ISE 517 - Modern Enterprise Systems Syllabus

"Best Practices for *Managing the* Modern *Enterprise as a System*"

Location: KAP 148

Day and Time: Mondays and Wednesdays, 14:00 to 15:20

Spring Semester, 2017-1

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Purpose, Focus and Goal of ISE 517

World Class Modern Enterprises (as a SYSTEM) engage in three distinct activities. Firstly, they are involved in developing a new product or a service (their reason for existence, raison d'etre,) secondly they manage their operations through business improvement and manufacturing/ service process enhancements, and lastly, they manage their supply chain.

The pursuit of system and process improvements is one of the major dimensions of Industrial and Systems Engineering in all the above-mentioned areas and it requires that we explicitly incorporate, in the design of our business systems and processes, the mechanisms for **Continuous Improvement**, **Innovation** as well as World Class **Best Practices** in order to enhance efficiencies and promote effectiveness.
The ISE 517 goal is to introduce you to all the Modern Tools and Methodologies used by World Class Enterprise Systems to achieve such system enhancements.

A system is a set of interrelated, interconnected, interactive and interdependent components that act together to achieve an objective or purpose. It involves human, information, and technological factors to operate that business system.
An enterprise or any modern business entity should be managed as a system, and NOT as a set of fragmented entities and processes linking traditional vertical hierarchies.

As graduates enter their professional world, they would benefit from discovering early on, the strategic, effective and innovative managerial methodologies in the fields of New Product Development (**NPD**,) Operational Process Management (**OPM**) and Supply Chain Management (**SCM**).
Modern Enterprise Systems Course (ISE 517) offers these modern managerial methodologies so that the students can use them immediately in any function and any business, and then gradually expand their application as broader professional responsibilities are gained, all the way to the strategic leadership level of executive management.

Throughout the ISE 517 (Modern Enterprise Systems course,) audio-visual resources are used to introduce the students to the latest research and to the most updated issues of Strategy and Innovation used in Modern Enterprise Systems in their processes of the New Product Development (**NPD**,) Operational Process Management (**OPM**,) as well as in Supply Chain Management (**SCM**.)

Week	Class Topics	Reading	Homework	Team project
1	• **Introduction:** Purpose and structure of the course. Syllabus Review: Modern Enterprise Systems Course has three major segments: **1- NPD** **2- Managing Processes in Operations** **3- Managing the Supply Chain** • **Building the foundation** **Modern Enterprise Systems** What do we mean by Modern, Modernism and Modernity? What is an Enterprise? What is a System's Definition? **Videos**: ***1- Scientific Method*** ***2- Strategic Thinking Today***	**Reading Assignment: Understanding Variation Book** ***Chapter 1***	**None**	**TBD**

2	**Building the foundation** **Modern Enterprises and the New Product Development Process** Modern Enterprises are allocating more resources to the NPD process to become more innovative. **Video:** ***From Systemic Problems to Systemic Solutions***	**Due** **Reading Assignment: Understanding Variation Book** ***Chapter 2***	**Due** **HW** **TBD**	**TEAM 1 Project:** **Prepare Presentation on Chapter 1**

3	**Building the foundation** **NPD (continued.) Modern Enterprise Systems and DFMA** Modern Enterprises are investing in new analytical tools to understand new opportunities and to become more agile. New tools are introduced. Only processes deliver results/outcomes. Process thinking is a fundamental element of Lean Engineering used in the process of new product development in Modern Enterprises. **Video:** ***SWOT, PEST, FIVE FORCES***	**Due** **Reading Assignment: Understanding Variation Book** ***Chapter 3***	**Due** **HW** **TBD**	**TEAM 2 Project:** **Prepare Presentation on Chapter 2**
4	**(NPD continued.)** **Modern Enterprise Systems and DFMA** Design for Manufacturing and Assembly tools are introduced. Modern Enterprises involved in the new product development processes are challenged by how to bring the voice of the customer (VOC) and frontline operators into the design process. **Video:** ***Risk-based Design in NP***	**Due** **Reading Assignment: Understanding Variation Book** ***Chapter 4***	**Due** **HW** **None**	**TEAM 3 Project:** **Prepare Presentation on Chapter 3**
5	**(Operations Process Management – OPM) Interpretation of data** The foundation for managing any business entity is the ability to predict the behavior of its processes. **Strategic Planning** Planning is a universal process that applies to every domain and activity. It integrates vision, strategy, outcomes, mission and execution and the relevant measures. The outcomes required by the Vision represent the strategy, and in turn, define the planning processes needed for their execution. The Planning methodology fosters the	**Due** **Reading Assignment: Understanding Variation Book** ***Chapter 5***	**Due** **HW** **None**	**TEAM 4 Project:** **Prepare Presentation on Chapter 4**

	on- going alignment of the operational goals with the enterprise's strategic objectives through Action Plans. The governing guidelines act as "filters" for a compliant and effective execution throughout the organization. **Video:** ***Grand Strategies and Strategic Intent***			
6	**(OPM Continued.) Systems thinking** A system is a collection of interrelated, interconnected and interdependent elements that interact to produce an effective outcome that cannot be produced by any isolated subset of the elements. The strategic whole determines the nature of the tactical parts. The parts cannot be understood if considered in isolation from the whole. System thinking is a powerful holistic concept that can transform the way any enterprise can be managed. We will present the principles of Systems Thinking used in the OPM Process. **Video:** ***Which Business Strategy? Fundamental Choices***	**Due** **Reading Assignment: Understanding Variation Book** ***Chapter 6***	**None**	**TEAM 5 Project:** **Prepare Presentation on Chapter 5**
7	**(OPM Continued.) People issues** = People work **IN** the system, and in Teams. Management must work **ON** the system. People issues include accountability, delegation, recruiting, hiring, rewards and promotions. The key issue of Knowledge Management in introducing and implementing change in Modern Enterprises is discussed. **Lecture:** ***1- People and Team issues.*** ***2- Creation and application of***	**Due** **None**	**Due** **HW PowerPoint Presentation on Chapter 1** **HW PowerPoint Presentation on Chapter 2**	**Due** **None**

	knowledge. **Video:** ***The Creative Person – Practice and Passion***			
8	**Team 1 & 2 Presentations** **Chapters 1 and 2 from "Understanding Variation"** **Managing with the state of processes.** **(OPM Continued.) Managing knowledge** Knowledge is essential in Modern Enterprises, not a parochial or hoarded asset. It is more than data and information. What matters about knowledge is the ability to manage and share it effectively throughout the enterprise in order to support action at any and all levels. **Video:** ***Systematic Tools for Generating New Ideas***	**None**	**Due** **HW** **PowerPoint Presentation on Chapter 3** **HW** **PowerPoint Presentation on Chapter 4** **HW** **PowerPoint Presentation on Chapter 5**	**Due** **TEAM 1** **Presents Project** **TEAM 2** **Presents Project**
9	**Midterm Examination** **Lecture:** ***Statistics for Engineers and Process Behavior Charts*** **(OPM Continued.) De-aggregate processes: Clear the fog** Complexity is the result of relationships. De-aggregating processes renders the relationships visible and actionable at any level. The aggregation of data blurs the comprehension of reality, yet it is routinely used by management with negative effects. Defining what to measure should not be a puzzle to management. An example of de-aggregation of a process will be discussed.	**Due** **None**	**HW** **One page report on the Tools for Generating New Ideas**	**Due** **None**

	3 issues will be addressed in OPM: • ***Business domains and activities*** Managing encompasses many domains activities and processes such as credible budgeting, effective meetings, reliable operations, projects reviews, and the ability to align the strategic objectives, from the boardroom to the mail room. Understanding the states of processes foster the ability to operate well at all levels. • ***Business environments*** Staying attuned to the evolution of the external, internal, marketing, operational and financial environments is important. A practical way is demonstrated. • ***Reputational risks.*** The enterprise does not operate in a vacuum. Its stakeholders actually (explicitly, implicitly and tacitly) control the ultimate fate of the enterprise. What matters is what the stakeholders think of the enterprise, not the reverse. A practical way to monitor stakeholders' perceptions Is presented. **Lecture:** ***Managing better the Modern Enterprises, the business and the business environments, and addressing the reputational gaps***			
	Spring break			

10	**Team 3 & 4 & 5 Presentations Chapters 3 and 4 and 5 from "Understanding Variation"** **Supply Chain Management (SCM.) Managing with the state of processes.** **Performing better.** Ever higher performance within the company has become the standing expectation from the Modern Enterprise System (MES.) The ability to reliably and flawlessly deliver must become part of its DNA. Wanting to perform better is not enough. An innovating and operating methodology is necessary to make the Modern Enterprise System successful, and that also requires a strategic focus on its supply chain.	**Due** **None**	**Due** **None**	**Due** **TEAM 3** **Presents Project** **TEAM 4** **Presents Project** **TEAM 5** **Presents Project**
11	**(SCM Continued.) Modern Enterprise Systems and Supply Chain Management** • **Supply Chain Management's landscape** Modern Enterprise System management needs to bring in the same "field of vision" and all the necessary and innovative NPD approaches and all the pertinent operational information related to the business into SCM. However, all need be customized to the individuals' needs, at any level, in real time in the supply chain. • **Information systems in the Supply Chain** Modern management can keep on managing by the state of process despite the rigidity of standard ERPs. Systems thinking can be enhanced by technology that extends into the enterprise's supply chain. **Lecture:**	**Due** **None**		

	Supply Chain Management Basics			
12	**(SCM continued.) Modern Enterprise Systems and Supply Chain Management** In this lecture we examine the role of IT in Modern Enterprise Systems that extends into the enterprise's supply chain. Another important issue, that will be discussed and presented, is the Management of Flows in the Supply Chain. **Lecture:** ***Supply Chain Management and the Role of IT*** ***Managing Flows in the Supply Chain*** **Video:** ***Systematic Tools to Generate New Ideas***			
13	**(SCM continued.) Modern Enterprise Systems and Supply Chain Management** **Lecture:** **Managing the state of the supply chain through performance measurement.** In this lecture we examine the performance measurement and supply chain relationships in Modern Enterprise Systems. **Video:** ***The Evolution of Cooperation***		**Due** **None**	
14	**Conclusion on Modern Enterprise Systems, Strategy and Future Trends** **Final Examination**		**HW Due** **One page report on the Tools for Generating New Ideas**	

The Above Syllabus is a Living Document and Subject to Change depending on the Class Progress. It will be regularly revised and posted on the Black Board.

- **Typical Class Day:**

1. Review and discussion of the changes in Modern Enterprise Systems.
2. Interactive lectures and videos on the topic of the day.
3. Overview of the work for the following week.
4. The slides used in the day's lecture are available in Course Documents immediately at 5 00 pm at the end of the class. This allows for a prompt review of the material presented in class.

- **Reading assignments' material.**

  Handouts on NPD, Systems Thinking and Supply Chain Management are occasionally given as reading assignments.

- **However, students need to purchase the following required book for reading:**

  1-"***Understanding variation. The key to managing chaos***"
  Second edition by Donald J. Wheeler. (Published by spcpress.com)
  It is strongly recommended to procure this book early especially for DEN students who have no easy access to the USC Bookstore

  The book is available at the USC bookstore.

  - The items is also available on-line directly from the publisher (www. spcpress.com), if desired.

- **Submission of assignments**

When submitting assignments, please submit (in the Format requested) directly to my email address rakhshan@usc.edu.

If you have any issues contact student support team at 213-821-1321 or webclass@usc.edu

The assignments and homework (when given) must be submitted by **Midnight** on the due date (a day ahead of class time) to be accepted and graded timely.
Late postings will see a 10% penalty if prior arrangements are not made.

- **Team project**

  "Understanding Variation Chapters"

  - The scope of the project will be explained in class. Coaching guidance will be available through email and/or during office hours.
  - Teams of 2-3 students will work on the projects.

- Students will be assigned to teams.
- The teams will present during class time as stated on the syllabus.

- **Exams**

  There are two assessments of knowledge exams (midterm and final.)
  - The exams are not just multiple choice exams. They are closed books combination (multiple choice, pick the correct answer, descriptive, analytical, etc.) exams.

  Each exam encompasses all material taught in class lectures up to that point, including the content of the videos, discussions, Readers and Homework.

- **Grading**

  The total grade for the course is the sum of the grades of the Exams, Presentations and the Instructor's Assessment based on the attendance, teamwork and participation.
  There is no curve grading.

  *The course total maximum grade is **100** points and includes the following:*

  Midterm
  - ***25 points***

  Homework Project
  - ***35 points***
    - ***Content 20***
      - ***Additional examples from outside the book***
    - ***Quality of Slides 10***
    - ***Presentation skills 5***

  Instructor's Assessment
  - ***10 points***
    - ***Assignment Quality***
    - ***Teamwork***
    - ***Participation***
    - ***Attendance***
    - ***Peer evaluation***

  Final
  - ***30 points***

  Participation

Due to the nature of the subject matter and the way it is to be taught, On-campus students are encouraged to participate in every class. *Team* participation *will be assessed by a Peer Evaluation form submitted to all team members to be filled out.*

Criteria for grading the team project

1. A tight relation between the course material and the scope of each presentation.
2. Quality of Teams' Presentation slides as well as additional materials from outside the text (examples, graphs, charts, etc.)
3. Good application of the presentation skills.

Again, this ISE 517 Syllabus is considered a **living document** and shall be modified during the semester as conditions or opportunities arise to enhance learning. Change will always be mentioned in class ahead of time and/or by email.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and contact information for DSP: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, (www.usc.edu/scampus or http://scampus.usc.edu) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency, if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, Teleconferencing, and other technologies.

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