Chapters 4.
Questions for Consideration:
1. Prepare a detailed flow diagram showing how "process fruit" is processed at RP1. Be sure to distinguish between wet and dry berries.
2. Identify the capacities at each stage of the process. Please do your analysis in barrels and barrels per hour. (Note: bbls. = barrels)
3. What are the current bottlenecks and how might they change?
4. As Mel O'Brien, what facilities changes, if any, would you propose for RP1 for the 1981 season? What influences your decision?
5. How would you implement your plan? page 10

Preparing for a Case Discussion
Reading: Study Jacobs et al., Chapter 1.
Instructions: Be ready to discuss how to prepare for a case session and expect to discuss a small case in class.

Process Fundamentals (case package)
Additional Reading: Review Jacobs et al., Chapters 6 and 7.
Instructions:
1. Study the case material thoroughly and make certain that you understand the concepts, examples, and terminology.
2. Be prepared to explain the concepts to the class or apply the concepts to similar material in class.

Project Management Exercise
Reading: Review Jacobs et al., Chapter 5.
Instructions:
Be prepared to discuss and/or do in-class group exercises based on the assigned reading.

Quality Tools Exercise
Reading: Study Jacobs et al., Chapter 8
Instructions:
Be prepared to discuss and/or do in-class group exercises based on the assigned reading.

Statistical Process Control Exercise
Reading: Study Jacobs et al., Chapter 8.
Instructions:
Be prepared to discuss and/or do in-class group exercises based on the assigned reading.

Synchronous Operations
Reading: Study Chapters 13 to 15 from Goldratt and Cox, The Goal: A Process of Ongoing Improvement (case package)
Questions for Consideration:
1. What are the analogies between the hike and a typical plant? For example, the troop hiking along the trail represents raw material being processed. There are many others; what are they?
2. While on the hike, what does Alex realize about statistical fluctuations and dependent events? How does this help him understand his plant?
3. While on the hike, what does Alex realize about a balanced plant? How does this help him understand his plant?
4. What other lessons did Alex learn while on the hike? How might these help him to manage?
5. Which performance measures are appropriate at the operational level? Why?
Note: In the Goldratt material, the term throughput refers to throughput rate (i.e., capacity or output rate), not throughput time.

Toyota Production System / Lean (JIT) Operations
Reading: Study Jacobs et al., Chapter 12.
Questions for Consideration:
1. Prepare for a discussion about the Toyota Production System (often called just-in-time production, lean operations, etc).
2. Which aspects of this system are "Japanese" and which could be applied in other industrial settings? That is, what is so Japanese about Japanese approaches to manufacturing?
3. What explains the success the Japanese have had with their approaches to production?
4. How is the notion of waste used in the Toyota Production system?

AACSB Assurance of Learning Goals and Objectives.

The Asper School of Business is proudly accredited by AACSB. Accreditation requires a process of continuous improvement of the School and our students. Part of “student improvement” is ensuring that students graduate with the knowledge and skills they need to succeed in their careers. To do so, the Asper School has set the learning goals and objectives listed below for the Undergraduate Program. The checked goal(s) and objective(s) will be addressed in this course and done so by means of the items listed next to the checkmark.

<table>
<thead>
<tr>
<th>Goals and Objective in the Undergraduate Program</th>
<th>Goals and Objectives Addressed in this Course</th>
<th>Course Item(s) Relevant to these Goals and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Quantitative Reasoning</td>
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<tr>
<td>A. Determine which quantitative analysis technique is appropriate for solving a specific problem.</td>
<td>✔</td>
<td>Case discussions</td>
</tr>
<tr>
<td>B. Use the appropriate quantitative method in a technically correct way to solve a business problem.</td>
<td>✔</td>
<td>Case discussions</td>
</tr>
<tr>
<td>C. Analyze quantitative output and arrive at a conclusion.</td>
<td>✔</td>
<td>Case discussions</td>
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<td>2 Written Communication</td>
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<tr>
<td>A. Use correct English grammar and mechanics in their written work.</td>
<td>✔</td>
<td>Written case assignments/Summaries</td>
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<tr>
<td>B. Communicate in a coherent and logical manner</td>
<td>✔</td>
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<tr>
<td>C. Present ideas in a clear and organized fashion.</td>
<td>✔</td>
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<td>3 Ethical Thinking</td>
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<td>A. Identify ethical issues in a problem or case situation</td>
<td>✔</td>
<td>Cases: Hillview Hospital, ITC echaupal, DAV</td>
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<tr>
<td>B. Identify the stakeholders in the situation.</td>
<td>✔</td>
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<tr>
<td>C. Analyze the consequences of alternatives from an ethical standpoint.</td>
<td>✔</td>
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<tr>
<td>D. Discuss the ethical implications of the decision.</td>
<td>✔</td>
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<tr>
<td>4 Core Business Knowledge</td>
<td>✔</td>
<td>Entire course</td>
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Academic Integrity

It is critical to the reputation of the Faculty of Management and of our degrees, that everyone associated with our faculty behave with the highest academic integrity. As the faculty that helps create business and government leaders, we have a special obligation to ensure that our ethical standards are beyond reproach. Any dishonesty in our academic transactions violates this trust. Specifically, acts of academic dishonesty include, but are not limited to:
- using the exact words of a published or unpublished author without quotation marks and without referencing the source of these words
- duplicating a table, graph or diagram, in whole or in part, without referencing the source
- paraphrasing the conceptual framework, research design, interpretation, or any other ideas of another person, whether written or verbal (e.g., personal communications, ideas from a verbal presentation) without referencing the source
- copying the answers of another student in any test, examination, or take-home assignment
- providing answers to another student in any test, examination, or take-home assignment
- taking any unauthorized materials into an examination or term test (crib notes)
- impersonating another student or allowing another person to impersonate oneself for the purpose of submitting academic work or writing any test or examination
- stealing or mutilating library materials
- accessing test prior to the time and date of the scheduled sitting
- changing name or answer(s) on a test after that test has been graded and returned
- submitting the same paper or portions thereof for more than one assignment, without discussions with the instructors involved

Group Projects and Group Work

Many courses in the Faculty of Management require group projects. Students should be aware that group projects are subject to the same rules regarding academic dishonesty. Because of the unique nature of group projects, all group members should exercise special care to ensure that the group project does not violate the policy on Academic Integrity. Should a violation occur, group members are jointly accountable unless the violation can be attributed to a specific individual or individuals.
Some courses, while not requiring group projects, encourage students to work together in groups (or at least do not prohibit it) before submitting individual assignments. Students are encouraged to discuss this issue as it relates to academic integrity with their instructor to avoid violating this policy.
In the Faculty of Management, all suspected cases of academic dishonesty are passed to the Dean’s Office, in order to ensure consistency of treatment.