From:	noreply@wsu.edu
To:	curriculum.submit
Subject:	609973 Engineering and Technology Management Requirements Revise - Revise or Drop Graduate Certificate
Date:	Friday, September 18, 2020 11:58:05 AM
Attachments:	2020.09.18.11.53.23.74.FormData.html 2020.09.18.11.53.22.70.currentCatalogFile_Grad_Cert_in_Constraints_Management_from_GS_w.docx 2020.09.18.11.53.22.70.currentCatalogFile1_Course_Syllabus_EM570_fall_2020.rtf 2020.09.18.11.53.22.70.currentCatalogFile2_Justification_for_Constraints_Certificate_Cha.docx

Patricia Elshafei has submitted a request for a major curricular change. His/her email address is: pelshafei@wsu.edu.

Requested change: Revise or Drop Graduate Certificate

Title: Constraints Management

Requested Effective Date: Fall 2021

Revise certificate requirement: Yes

Dean: Field, David - Assoc Dean - VCEA - Grad,

Chair: Squires, Alice – Chair – Engineering and Technology Management,

Catalog Subcommittee Approval Date	AAC, PHSC, or GSC Approval Date	Faculty Senate Approval Date

From: Squires, Alice
To: Field, Dave; curriculum.submit; Squires, Alice
Subject: Re: 609973 Engineering and Technology Management Requirements Revise - Revise or Drop Graduate Certificate
Date: Monday, September 21, 2020 9:51:05 AM

I approve this proposal in its current form.

From: "Field, Dave" <dfield@wsu.edu>
Date: Friday, September 18, 2020 at 9:27 PM
To: "curriculum.submit" <curriculum.submit@wsu.edu>, WSU - Alice Squires <alice.squires@wsu.edu>
Subject: Re: 609973 Engineering and Technology Management Requirements Revise - Revise or Drop Graduate Certificate

I approve this proposal in its current form.

Dave

From: curriculum.submit@wsu.edu <curriculum.submit@wsu.edu>
Sent: Friday, September 18, 2020 11:53 AM
To: Squires, Alice <alice.squires@wsu.edu>
Cc: Field, Dave <dfield@wsu.edu>
Subject: 609973 Engineering and Technology Management Requirements Revise - Revise or Drop Graduate Certificate

Squires, Alice – Chair – Engineering and Technology Management,

Field, David - Assoc Dean - VCEA - Grad,

Patricia Elshafei has submitted a request for a major curricular change.

Requested change: Revise or Drop Graduate Certificate

Title: Constraints Management

Requested Effective Date: Fall 2021

Revise certificate requirement: Yes

Both Chair and Dean approval is required to complete the submission process. Please indicate that you have reviewed the proposal by highlighting one of the statements below and **reply all** to this email. (curriculum.submit@wsu.edu.) [Details of major change requested can be found in the attached supplemental

From: Field, Dave
To: curriculum.submit; Squires, Alice
Subject: Re: 609973 Engineering and Technology Management Requirements Revise - Revise or Drop Graduate Certificate
Date: Friday, September 18, 2020 6:27:56 PM

I approve this proposal in its current form.

Dave

From: curriculum.submit@wsu.edu <curriculum.submit@wsu.edu>
Sent: Friday, September 18, 2020 11:53 AM
To: Squires, Alice <alice.squires@wsu.edu>
Cc: Field, Dave <dfield@wsu.edu>
Subject: 609973 Engineering and Technology Management Requirements Revise - Revise or Drop Graduate Certificate

Squires, Alice – Chair – Engineering and Technology Management,
Field, David - Assoc Dean - VCEA - Grad,
Patricia Elshafei has submitted a request for a major curricular change.
Requested change: Revise or Drop Graduate Certificate
Title: Constraints Management
Requested Effective Date: Fall 2021
Revise certificate requirement: Yes

Both Chair and Dean approval is required to complete the submission process. Please indicate that you have reviewed the proposal by highlighting one of the statements below and **reply all** to this email. (curriculum.submit@wsu.edu.)
[Details of major change requested can be found in the attached supplemental documentation]

1. I approve this proposal in its current form.
2. I approve this proposal with revisions. Revisions are attached.
3. I do not approve this proposal. Please return to submitter.

If you do not respond within one week, you will be sent a reminder email. If no response is received within three weeks of the submission date, the proposal will be returned to the submitter.
Thank you for your assistance as we embark on this new process. If you have any questions or concerns, please let us know wsu.curriculum@wsu.edu.

Blaine Golden, Assistant Registrar
Graduations, Curriculum, and Athletic Compliance
Washington State University
Registrar's Office
PO Box 641035
Pullman WA 99164-1035
509-335-7905
bgolden@wsu.edu

Justification for Constraints Certificate Requirement Change to substitute EM570 Systems Improvement: Integrating TOC, Lean, and Six Sigma for EM534 Contemporary Topics in Constraints Management

Current Constraint Certificate

1. E M 526 Constraints Management
2. E M 530 Applications of Constraints Management
3. E M 534 Contemporary Topics in Constraints Management

Proposed Change

Drop EM 534 Contemporary Topics in Constraints Management and substitute EM570 Systems Improvement: Integrating TOC, Lean, and Six Sigma

New Constraint Certificate

1. E M 526 Constraints Management
2. E M 530 Applications of Constraints Management
3. EM570 Systems Improvement: Integrating TOC, Lean, and Six Sigma

Rationale

The Theory of Constraints (TOC) certificate focuses on the management of the limiting factors of any system. By providing specific methods of managing variability, TOC creates exceptional performance very quickly and then encourages a process on an on-going improvement through the focused use of LEAN and Six Sigma tools. The current EM534 Contemporary Topics in Constraints Management focuses on presenting scholarly works of new and emerging techniques and methodologies in TOC. Thus, the course provides a good literature review of broad theoretical works but lacks coverage in the application and implementation in practice, specifically of lean and six sigma tools. The EM570 Systems Improvement: Integrating TOC, Lean, and Six Sigma provides a more meaningful alignment to the TOC Certificate by delivering proven application-based practices that students can employ rather than the more broad and conceptual approach of EM534. Given that ETM students are mostly working professionals, this change is more relevant to their needs. The ETM Graduate Studies Committee (GSC) has reviewed and approved this change.

Attached is the EM570 Syllabus.

Graduate Certificate in Constraints Management

1. *Credit Hours: 9 credit hours total*
2. *Required Courses*
    a. E_M 526
    b. E_M 530
    c. ~~E_M 534~~
    ~~c.~~d. E_M 570

EM 568 – Risk Assessment and Management
COURSE SYLLABUS

The information below outlines the course content, student learning outcomes, class requirements, assessment methods, grading structure, course outline, and student notices for EM568.

COURSE INFORMATION

Course ID: **EM568**
Course Title: Risk Assessment and Management
Number of Credits: 3 credits
Prerequisites: Graduate standing
Current semester: Spring 2019
Course location: Online
Meeting Times: Thursdays, 5:15 – 7:45pm

Instructor: **Luna Magpili, PhD**
Office Location: Online
Contact: PH 757.632.0419; luna.magpili@wsu.edu
Office hours: Thursday prior or after the live class or by appointment
Consultation: For questions and clarifications, prefer that students post and use the discussion forum on the Blackboard course site to ensure maximum benefit of the whole class. Extended consultations beyond office hours are by appointment. Emails and phone calls without appointment are entertained during business hours, Eastern Standard Time (EST).

Course description: Risk assessment and management is the identification, analysis, and prioritization of risks; as well as the coordinated treatment of risk to prevent, minimize, monitor, and control the probability and/or impact of undesirable events and consequences. This graduate course covers the principles and applications of risk assessment and management in the context of engineering management and systems engineering. This course is about the systematic approach to the management of risk as applied to engineering, operations, and management decisions. Students will be prepared to function in a business environment, developing an awareness of the challenges, the tools, and the process of designing and implementing risk assessment and management strategies. In addition to specialized topics in risk, this course will also discuss topics in statistics, decision science, supply chain management, project management, and other fields related to managing risks, in order to provide relevant basis to the methodological development of the risk body of knowledge.

COURSE MATERIALS

Textbook: Pinto, Magpili, Jaradat (2015). ***Operational Risk Management***. New York, NY: Momentum Press. ISBN: 9781606505304
Available at Amazon and Momentum Press.

Software: Spreadsheet software such as MS Excel, Statistical software

Internet Access: The course requires high-speed Internet access. If you do not have high-speed Internet at home, then consider locations where you are able to access the course site and attend the live class sessions.

Course Site: ALL course materials (announcements, instructions, lectures, homework, exams, solutions, and readings) can be accessed from the Blackboard course site at https://learn.wsu.edu. Login with your WSU username and password when prompted. Class materials are uploaded on a weekly basis. Submissions of ALL course work should be done through Blackboard.

Library Access: All students enrolled in WSU distance courses can use the WSU Libraries online databases at http://libraries.wsu.edu. Login with your WSU username and password if prompted. Students may also receive reference and research assistance from the online university services and borrow books and other circulating material and receive photocopies of journal articles. Visit the online university resources at http://libguides.libraries.wsu.edu/global for library support information and access to the online library tour for distance students.

Sessions: Pre-recorded lectures and/or lecture slides will be available prior to class sessions as needed. If available, make sure to view the recordings before attending the live class. The live class sessions will be conducted during the scheduled meeting times via Blackboard Collaborate Ultra. A recording of the live session will also be archived and available on the Blackboard course site.

IT Help Desk: For any technical issues with Blackboard Learn or Blackboard Collaborate please contact support at wsuonline.support@wsu.edu or call 509-335-4320 or 1-800-222-4978. To join the Blackboard alerts email list and receive notifications about Blackboard outages please visit http://lists.wsu.edu/join.php and select the Blackboard-alerts option from the dropdown menu.

COURSE LEARNING OUTCOMES AND ASSESSMENT

Student Learning Outcomes (SLO):

(1) Students will acquire an in-depth understanding of the fundamentals of risk management.
(2) Students will be able to apply risk management strategies and techniques to the design and management of engineering and technology systems.
(3) Students will recognize advanced application and new research in risk management.

Requirements and Evaluation:

Classwork/ Homework	40%
Exams	30%
Case Study	30%
TOTAL	100%

Classwork: Exercises will be given in class to be worked on individually or as a group. Only participation will be graded. If a student misses a class, classwork may also be done asynchronously by watching the recording and uploading the classwork in Blackboard. Missed classwork should be submitted prior to the next class session.

Homework: Weekly homework sets will be assigned and posted on Blackboard. Homework will be due the following week prior to class and submitted through Blackboard. Homework sets shall include but not be limited to discussion questions, problem analysis, research and technical reviews, and reading assignments.

Midterm: The midterm is given after Session 6 and covers topics from Sessions 1-6. It will be open notes and open books. Answers and solutions shall be submitted through Blackboard on or before the assigned due date. Late submission will not be accepted. The midterm exam is an individual effort. No consultations among students or other individuals are allowed. If you have questions or clarifications, consult with the instructor.

Final exam: The final exam is given on the last day of class and covers ALL the topics of the entire course. It will be open notes and open books. Answers and solutions shall be submitted through Blackboard on or before the assigned due date. Again, the final exam is an individual effort. Consultations among students or other individuals are absolutely prohibited. Late submission will not be accepted.

Case study: Teams of 3-4 members shall work together on assigned case problems. Please be prepared to share with the class and submit analysis and discussion points through Blackboard one day prior to the scheduled case presentation session. Presenting teams may be selected randomly. Non-presenting teams are required to provide at least one comment or question. Further case study guidelines will be posted on Blackboard.

A portion of the weekly live class session will be allocated to team meetings and collaboration. Teams can opt to meet during that time or schedule alternative meeting times. Student contribution to the team will be determined through peer evaluation and included in the case study grade.

Attendance: Although attendance is not required, students are responsible to fulfill and timely submit all the requirements of the course including classwork and team meetings missed during the live sessions.

Late Submission: ALL coursework MUST be completed and submitted by the designated due dates, in the designated Blackboard location. Full credit cannot be earned by late or incomplete submissions. Coursework lose 10% of their possible value each day late if submitted after the posted due date/time. Coursework lose all of their value at 10 days past due. Late exams without instructor approval will not be accepted.

Exceptions to the above policy may be granted by the Instructor if the instructor receives a request for late submission by email prior to the submission date and for a valid reason. Extenuating circumstances such as work and personal extraordinary demands may be valid reasons for such an exception. Reasonable accommodations can be made with instructor approval.

Student Effort: For each hour of lecture equivalent, students should expect to have a minimum of two hours of work outside class. Schedule approximately 6-8 hours per week for work – spread over multiple days. This includes readings, coursework, and session attendance.

Grading Scale:

A	94-100	C+	77-79
A-	90-93	C	73-76
B+	87-89	C-	70-72
B	83-86	D	65-69
B-	80-82	F	0-64

If the final % is less than a whole number, the grade will not be rounded.

COURSE MAP/ OUTLINE

Student Learning Outcomes (SLO):

(1) Students will acquire an in-depth understanding of the fundamentals of risk management.
(2) Students will be able to apply risk management strategies and techniques to the design and management of engineering and technology systems.
(3) Students will recognize advanced application and new research in risk management.

Session #	Alignment to SLO and Session Objectives	Course Topics	Evaluation of Outcome *Coursework*
1 1/16	(1) Introduce risk and definitions	Course introduction Introduction to risk, Chapter 1	CW/HW1
2 1/23	(1) Define and describe the fundamental processes of risk management	Fundamentals of Risk, Chapter 2 - risk identification - risk analysis - risk management	CW/HW2
3 1/30	(1) (2) Describe various risk identification tools and apply basic steps	Risk Tools and Techniques, Chapter 3 - Systems Approach - Taxonomy based, risk breakdown structure, HHM, SWOT, root cause analysis, influence diagram	CW/HW3
4 2/6	(1) (2) Describe various risk analysis tools and apply basic steps	Risk Tools and Techniques - PHA, HAZOP, JSA - Risk Matrix. Risk Index and Risk Ranking	CW/HW4
5 2/13	(1) (2) Describe various risk analysis tools and apply basic steps	Risk Tools and Techniques continued - FMEA, FTA, CCA - ALARP	CW/HW5
6 2/20	(1) (2) Differentiate conditions for suitability and recognize	Application of Risk Tools and Techniques Case 1 Discussion	CW/Case 1

	limitations of various tools and techniques; Conduct an in-depth risk analysis of a specific risk event;		
2/27	(1) (2) Student interim assessment and feedback	EXAM Session	MIDTERM
7 3/5	(1) Define and describe the fundamental processes of risk treatment strategies	Introduction to risk treatment, Chapter 4 Fundamental risk treatment strategies Risk treatment process	CW/HW8
8 3/12	(1) Define and describe the fundamental processes of performance monitoring, and review of risk strategies	Performance Monitoring and Review, Chapter 5 ISO 3100	CW/HW9
3/19	SPRING BREAK		
9 3/26	(1) Understand and apply risk management to decision making process	APPLICATIONS: Decision Making Under Uncertainty Decision Trees	CW/HW10
10 4/2	(1) (2) Understand and apply risk management to project management	APPLICATIONS: Project Risk Management	CW/HW11
11 4/9	(1) (2) Understand and apply risk management to supply chain	APPLICATIONS: Supply Chain Risk Management	CW/HW12
12 4/16	(3) Describe advanced application and new research in risk management	SPECIAL TOPICS: Monte Carlo Simulation, Risk and TOC, Anti-fragility, Chapter 6 and 7	CW/HW13
13 4/23	(3) Describe advanced application and new research in risk management	SPECIAL TOPICS: Continued…	CW/HW14
14 4/30	(1) (2) Develop and recommend risk management processes for a specific case application	Enterprise Risk Management Application of Risk Treatment Strategies, performance monitoring, and review	CW/Case 2
5/7	(1) (2) Student summative assessment	Exam Session	FINAL EXAM

***CW- Classwork may be given in class; HW-Homework assigned weekly**

STUDENT NOTICES

Copyright Notice

The content of the course and the video transmissions of the classes are the property of Washington State University and are to be viewed and used only by persons currently enrolled in this course. The materials provided in this course are copyrighted and unauthorized duplication is not allowed without permission of the copyright holders. Any other use requires written consent of the Instructor.

Academic Integrity

Academic integrity is the cornerstone of higher education. As such, all members of the university community share responsibility for maintaining and promoting the principles of integrity in all activities, including academic integrity and honest scholarship. Academic integrity will be strongly enforced in this course. Students who violate WSU's Academic Integrity Policy (identified in Washington Administrative Code (WAC) 504-26-010(3) and -404) will receive a failing grade, will not have the option to withdraw from the course pending an appeal, and will be reported to the Office of Student Conduct.

Cheating includes, but is not limited to, plagiarism and unauthorized collaboration as defined in the Standards of Conduct for Students, WAC 504-26-010(3). You need to read and understand all of the definitions of cheating at http://app.leg.wa.gov/WAC/default.aspx?cite=504-26-010. If you have any questions about what is and is not allowed in this course, you should ask the instructors before proceeding. If you wish to appeal a faculty member's decision relating to academic integrity, please use the form available at http://conduct.wsu.edu/.

ETM mandates students to include the following statement on exams and other course assignments as required by the Instructor:

I commit myself to Washington State University's high standards to uphold academic honesty and scholarly values as established by the WSU's Standards of Conduct. I affirm that I have not given nor received any unauthorized assistance on this assignment/examination, that the work product presented here is the work of the author(s) [myself or all team members listed], and that all materials from other sources (including books, articles, Internet, or other media), whether quoted or paraphrased, have been properly cited.

<student signature>

Typing my name above serves as my signature

Academic Freedom

WSU supports the faculty's academic freedom, right to freedom of expression, and responsibility to fulfill course objectives that are approved by the Faculty Senate. This is fundamental to who we are as an institution. Along with these rights comes the responsibility to protect the freedom of expression of all members of our community.

Communication

Please be reminded that we also recognize the importance of courtesy and decorum during all discussions – in class, in chat rooms, email, and other conversations. All official WSU email communication must be sent through the student's WSU email address.

Professional Oral and Written Presentations

The WSU ETM Master's degree is a professional graduate program. It is expected that student work be presented neatly and with correct English spelling, grammar and punctuation. Poorly-written work will not be accepted.

There are numerous software packages available to help students present professional papers, homework and projects. The Graduate and Professional Writing Center is available to help on-line students learn to revise and proofread their own work. Information on their services are available at https://writingprogram.wsu.edu/graduate-writing-center/ and

https://writingprogram.wsu.edu/graduate-writing-center/professional-editing-service-center/.

Incomplete Policy

An incomplete (I) grade is given to a student who, for reasons beyond the student's control, is unable to complete the course requirements within the enrolled semester. An incomplete will only be considered if at least 50% of point assignments required in the course are completed and submitted by the end of the enrolled semester. The incomplete must be cleared and completed within one year following the semester in which the "I" grade was assigned. If the incomplete is not completed and a grade change is not submitted by the deadline, the grade will automatically change to an "F".

A student may not simply repeat the course to remove an Incomplete grade. A student must have a written permission from their faculty advisor to register for future semesters if the student has two or more Incomplete grades on their transcripts. If a student intends to graduate less than one year following the semester in which the 'I' grade was assigned, the student must clear the incomplete before the end of the semester that they intend to graduate or receive a certificate. A student will not be allowed to graduate or receive a certificate with an Incomplete grade on their transcript.

A student who desires an Incomplete grade must:

(1) Notify the professor in writing,
(2) Provide sufficient reason for the incomplete request,
(3) Complete and submit an Incomplete Grade Agreement Form found at

http://registrar.wsu.edu/media/753496/incompletegradeagreement.pdf

Safety Statement

Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. In support of our commitment to the safety of the campus community the University has developed a Campus Safety Plan, http://safetyplan.wsu.edu. 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 (https://oem.wsu.edu/emergency-procedures/active-shooter/) 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). Before visiting campus, please also visit the University emergency management web site at http://oem.wsu.edu to become familiar with the information provided. 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 (https://www.youtube.com/watch?reload=9&time_continue=2&v=5VcSwejU2D0) and visit the WSU safety portal, https://oem.wsu.edu/about-us/)

Reasonable Accommodations

Students with Disabilities: Reasonable accommodations are available in online classes for students with a documented disability. All accommodations must be approved through your WSU Disability Services office. If you have a disability and need accommodations, begin the process as soon as possible. For more information contact a Disability Specialist on your home campus:

• **Pullman or WSU Online:** 509-335-3417, http://accesscenter.wsu.edu, access.center@wsu.edu

• **Spokane:** 509-358-7534, https://spokane.wsu.edu/studentaffairs/access-resources

• **Tri-Cities:** 509-372-7352, http://www.tricity.wsu.edu/disability/

• **Vancouver:** 360-546-9138, http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services

• **Graduate-level courses**: https://gradschool.wsu.edu/rights-and-responsibilities/

All students requesting reasonable accommodation must meet with the Instructor prior to or during the first week of the course to review all proposed accommodations in relation to course content and requirements.

Student Grievance Process

If a WSU Online student has a complaint or problem, the University offers the following channels as outlined below.

See: http://online.wsu.edu/nonResidentComplaintProcess.aspx

Academic Complaint Procedures (Academic Rule 1 04)

Students having complaints about instruction or grading should refer them first to the Instructor. If the complaint is not resolved, then the student may refer the complaint in writing to the chairperson of the department in which the course is offered by the end of the last day of the following semester (excluding

summer term). The chair's decision shall be rendered within 20 business days. After the chair's decision, the student or the Instructor may appeal to the Dean's Office. Complaints must be presented in writing to the dean within 20 business days of the chair's decision. The written statement should describe the complaint, indicate how it affects the individual or unit, and include the remedy sought from the Dean. The decision of the Dean is the final step and shall be made within 20 business days. The University Ombudsman is available at any stage for advice or assistance in resolving academic complaints.

Discrimination and Sexual Harassment

Office for Equal Opportunity (https://oeo.wsu.edu) seeks to integrate principles of equal employment opportunity, affirmative action, fairness and equality into all academic and employment activities and practices throughout Washington State University (WSU). The policy prohibiting discrimination and sexual harassment expresses WSU's commitment to maintaining an environment free from discrimination, including sexual harassment. This policy applies to all students, faculty, staff, or others having an association with the University. Additional information may be found in the Code WAC 504-26-220, -222, and -227. In addition, complaints about discrimination/sexual harassment can be directed to WSU's Office for Equal Opportunity https://oeo.wsu.edu/file-a-complaint/. For WSU graduate students, procedures can be found at- https://gradschool.wsu.edu/documents/2017/07/gs-grievance-procedures.pdf/

Online students also have protections and processes specific to their state of residence. See: http://online.wsu.edu/nonResidentComplaintProcess.aspx for links to State Grievance Processes.

Reasonable Religious Accommodation

Washington State University reasonably accommodates absences allowing for students to take holidays for reasons of faith or conscience or organized activities conducted under the auspices of a religious denomination, church, or religious organization. Reasonable accommodation requires the student to coordinate with the instructor on scheduling examinations or other activities necessary for course completion. Students requesting accommodation must provide written notification within the first two weeks of the beginning of the course and include specific dates for absences. Approved accommodations for absences will not adversely impact student grades. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. Students who feel they have been treated unfairly in terms of this accommodation may refer to Academic Regulation 104 - Academic Complaint Procedures. See also Rule 82.

COVID-19 Policy

Students are expected to abide by all current COVID-19 related university policies and public health directives, which could include wearing a cloth face covering, physically distancing, self-attestations, and sanitizing common use spaces. All current COVID-19 related university policies and public health directives are located at https://wsu.edu/covid-19/. Students who do not comply with these directives may be required to leave the classroom; in egregious or repetitive cases, students may be referred to the Center for Community Standards for university disciplinary action.

Academic Calendar

Students should refer to the academic calendar to be aware of critical deadlines throughout the semester. The WSU Global Campus academic calendar can be found at http://registrar.wsu.edu/academic-calendar/.