

MBA 581: Green Belt 02: Analyze, Improve and Control

SCHOOL OF BUSINESS AND MANAGEMENT

3 Credits

Effective Date (Winter/2022)

List any Pre-requisite or Co-Requisite:

MBA 579 - Green Belt 01: Define and Measure

Access to the Internet is required.

All written assignments must be in Microsoft-Word-compatible formats.

See the library's APA Style Guide tutorial for a list of resources that can help you use APA style.

Faculty Information

[INSTRUCTOR MAY INSERT PERSONAL MESSAGE IF DESIRED]

Contact Information

Faculty Name: FACULTY NAME

Contact Information: CONTACT INFORMATION

Course Description

This course covers the second part of a two-phase learning plan for Six Sigma Green Belt. This second course of Six Sigma Green Belt is focused on the last three phases of the Define, Measure, Analyze, Improve, and Control (DMAIC) process, which are Analyze, Improve and Control. The primary goal of Analyze phase is to identify and assess the root causes of problems and to propose solutions that are focused on the underlying causes. During the Improve phase of DMAIC, project teams implement these proposed solutions and select the best course of action to improve the business performance. When changes are implemented and it is determined that the improvement is achieved, it's time to sustain the win and to ensure that results will be consistent over long term which is the main goal of the Control phase. Accordingly, this course is designed to help students gain an in-depth understanding of the key decision points, systems and processes, tools, and methods that facilitate Analyze, Improve and Control phases of Six Sigma projects. The cohesive body of knowledge that is presented in this class constructs the foundation that students need for the effective execution of the last three phases of DMAIC strategy.

Course Resources

Required and recommended resources to complete coursework and assignments are found on the course [Reading List](#). Access is provided through the Reading List link in your online course as well as from the library homepage ("Find Your Reading List" button).

Note: Required resources that must be purchased by the student are tagged "Purchase from a vendor of your choosing." Required resources with a direct link, "Available through CityU Library", are available electronically at no cost to students.

Students in Canada may purchase course resources from the [Canada Bookstore](#), and students outside the U.S. and Canada should contact their advisor or textbook coordinator for additional information.

Course Outcomes

After completion of this course learners will be able to:

- Define and apply regression analysis, hypothesis testing and design of experiment (DOE) principles to determine casual relationships among different variables.
- Describe the objectives of statistical process control (SPC) including monitoring process performance and reducing variation within a process.
- Utilize root cause analysis methods to identify causes of problems.
- Apply lean tools and techniques to eliminate the seven-classic wastes.
- Select and apply basic concepts of total productive maintenance during control phase of DMAIC.

Additional Information

CORE CONCEPTS, KNOWLEDGE, AND SKILLS

- Exploratory Data Analysis
- Hypothesis Testing and Regression Analysis
- Design of Experiments (DoE)
- Root Cause Analysis
- Lean Tools
- Statistical Process Control (SPC)
- Total Productive Maintenance

Grading Scale

The grades earned for the course will be calculated using City University of Seattle's decimal grading system, found in the current University Catalog (<https://www.cityu.edu/catalog/>).

Grading rubrics with details on how each assignment will be graded are located under *Assignments* and/or in *My Grades* in the online course menu. Students should review the rubric for each assignment prior to completing their work in order to understand how it will be assessed.

Overview of Required Assignments	% of Final Grade
Instructor Determined Activities (including participation)	30%
Quizzes (3)	30%
Individual Phased Project: Process Improvement – Analyze, Improve and Control Phases	40%
TOTAL	100%

Course Assignments and Grading

The instructor will provide grading rubrics that will provide more detail as to how each assignment will be graded.

Instructor Determined Activities (Weekly Discussions)

Whether in class, online, or in a mixed mode setting, students will be graded on their participation in classroom discussions; their ability to present, explain, or defend alternative viewpoints; and the degree to which they have mastered the concepts and principles inherent in the study of business management. Written work will be assessed not only on relevance to the subject presented, but also on adherence to good written form, APA style, and professional presentation. Your instructor may also choose to create additional activities to support learning in the classroom or online.

Components	% of Grade
Quality of Responses	50%
Quantity of Responses	30%
Timeliness	20%
TOTAL	100%

Quizzes (3)

The purpose of these formative assessments is to give students and the instructor the opportunity to assess the achieved level of learning progress. These results allow students to focus on those areas that need further clarification and enable the instructor to assist those students that need additional support. The questions will be selected from key domains of the Analyze, Improve and Control phases of the DMAIC methodology. These multiple-choice assessments follow ASQ (American Society for Quality) exam format and are designed in a way to equip students with practical knowledge in three primary areas: (1) to find and validate the root causes of business problems and ensure that improvement is focused on causes, rather than symptoms, (2) to identify a solution to the problem that the project aims to address, and (3) to ensure that the gains obtained during Improve phase are maintained long after the project has ended.

Components	% of Grade
Completion of Quiz by Due Date	15%
Accuracy of Solution	85%
TOTAL	100%

Individual Phased Project: Process Improvement - Analyze, Improve and Control Phases

For this three-phase project, the instructor will provide a real-world scenario to students. This case will challenge students' understanding and application of key concepts of Six Sigma and DMAIC methodology. Students will utilize Minitab Software to analyze the information provided for the scenario. The project is designed to encourage students to apply proper methods, tools, techniques, and frameworks of Six Sigma to complete root cause verification analyses,

generate ideas on how to remove sources of variation in the process and develop monitoring processes and procedures that will ensure long-term success. Students will submit a final report summarizing Minitab results, their interpretations, and conclusions in 4-6 pages using proper APA format. Additional resources are not required.

Required sections for the Process Improvement - Analyze Phase include:

- a. Multivariate and Correlation Analysis: Use Minitab to execute a Multivariate analysis and /or Correlation analysis to evaluate the strength of relationship between two or more quantitative variables. Interpret the results and make conclusions.
- b. Hypothesis testing and Tests for Means and Variance: Select and justify a Hypothesis test; then use Minitab to test and validate your hypothesis. Interpret the results and make conclusions.

Required sections for the Process Improvement - Improve Phase include:

- a. Design of Experiment: Utilize Minitab to run a full factorial DOE based on your conclusions from Analyze Phase. Interpret the results of your DOE and make conclusions.
- b. Root Cause Analysis: Implement a complete root cause analysis process to discover root cause of the problem defined for the project and identify appropriate solutions.
- c. Lean Elements: Select a lean principle and offer solutions to maximize value to the customer while using minimum resources as possible. Justify your solutions.

Required sections for the Process Improvement - Control Phase include:

- a. Statistical Process Control: Select and justify a Statistical process control (SPC) chart to monitor and control a process. Then use Minitab to calculate and identify the elements (LCL, CL and UCL) of your selected control chart.
- b. Visual Factory: Offer solutions for visual factory and describe how data and information is conveyed in a lean environment to those who need it. Justify your solution.

Components	% of Grade
Requirements	35%
Analysis	30%
Recommendations and Justifications	15%
Style Including Structure, Flow, Grammar, and Spelling	10%
APA	10%
TOTAL	100%

Course Policies

Late Assignments

A critical aspect of management is to meet predefined deadlines. Therefore, all assignments are expected to be submitted when due. No late assignments are accepted. Life-situations do occur. When an issue arises coordinate with the instructor prior to the assignment's due date and the due date may be adjusted. It is in the best interest of the student to ensure that all assignments are submitted on time.

Participation

Class participation will be evaluated during class. Participation includes being prepared for class discussions and contributing meaningful content when appropriate. It also includes individual effort contributed to the team project.

Professional Writing

Assignments require error-free writing that uses standard English conventions and logical flow of organization to address topics clearly, completely, and concisely. CityU requires the use of APA style.

University Policies

Students are responsible for understanding and adhering to all of City University of Seattle's academic policies. The most current versions of these policies can be found in the [University Catalog](#) that is linked from the CityU Web site.

Antidiscrimination

City University of Seattle and its staff and faculty are committed to supporting our students. We value equity, diversity, and inclusion as a way of life as well as the educational opportunities it provides. CityU will not tolerate any form of discrimination based on race, color, ethnicity, sexual orientation, gender identification, socioeconomic status, or religious values. If you have experienced any discrimination based on any of the above, we encourage you to report this to the University. Please report this to your instructor. If you do not feel safe reporting this to your instructor, please report to the Provost or to the Vice President of Student Affairs.

Non-Discrimination & Prohibition of Sexual Misconduct

City University of Seattle adheres to all federal, state, and local civil rights laws prohibiting discrimination in employment and education. The University is committed to ensuring that the education environment is bounded by standards of mutual respect and safety and is free from discriminatory practices.

In the U.S., the University is required by Title IX of the Education Amendments of 1972 to ensure that all of its education programs and activities do not discriminate on the basis of sex/gender. Sex include sex, sex stereotypes, gender identity, gender expression, sexual orientation, and pregnancy or parenting status. Sexual harassment, sexual assault, dating and domestic violence, and stalking are forms of sex discrimination, which are prohibited under Title IX and by City University of Seattle policy. City University of Seattle also prohibits retaliation against any person opposing discrimination or participating in any discrimination investigation or complaint process internal or external to the institution. Questions regarding Title IX, including its application and/or concerns about noncompliance, should be directed to the Title IX Coordinator. For a complete copy of the policy or for more information, visit <https://my.cityu.edu/titleix> or contact the Title IX Coordinator.

In Canada, in compliance with the British Columbia Human Rights Code, the Alberta Human Rights Act, WorksafeBC, and the Workers' Compensation Board of Alberta, the University believes that its environment should at all times be supportive and respectful of the dignity and self-esteem of individuals. Discrimination, harassment and bullying conduct, whether through person to person behaviour or via electronic communications such as email or social media is not acceptable and will not be tolerated. As an educational institution, it is our responsibility to cultivate an environment of excellence, equity, mutual respect and to recognize the value and potential of every individual. The University will take all necessary steps to meet or exceed the requirements of the law to prevent discrimination, harassment and bullying. The Respectful Workplace Policy for the prevention of discrimination, harassment and bullying policy and procedure can be found at <https://www.cityu.edu/discover-cityu/about-cityu/> under the Policies section or at <https://www.cityuniversity.ca/about/>.

Religious Accommodations

City University of Seattle has a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The University's policy, including more information about how to request an accommodation, is available in the University Catalog and on the my.cityu.edu student portal. Accommodations must be requested by the 20% mark of this course (e.g. day 14 of a ten-week course, day 7 of a 5-week course) using the Religious Accommodations Request Form found on the student dashboard in the my.cityu.edu student portal.

Academic Integrity

Academic integrity in students requires the pursuit of scholarly activity that is free from fraud, deception and unauthorized collaboration with other individuals. You are responsible for understanding CityU's policy on academic integrity and adhering to its standards in meeting all course requirements. A complete copy of this policy can be found in the [University Catalog](#) in the section titled *Scholastic Honesty* under *Student Rights & Responsibilities*.

Attendance

Students taking courses in any format at the University are expected to be diligent in their studies and to attend class regularly.

Regular class attendance is important in achieving learning outcomes in the course and may be a valid consideration in determining the final grade. For classes where a physical presence is required, a student has attended if s/he is present at any time during the class session. For online classes, a student has attended if s/he has posted or submitted an assignment. A complete copy of this policy can be found in the [University Catalog](#) in the section titled *Attendance Policy for Mixed Mode, Online and Correspondence Courses*.

Support Services

Disability Services Accommodations Statement

Students with a documented disability who wish to request academic accommodations are encouraged to contact Disability Support Services to discuss accommodation requests and eligibility requirements. Please contact Disability Support Services at disability@cityu.edu or 206.239.4752 or visit the [Disability Support Services](#) page in the my.cityu.edu portal. Confidentiality will be observed in all inquiries. Once approved, information about academic accommodations will be shared with course instructors.

Library Services

CityU librarians are available to help students find the resources and information they need to succeed in this course. Contact a CityU librarian through the [Ask a Librarian](#) service, or access [library resources and services online](#), 24 hours a day, seven days a week.

Smarthinking

As a CityU student, you have access to 10 free hours of online tutoring offered through Smarthinking, including writing support, from certified tutors 24 hours a day, seven days a week. Contact CityU's Student Support Center at help@cityu.edu to request your user name and password.