

Fall 2010-2011

**INDU 6331: Advanced Quality Control
(4 credits)**

Instructor: Dr. Anjali Awasthi

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Course Timings:

| <i>Days</i> | <i>Timings</i> | <i>Room</i> | <i>Location</i> |
|-------------|----------------|-------------|-----------------|
| M | 17:45-20:15 | H-460 | SGW |

Office Hours: Tuesdays, 11:00 am - 1:00 pm

Prerequisite: None

Textbook: Introduction to statistical quality control by Douglas C. Montgomery, 6th edition, Wiley Publications, 2008

Course Description: The objective of this course is to provide a conceptual and practical knowledge of techniques for advanced quality control. The course contents include Introduction to advanced quality control and improvement concepts, Fundamentals of statistical methods and theoretical basis for quality control methods, Advanced and newly developed quality control and improvement methods such as modified and acceptance charts, multiple stream process control, control charts with adaptive sampling and engineering process control for quality, International standards of acceptance sampling, Economic design and implications of quality control and improvement procedures. The class lectures will be supported by in-class exercises and case studies. A project is required. The lectures are organized as follows:

| <i>Week</i> | <i>Topics</i> | <i>Textbook Chapter</i> |
|---|---|-------------------------|
| 1 | Introduction to quality control, Statistical fundamentals | 1,3 |
| 2 | Statistical Inference about process quality | 4 |
| 3 | Methods for statistical process control | 5 |
| <i>Assignment 1, Last date for selection of project topics, October 4</i> | | |
| 4 | Control charts for variables | 6 |
| 5 | Control charts for attributes | 7 |
| <i>Midterm Exam (Chapter 1,3-7), October 25</i> | | |
| 6 | Process and measurement system capability analysis | 8 |
| 7 | Cusum and EWMA charts | 9 |

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|---|---|----|
| 8 | Advanced Process Control Charts –I | 10 |
| <i>Assignment 2, November 22</i> | | |
| 9 | Advanced Process Control Charts –II | 10 |
| 10 | Lot by lot acceptance sampling for attributes | 15 |
| 11 | Acceptance sampling by Variables | 16 |
| <i>Project Presentations with report (December 6)</i> | | |
| <i>Final Exam (Chapter 1-10), TBA</i> | | |

Course website: INDU 6331 on Moodle, Access through myconcordia portal

Grade Composition

| | |
|--------------|-----|
| Homework (2) | 10% |
| Project | 15% |
| Midterm Exam | 25% |
| Final Exam | 50% |

Note:

1. There is no direct mapping between numerical percentage grades and final letter grades for the course.
2. The projects are to be done in groups of three students. Project reports should be submitted at the time of presentations.
3. There are two homework assignments. Assignments are to be done in groups of three students and submitted in both paper form and online via the electronic assignment submission system (<https://fis.encs.concordia.ca/eas/>) before the due dates. Late submissions will be penalized.
4. All assignments and project reports should be accompanied with expectations of originality form (<http://www.encs.concordia.ca/documents/expectations.pdf>).
5. **Student should prepare to be present on the dates of project presentations, midterm and final exam.** Alternate date requests will not be entertained other than in health related emergency cases.

Student expectations

Students are expected to attend every class. Some material may only be covered in class and not made available on the course website. You are expected to read the assigned material and actively participate in class discussions. You are expected to be respectful of other people's opinions and to express your views in a calm and reasonable way. Disruptive behavior will not be tolerated. The Code of Rights and Responsibilities is available at:

<http://rights.concordia.ca>

If you cannot attend class for any reason, unforeseen or not, you are required to come and talk or write to me as soon as possible.

Academic code of conduct

Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behavior related to the obtention of academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of

Conduct and **may lead to severe penalties up to and including suspension and expulsion.** For example, you are not permitted to:

- Copy from anywhere without indicating where it came from
- Let another student copy your work and then submit it as his/her own
- Hand in the same assignment in more than one class
- Have unauthorized material or devices in an exam. Note that you do not have to be caught using them – just having them is an offence
- Copy from someone's else exam
- Communicate with another student during an exam
- Add or remove pages from an examination booklet or take the booklet out of an exam Room
- Acquire exam or assignment answers or questions
- Write an exam for someone else or have someone write an exam for you
- Submit false documents such as medical notes or student records
- Falsify data or research results

You are subject to the Academic Code of Conduct. Take the time to learn more at <http://provost.concordia.ca/academicintegrity/>

Student Services

To know about the student services offered at Concordia University, visit the following links:

- **Concordia Counselling and Development** offers career services, psychological services, student learning services, etc.

<http://cdev.concordia.ca>

- **The Concordia Library Citation and Style Guides:**

<http://library.concordia.ca/help/howto/citations.html>

- **Advocacy and Support Services:**

<http://supportservices.concordia.ca>

- **Student Transition Centre:**

<http://stc.concordia.ca>

- **New Student Program:**

<http://newstudent.concordia.ca>

- **Office for Students with Disabilities:**

<http://supportservices.concordia.ca/disabilities/>

- **The Academic Integrity Website:**

<http://provost.concordia.ca/academicintegrity/>

Disclaimer

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.