Course Syllabus
FS 475 Statistical Quality Management of Food Products, 3 cr
Fall 2016

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Class Hours: TR 9:30-10:45 AM
Classroom: TLC 140 (UI Campus)
Office hours: By appointment (in person or Facebook (academicjoyner)

Recommended Course Pre-requisites: STAT 251, FS 302/303

Course Description:

It's much more difficult to make sure 12,000 hamburgers are both safe to eat and still taste great than it is to make sure 12 hamburgers are safe and tasty. This is why quality control is so important in the food industry. In this course, we'll learn about the quality management programs that are used by many industries to maintain and improve the quality of their products and services. We'll also learn how to use statistical tools to monitor and assess quality. These are the same programs and tools used by food companies to monitor food quality, so the information in this course is great to have if you're interested in a career in the food industry.

Student Learning Goals Table

At the end of this course, students should be able to:		**Course topics (&dates) that advance these learning goals:**	**This objective will be assessed primarily by:**
LO1	**Identify the function and importance of quality control/assurance to food and bioprocessing operations.**	All, main focus Weeks 1 and 2	In-class activities, case studies, homework assignments, quizzes, exams, group project
LO2	**Discuss the basic principles of quality management programs and how they are applied in industrial settings.**	All	In-class activities, case studies, homework assignments, quizzes, exams, group project
LO3	**Apply statistical quality techniques for maintaining safety and quality in food and bioprocessing materials and products.**	All, main focus Week 3 and later	In-class activities, case studies, homework assignments, quizzes, exams, group project
LO4	**Analyze statistical data using statistical analysis software (QIMacros) and interpret the output in terms of quality management.**	All, main focus Weeks 10-13	In-class activities, case studies, homework assignments, quizzes, exams, group project

Required Textbook:

Statistical Process Control by John S. Oakland (ISBN 978-0750669627)
This book is available at the campus bookstore, and on Amazon.com and Barnes&Noble.com.

Website: https://bblearn.uidaho.edu

Course Format:

This course is designed to be a blended learning/flipped course. In a flipped course, students review the lecture material BEFORE class. Lecture material may be given in the form of handouts, reading assignments, video clips, lecture notes, or other media, and is available on the course website. Class time is then used for content application. Example class activities include discussion of lecture material, clarification of concepts, problem-solving, group activities, and interactive demonstrations.

Being in a flipped course does not mean that you have to learn all of the material on your own! Reviewing the material before class frees up class time that would normally be spent on lecture for activities that promote a deeper understanding and better retention of the material. There will be plenty of opportunities to ask questions and practice the material under instructor guidance.

This course includes a course project. The course projects are individual, but you will be divided into project teams of 3-5 members. Each member must provide constructive criticism and feedback on the other member's projects as part of a peer-review process. Broad course project expectations are reviewed in the Grade Determination section, and guidelines for the project are discussed in a separate handout.

To encourage good team dynamics, class activities aside from the course project will often involve group work. If these activities are graded, a grade may be determined based on group results, individual results, or a combination of the two.

Facebook for Office Hours and Content Posting

A Facebook group will be set up for the course. The Facebook group will be private; the instructor will add you to the group once you send them your username. You are welcome to create a separate Facebook account instead of using your primary account for this course.

Course office hours will be held on Facebook. You can post questions or use chat to talk to the instructor. Office hours will be arranged during the first week of the course.
Course assignments and announcements will be posted on both Facebook and Blackboard.
Assignments posted on Facebook will have a link to the assignment on Blackboard.
You can choose not to participate in the Facebook group without penalty, but be sure to keep an eye on Blackboard to stay current with assignments and announcements.

Assignment Submission:

All assignments must be submitted through Blackboard. *Please do not turn in hard copies or email assignments to the instructor; you will receive an email stating that your submission will not count unless it is uploaded on Blackboard*. Upload links will be given for each assignment. An explanation of how to use the links is available on the course main page. More detailed instructions are provided in the Blackboard Help files.

You are expected to submit assignments on time. Valid University of Idaho excused absences (e.g. severe illness) are acceptable reasons to submit an assignment late without penalty, provided the appropriate documentation is submitted to the instructor. Poor/no internet connections and busy schedules are not valid excuses for late submission.

Assignment Submission (continued):

Bblearn outages are also not valid excuses, as the dates for these outages are posted ahead of time. Please plan accordingly when completing your assignments.

Note that submitting an assignment online is just like turning in a hard copy to the instructor. Once you click "submit", your assignment has been turned in. If you forget to upload a file or upload the wrong file, please contact the instructor BEFORE the assignment is due to have your submission reset. You will have two "do-over" opportunities per semester, i.e., the instructor will reset a total of two submissions so you can upload the correct files. Once you use up your "do-overs", you will not be able change your submitted files.

When you submit assignments, please make sure every file you submit has your name and a clear title stating what the homework is. For example, "HJoyner Bottle Weight Control Chart" and "JoynerDEFINEVideo" are good titles; "HW6", "ControlChart", and "Workbook1" are not good titles. You are asked to name your files in this manner so that the instructor can easily tell who submitted what file and the contents of the file. If you do not title your files appropriately, a 5% penalty will be given.

There are several ways to turn a physical copy of an assignment into an electronic copy. Instructions for doing so are posted on the course website. Please note that if you do not consolidate your files as much as possible (for example, uploading 8 scanned pages as 8 jpgs instead of putting the images into a single pdf or Word file), a 5% penalty will be given. Also, please make sure any scanned or imported images are clearly legible. If the instructor cannot read your work, you will not receive credit for it.

Grade Determination:

Assessment	Total Possible Points		Points to Letter Grade
Three Midterms (200 points each)	600		A= 1800 - 2000 pts
Comprehensive Final (optional)	400		B= 1600 - 1799 pts
Participation/Homework	400		C= 1400 - 1599 pts
Quizzes	100		D= 1200 - 1399 pts
Course project	500		F= <1400 pts
Total Points:	2000		(extra credit earns additional points)

Midterms and Final Exam**:**

The midterms and are open resource. You may use any resource you like (e.g. textbook, notes, internet, calculator) to complete the exams. The exam files will be posted on Blackboard and you will have 24 hours to complete the exam and upload your work through the provided submission link. Midterm due dates are posted on Blackboard.

The final exam is optional. The final exam is closed book. You may bring a calculator and one 8.5x11-inch page of notes to each exam. You may write notes on both sides of the paper. Please bring a pencil and eraser; do not complete the exams in pen. A 5-point penalty will be given if the exam is completed in pen. If you choose to not take the final exam, your three midterm scores will be averaged, scaled to be out of 400 points, and used as your final exam score. If you do choose to take the final exam, your final exam score will be the higher of 1. the scaled average of your three midterm scores and 2. your final exam score.

Grade Determination (continued):

Midterm Corrections for Credit**:**

Each midterm will be graded twice. On the first grading, answers will be marked as right or wrong with no partial credit awarded. Students will have the opportunity to regain points missed during the second grading by resubmitting corrected solutions to the instructor no later than one (1) week after the graded midterms are returned. Credit awarded for correct resubmissions will not exceed 50% of the points originally assigned to the problem for a conceptual error and 75% of the points originally assigned to the problem for a calculation error. To obtain maximum points for a missed problem, the error must be identified and classified (conceptual, mathematical, etc.). The problem must be fully reworked/rewritten with the correct solution clearly identified. The final score on the midterm will be the initial score plus the number of points earned back from the corrections, or the score after the second grading.

The opportunity to make up points will not be offered for quizzes, homework, and the final exam. These assessments will have partial credit and will be graded only once.

Class Participation:

Class participation comprises the following:

Attendance**:**

Attendance is essential to your success in this class. Excused absences include university-sanctioned events, illness and family emergencies. You should become engaged in interactive learning processes, participate in classroom discussions, and ask questions when a particular topic or point is unclear. Appropriate professional behavior demonstrating respect for fellow students and instructor is expected.

Phone clicker questions**:**

You will be required to answer questions asked via PollEverywhere, an online polling service that allows participants to answer questions by texting to a shortcode. This service is free to students and does not require a smartphone to use. You will be required to certify your phone at the beginning of the semester so that you can receive credit for your answers. If any difficulties in using the polling system arise, the instructor should be notified immediately. If you do not have a phone with a texting plan, you may participate by creating an account on PollEverywhere and registering that account with the instructor. You must be logged into your account when answering via the website to receive credit for your answers. If you forget your phone or computer, you may write your answers on a piece of paper and submit them to the instructor at the end of class.

Stick questions**:**

Stick questions will be asked to encourage student participation, feedback, and critical thinking. Each student will have their name written on a Popsicle stick at the beginning of the semester. Sticks will be chosen at random for answering questions, explaining concepts, reporting on group discussions, etc. Student responses will be tracked on the sticks via a marking system. Stick questions may be individual or group questions.

NOTE: The number of participation points plus homework points that can be earned over the course is greater than 400, but your participation/homework grade is capped at 400.

Grade Determination (continued):

Homework Problem Sets**:**

Homework problem sets will be due approximately every two weeks. A homework problem will be assigned for every lecture. You will need to bring in or upload your attempt at each homework problem prior to the start of each class (e.g. if you are assigned a problem on September 5 and the next class is on September 9, you will need to turn in or upload your work by September 9, 9:30 AM Pacific time). Paper copies may be turned in right before class into the turn-in folder at the front of the room (NOT the group folders!). This initial submission will only be checked for completion, and returned immediately. You will have an opportunity to compare answers with your group and revise your answer as necessary. Homework sets will be due after 3-6 problems are assigned. The due date of the problem sets will be announced in advance.

Lecture Assignments:

You are expected to review the assigned lecture material prior to the class period in which it is to be discussed. This practice will permit the instructor to expand on and clarify the topics. Unannounced quizzes may be given if it becomes apparent that the lecture material is not being reviewed. Reading ahead is encouraged.

Quizzes:

Short quizzes will be given with each lecture. These quizzes are to determine whether you have reviewed and have a basic understanding of the key points of the lecture material. You will have three (3) opportunities to take each quiz. It is recommended that you take the quiz for the first time without reviewing the material. Then review the material and take the quiz again. If you are not satisfied with your score, review the material you missed and take the quiz a third time. Only your highest score will be used to determine your grade.

Course Project:

The course project is intended to give you experience using the Six Sigma method for identifying and correcting quality problems. There are two options for the course project:

Option 1: You may select an aspect of your life that you would like to improve (e.g., exercising more, being on time to class/meetings, or reducing sarcastic statements)
Option 2: You may work with a company on an improvement project for a process or product they have. *If you select this option you must have your project approved by the company before starting the project.*

Regardless of which option you choose, your project must be approved by the instructor. The course projects are individual, although you will be working in groups to receive peer feedback throughout the project process. Several oral and written reports on project progress will be required. A final project report and presentation is due at the end of the semester. Guidelines for the report and presentation formats will be given along with the project instructions. A rubric for each project peer-review will also be given. Both your project group and the instructor will grade your oral and written reports, and your overall grade for each report will be a combination of peer and instructor grades. Your final score for the group project will be a combination of oral and written report grades. More information on the details of the grading will be included with the grading rubrics.

Grade Determination (continued):

Late Submission and Make-up Policy**:**

Unless otherwise stated, assignments will be due at 5 PM one calendar week from the date of announcement or distribution. Late assignments will be accepted at a cost of 20% off the grade per each late day. Therefore, if an assignment is one (1) day late, the highest attainable grade will be 80%. Assignments missed due to a valid University excuse will not be considered late, provided that proper documentation of the reason the assignment was missed is submitted with the assignment.

Make-up of missed exams is contingent on making arrangements prior to the exam. Student must notify instructor of any unforeseen circumstance resulting in a missed exam at least 24 hours before the exam. The type of make-up exam will be oral, essay, or a combination of the two and must be completed within one week of scheduled exam time.

Calculator and Laptop:

A scientific calculator capable of natural logarithms is required for the homework, quizzes and exams. You need to bring this calculator to every class. It is not required that you bring a laptop to class; however, you are encouraged to do so as classroom activities may involve the use of computer software. It is recommended that you designate at least one group member to bring a laptop to every class.

Students With Disabilities:

WSU: Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center.

UI: Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 306 in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course. Phone: 208-885-6307; email: dss@uidaho.edu; website: www.uidaho.edu/dss.

Academic Honesty:

Students who violate WSU's or UI's Standards of Conduct for Students will receive an F as a final grade in this course, will not have the option to withdraw from the course and will be reported to the Office of Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these standards: http://conduct.wsu.edu/default.asp?PageID=338.

Plagiarism:

Plagiarism is defined by Webster's Dictionary as, "*to steal and pass off the ideas or words of another as one's own*." There are two general forms of plagiarism:

(a) Unintentional: the use of other writers' words, phrases, sentences, paragraphs as though they were your own *without understanding* the need to cite the original source. Unintentional plagiarism normally occurs when the individual does not understand the conventions of scientific writing and the need to cite sources of information.

Plagiarism (continued):

(b) Intentional: the use of another writers' work and claiming it as your own. Intentional plagiarism includes *knowingly copying* or incorporating sections of books, articles, or other sources into your work without citation.

To evade plagiarism, you must acknowledge the source of information. In scientific writing, this can be performed in the text of your work through the use of surnames of authors and the year of publication (*e.g.*, Smith et al., 2003) or by using numbers enclosed by parentheses, which correspond to specific citations in the reference section. In addition to employing citations in the text, plagiarism can be avoided by applying special techniques when writing about information obtained from a source:

(a) Paraphrase: rewording information in which you accurately present the main ideas from the source but do so using your own organization, words, and sentence structures.
(b) Summary: a concise statement of the main idea from a section within a source.
(c) Direct quotation: use of quotes surrounding the passage written by another author.

In general, paraphrasing (a) and the use of summary statements (b) are very common techniques used in scientific writing. Use of quotations (c) in scientific writing is rare and should be avoided.

Plagiarism is dishonest and is **not** tolerated. If caught using all or portions of a current or former classmate's writing or other sources of information (*e.g.*, purchase a paper), a grade of zero will be given for the exercise. Additional penalties for plagiarism are possible as outlined in the *Washington State University Student Handbook*.

Washington State University Campus Safety:

Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the "***Alert, Assess, Act***" protocol for all types of emergencies and the *"Run, Hide, Fight"* response for an active shooter incident. Remain ***ALERT*** (through direct observation or emergency notification), ***ASSESS*** your specific situation, and ***ACT*** in the most appropriate way to assure your own safety (and the safety of others if you are able).

Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI's *Run, Hide, Fight* video and visit the WSU safety portal.

Statement of Firearm Regulations:

The University of Idaho bans firearms from its property with only limited exceptions. One exception applies to persons who hold a valid Idaho enhanced concealed carry license, provided those firearms remain concealed at all times. It is a violation of University policy if an enhanced concealed carry license holder's firearm is displayed, other than in necessary self-defense. Please contact local law enforcement (call 911) to report firearms on University property.

Course Content and Fundamental Course Concept and Questions

This course focuses on quality management principles and programs used in the food and bioprocessing industries. Quality is a major concern in these industries, as a lack of quality can not only result in a loss of money, but loss of life.

Fundamental course concepts are the main themes underlying the course. All of the material can be related back to this concept. Fundamental course questions are related to the fundamental concept. Learning the information provided in the course should provide the needed information to answer these questions.

The fundamental course concept in this course is *continuous improvement*. This is the goal of every quality management program. Nothing is ever perfect; there is always a way to make a product or service better.

There are two fundamental questions in this course:

1. *How can we tell a product, process, or service needs improvement?*
2. *How do we know the change(s) we made resulted in improvement?*

These questions will be answered by the material covered in the course. The fundamental concept and questions appear in the Course Outline below so you can match the questions with the course content.

Course Outline (may be adjusted to include/exclude topics as time allows)

Week	Date	Topic	Major Assignments
Fundamental Course Concept: Continuous Improvement			
Fundamental Question 1: How can we tell a product, process, or service needs improvement?			
DEFINE Phase			
1	August 22-28	Course intro; Introduction to quality	
2	August 29-September 4	Six Sigma and other quality management programs	Project Topics Due (Sept. 4)
3	September 5-11	Data collection, project management, basic quality tools	
4	September 12-18	Statistics used in quality management: basic concepts, histograms, failure analysis	DEFINE Phase Oral Report Due (Sept. 14) DEFINE Phase Written Report Due (Sept. 18)
MEASURE Phase			
5	September 19-25	Root Cause Analysis	Midterm #1 (Sept. 25)
6	September 26-October 2	Statistics used in quality management: probability, and sampling Statistical Process Control tools: sampling plans	
7	October 3-9	Statistical Process Control tools: sampling plans	
8	October 10-16	Statistical Process Control tools: control charts for variables	
9	October 17-23	Statistical Process Control tools: control charts for variables and attributes	MEASURE Phase Oral Report (Oct. 19) MEASURE Phase Written Report (Oct. 23)

Fundamental Question 2: How can we tell the change(s) we made resulted in improvement?			
ANALYZE/IMPROVE Phase			
10	October 24- October 30	Statistical Process Control tools: control charts for attributes Statistics used in quality management: normality	Midterm #2 (Oct. 30)
11	October 31- November 6	Statistics used in quality management: hypothesis testing	
12	November 7-13	Statistics used in quality management: one- and two-factor ANOVA	
13	November 14-20	Statistics used in quality management: variable control charts analysis and revision	
14	November 21-27	Fall Break, no class	
15	November 28- December 4	Synthesis of course material: troubleshooting process issues	ANALYZE/IMPROVE Phase Oral Report (Nov. 28) ANALYZE/IMPROVE Phase Written Report (Dec. 4) Midterm #3 (Dec. 4)
16	December 5-11	Course wrap-up Project presentations	Final Project Presentation (Dec. 6 and 8)
		Comprehensive Final Exam (Optional)	**Final Project Written Report (Dec. 17)**

Exams may include some additional topics from lecture, handouts and/or reading material that may not be covered in the book.

I have read through the FS 475 Fall 2016 syllabus in its entirety and I understand the expectations and policies for this course.

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Printed name

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Signature Date