WORK, TECHNOLOGY AND ORGANIZATION (ISE 440)

Spring 2020, MW 10:00-11:50am (THH 118), 3 units, prerequisite: junior or senior
Instructors: Dr. Rahimi; **Email:** mrahimi@usc.edu
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Office hours: Dr. Rahimi: Open/anytime (individually or with your team) using any conferencing app (e.g., Bluejeans, Zoom). After starting the app, start a meeting, send the meeting link to my Gmail address: mrahimigm@gmail.com which is on instant push notification.
Office hours: Dr. Khashe: Tuesdays 2-4 pm or by appointment. (Office: GER 241)

Classroom Style: Dr. Rahimi will connect to the class remotely.
                         Dr. Khashe will present in class.

TA: Shikhar Goyal; **Email:** goyalshi@usc.edu

COURSE SUMMARY AND OBJECTIVES

"... My current task is to create a very large Relationship Map describing Microsoft's business interface with their main contract manufacturer. I'm headed to Asia next week to meet with the stakeholders. Just wanted to say thank you for the great experience and real-world tools!" K.B., BSISE, 2017

Introduction:
In this course, a work environment is analyzed from three perspectives of work, technology, and organization (WTO). We explore each of these topics in some depth and examine the interactions among them.

The course is mostly conceptual, and the individual concepts seem easy to learn. However, the difficulty begins when you try to integrate these concepts into a real work situation. Our teaching approach includes lectures, videos, case study discussions, term projects, and team-based readings and presentations.

The learning outcomes will be derived from answering the following questions:

- What are the main components of a work system?
- Are workers becoming more or less important in the current and future work systems?
- Should jobs be matched to worker personalities?
- Why some employees are motivated to work, and some are not?
- In a hierarchical organization, how much power and influence matter?
- When should all decisions be made from the top?
- Who should control the key decisions about work processes and working conditions?
- How can we work more effectively in a technical team?
- What are the impacts of automation on work?
- Why some technologies fail and what is the role of humans in automation?
- Can a company reorganize itself into a more democratic structure and still be successful?
- What are the major representations (metaphors) for an organization structure?
- Why lean systems create tension for workers (in the case of multinational auto industry)?
- How to address WTO problems from a practical standpoint?

COURSE MATERIAL

Lecture Sets:
Lecture slides are designed to provide a basic understanding of a variety of topics relevant to WTO. The files are uploaded in Blackboard and presented by the instructor. Please try to give your opinions during these lectures.

Case Studies:
These case discussions follow some of our lecture sets. Read each case before the assigned session and bring the case to the class for in-class discussions, either in a paper format or on your mobile/laptop. We will ask the individual or group of students to participate in each case study discussion. They cases are uploaded in Blackboard.

Book Chapter Presentations:
1. Morgan, Gareth (2006). _Images of Organization_. Sage Publications, Inc., Thousand Oaks, California. This book is an international best seller, conceptualizing different views of an organization's behavior. Each chapter will be assigned to a team and you will present it in the class. We refer to this book as the "Images" book.
2. Pulignano, V., Stewart, P., Danford, A., and Richardson, M. (Editors) (2008). _Flexibility at Work: Critical Developments in the International Automobile Industry_. Palgrave Macmillan Publishers, New York, N.Y. This book includes a detailed analysis of the lean philosophy as it applies to automobile industry within a global context. Each chapter will be assigned to a team to be presented in the class. This book is referred to as the "Flexibility" book.

Additional Materials:
A number of videos have been carefully selected to complement the lectures and case studies. Please view these videos before each assigned session. Exam questions could come from these videos as well.

Student's Roles and Responsibilities:
*   This class (especially in a remote session) requires student participation. Ask questions during class sessions. There is a grade assigned to student attendance and participation.
*   Assignments should be professionally written and delivered on time. Late work will not be accepted or will receive significant grade reductions.
*   When you have a presentation, come 5 minutes early and setup on time. The instructor/TA will bring a Windows 8 laptop with a connection to the projector (HDMI or mini-HDMI). You are responsible for the rest of the presentation hardware/software requirements. Apple users, please bring your own cables. Always bring a backup drive in case of wi-fi problems.
*   Check your email and Blackboard regularly for announcements and changes.
*   Use of electronic devices are not allowed during the lectures. The only time you can use them is to access your case study discussions.
*   If you have (or think you have) a cold/flu, DO NOT come to class. Read the materials at home.

COURSE SCHEDULE

Date	Topics/Readings/Assignments
1/13	• Syllabus, class requirements and expectations • Place your name in a team, begin searching for a company for your term project
1/15	Introduction to ISE 440 (slide set) Philosophies of Work (craft, mass, lean, holacracy): • Craft production system: https://www.youtube.com/watch?v=8wCFLRjAy88 (2 min) • Mass production system: https://www.youtube.com/watch?v=3KAny-1saS4 (1 minute) • Problems with mass production: https://www.youtube.com/watch?v=TKfRksMbbSI (2 min) • Lean manufacturing https://www.youtube.com/watch?v=fMOPyHyNFw8 (5 min) • Finalizing teams and spend a few minutes with your team members to select an organization for your WTO term project
1/20	• **MLK day**
1/22	• Paper Airplane Lean Simulation: https://www.youtube.com/watch?v=9exz80dGkfU From Lean to Holacracy (slide set) • Holacracy by Brian Robertson: https://www.youtube.com/watch?v=0FmKsDf_CnI (5 min) • Holacracy: breakdown of hierarchical structure (https://www.youtube.com/watch?v=ial7CT-4KOY) (3 min) • Optional video: Holacracy: A Radical New Approach to Management (18 min) https://www.youtube.com/watch?v=tJxfJGo-vkI
1/27	• Deadline: your team must obtain the approval of instructor/TA for your WTO project name and a short description of the organization Automation is inevitable! • Humans Need Not Apply: https://www.youtube.com/watch?v=7Pq-S557XQU (15 min) • The Rise of The Machines: Why Automation is Different This Time: https://www.youtube.com/watch?v=WSKi8HfcxEk (12 min) • Universal Basic Income and work motivation https://www.youtube.com/watch?v=kl39KHS07Xc&feature=youtu.be (10 min) • If you are interested in more videos on UBI, see the followings which are NOT required for the exam: https://www.youtube.com/watch?v=aIL_Y9g7Tg0 (17 min) https://www.youtube.com/watch?v=87M2HwkZZcw&t=1838s (45 min) https://www.youtube.com/watch?v=ARNkZzWg4No (20 min)
1/29	• Personality Assessment (slide set) • Read Case 4: Personality Assessment
2/3	• Power and Influence in Organizations: Hollywood's view https://www.youtube.com/watch?v=z6ZPeq-wefs (4 min) • Power in Organizations (slide set)

	• Influence and the "Science of Persuasion": https://www.youtube.com/watch?v=cFdCzN7RYbw (11 min)
2/5	• Introduction to motivation at work: (https://www.youtube.com/watch?v=u6XAPnuFjJc (10 min) • Theories of motivation at work (slide set) • Read Case 14: Mega Manufacturing (see the following video for a sport shoes manufacturing process https://www.youtube.com/watch?v=4J_kxwT9zX4 (3 minutes)). Use the sheet provided in the Case Study section of the Bb (in Contents section).
2/10	• High-level mapping of a work process: https://www.youtube.com/watch?v=JENOhSXzi2U (7 min) • Relationship Map (slide set) • Prepare to ask questions about your term project's high-level process and relationship maps View this video at home: • Introduction to process mapping: https://www.youtube.com/watch?v=YGmhtf7p8P8 (8 min)
2/12	• Introduction to "Images" book: Chapter 1 of Images book (slide set) • **Team 1:** Ch 2 of Images book (mechanization) (add a video and case study?) (30 min.+10 min. Q/A)
2/17	**President's Day**
2/19	• Morality and Ethics (slide set) • Read Case 59: Moral Dilemmas *(each team prepare a response to one dilemma)*
2/24	• **Team 2:** Ch 3 of Images book (organisms) (add a video and cases study?) (30 min.+10 min. Q/A)
2/26	• **EXAM 1** • **1st peer evaluation**
3/2	• Team building exercise: https://www.youtube.com/watch?v=8MdtTZ-a8bI (9 min) • Team Building and Conflict (slide set)
3/4	• **WTO term project 1st presentation:** 5 min. + 2 min. Q/A (no papers)
	• **Team 3:** Ch 5 of Images book (culture) (add a video and case study?) (30 min.+10 min. Q/A)
3/9	• **Team 4:** Ch 8 of Images book (change) (add a video and case study?) (30 min.+10 min. Q/A)
3/11	• **Team 5:** Ch 9 of Images book (domination) (add a video and case study?) (30 min.+10 min. Q/A)
	Spring Break
3/23	• How do we envision the WTO variables when automation takes over (at individual, team, and organization levels)? - Re-imagining work (in high-tech jobs) https://www.youtube.com/watch?v=G11t6XAIce0 (9 min) - Types of Human Computer Interfaces https://www.youtube.com/watch?v=4pCOnAn3KQE (7 min.)

	- Remote control of driverless cars: https://www.youtube.com/watch?v=9sgetWQGYxY (3 min.) - Adaptive automation in a maritime application: https://www.youtube.com/watch?v=MH0Vj-rChrM (4 min.) - Future Interfaces Group (from Carnegie Mellon Univ.) https://www.youtube.com/watch?v=J_oPtEjiVuA (4 min.)
3/25	• Introduction to QWL: U.S. versus German labor policies (by Brookings Institute) https://www.youtube.com/watch?v=c48X8rDfqbw (5 min) • **Team 6:** Ch 2 of Flexibility (quality of working life) (30 min.+10 min. Q/A)
3/30	• Job Design (slide set) • Hackman and Oldham job design model https://www.youtube.com/watch?v=Y6C5YvifaEk (8 min) • Read Case 42: Job Design Exercise
4/1	• Introduction to globalization: https://www.youtube.com/watch?v=B9FseRXtzSg (3 min) • **Team 7:** Ch 4 of Flexibility (Belgium policymaking) (30 min.+10 min. Q/A)
4/6	• Introduction to mass customization: https://www.youtube.com/watch?v=yswU7nca_ac (4 min) • **Team 8:** Ch 5 of Flexibility (mass customization) (30 min.+10 min. Q/A)
4/8	Students watch and critique the following videos, representing the following external forces shaping an organization: capital, environment, new technology. • Corporate Greed Isn't New: The Internet Is Just the New Playing Field, by Douglas Rushkoff (https://www.youtube.com/watch?v=mAOyOULWKUo) (12 min.) • Story of Solutions (changing the goal of businesses from financial only to triple bottom line: economic/social/environmental): http://www.youtube.com/watch?v=cpkRvc-sOKk (9 min.) • These humans are teaching cars to drive: (https://www.youtube.com/watch?v=jrVwqQVCrLw&list=PLqq4LnWs3olUF4RKAPDYMhIGRQkt0k1Xl&index=9) (11 min.) • The People's Republic of Future: (https://www.youtube.com/watch?v=taZJblMAuko) (30 min)
4/13	A different organizational structure to represent the triple bottom line: • Rural Electrification Administration https://www.youtube.com/watch?v=tenKnIx4ouY (3 min.) • Workplace democracy https://www.youtube.com/watch?v=h1i0Miy6T7A (12 min.) • How do worker cooperatives work? https://www.youtube.com/watch?v=qbZ8ojEuN5I (7 min.)
4/20	• **EXAM 2 (all materials after Exam 1)**
4/22	• **In-class workshop finalizing WTO project and term paper**
4/27	• **WTO 2nd Presentations and Papers:** 10 min. + 2 min. Q/A
4/29	• **WTO 2nd Presentations and Papers:** 10 min. + 2 min. Q/A (papers are due before 11:59 pm of the Friday after this session) • **2nd peer evaluation**

Note 1: The readings are to be completed *before* the class sessions indicated.
Note 2: Any material, presentation and/or task assignments in this class may be revised to accommodate the content and the pace of the class learning process. All revisions will be announced either in an email, on Blackboard and/or in the class. You are responsible for the revised materials.
- All red font items are related to your WTO term project.

COURSE GRADING

Deliverables	*Grade Ownership*	*Grade Distribution and Rubric*
Book Presentation	Team	**15%** (based on content and format of presentation)
WTO Term Project	Team	**20%** (half for final presentation, half for final paper)
Attendance/Participation	Individual	5% pop quizzes (up to 20% will be eliminated due to unattendance)
Peer Evaluations	Individual	**10%** (half mid-term, half final)
Exam 1	Individual	**25%** (Closed Books and Notes)
Exam 2	Individual	**25%** (Closed Books and Notes)

Notes on the Exam 1 and 2 and the type of questions asked:
- Place all electronic devices inside your bag and under the chair, no hats and dark sunglasses. Do your bathroom trip before the exam.
- Exam 2 is not comprehensive. It covers only the material after exam 1.
- Each exam may consist of true/false, fill-in the blanks, multiple-choice, and short answer questions.
- Short answer questions have partial grades.
- Example for true/false: T / F   ST (Sensing/Thinking) personalities are usually analytical. (2 points) (methodical)
- Example of fill-in the blank: Action geared toward changing the behavior of others is a definition of Influence. (3 points)
- Example of short answer: In one sentence, explain the concept of "reciprocation" as it relates to the topic of influence. (4 points) Answer: we are obligated to repay, in kind, for what has been given by another person.
- Example of a more conceptual question: McClelland's Human Motivation Theory states that every person has one of three main driving motivators: the needs for achievement, affiliation, or power. Which one of the Maslow's theory of needs relate more closely to the McClelland's need for affiliation? Why and what is the difference between the two? (8 points) Answer: Belongingness because both of these motivators speak about the need to belong and be connected to others. The difference between the two is that in Maslow's theory, one need has to be fulfilled before a higher need becomes significant.

FORMATION OF TEAMS

General Rules for Team Behavior and Grading
We begin forming the teams in the first session. Some rules are:

- All team members will receive equal grades, but each member has two chances to evaluate the other members in mid and end of the semester for their peer evaluation grades. Use the peer evaluation form in this syllabus.
- All team members must participate in the presentation with equal workload assigned to each member.
- All activities internal to each team is assigned, performed and managed by the team members. The instructor will only intervene when one or more of the team members deviate from normal and acceptable norms of team behavior.

Peer Evaluation
Each team member must evaluate the performance of other team members on the basis of 5 dimensions of team performance (see below). Email your completed form to the TA on time.
Caution: If you fail to deliver your peer evaluation on time, a zero will be assigned to your own evaluation score.

Peer Evaluation Form

Print your name: (first, last)   Date:

Team number and title of the project:

Criterion (Assign 0 to 100 in each cell)	Name	Name	Name	Name	Name
1 Ability to communicate effectively: listening and talking with respect					
2 Willingness to help others					
3 Creativity in performing the tasks assigned					
4 Ability to offer solutions and accept constructive criticism					
5 Spend time and work hard to finish the project					
Total Points/5					

Please be honest and truthful in your evaluations of other team members. All peer evaluation individual scores will be kept ***strictly confidential***. Only the mean sum value of the combined scores from all the team members will be uploaded into the Blackboard.

BOOK READING AND PRESENTATION

Why do we ask you to read and present a book chapter?

1. According to the Accreditation Board of Engineering and Technology (ABET), one of the most important qualities of a good engineer is the ability to read, research, reduce and present a topic to a specific audience. The ISE department has designated this course to nurture this quality in our students. We do this in a team format since most of your future project works and presentations are in a team setting.
2. "Flipping" the classroom. According to the *Journal of Engineering Education*, allowing the students to read/learn outside the class and present their own findings is a better mode of learning than listening to lectures only.
3. It is true that the quality of contents and the presentations may vary from one team to another, however, we know that the depth of learning for the presenting team is significantly higher and the effects are longer lasting.

"Images of Organization"

This book discusses the behavior of an organization from multiple viewpoints or "images." These images are metaphors that govern specific organizational behavior. Each team should do the followings:

Assignment:
- Read the chapter carefully and understand the contents deeply.
- DO NOT present the entire chapter! Present a few important concepts.
- Find and show a short video that highlights the main points as an introduction.
- Find, present, and generate class discussions on a case study of a real industry. Your case study could come from the following cases:
  http://college.cengage.com/business/moorhead/organizational/6e/students/cases/index.html
  You may modify a case to fit your chapter as necessary, or find one from other sources.
- NOTE: Grades will be deducted if the team does not bring extra materials, short videos, and a case example from outside.

Q/A:
- The instructor and TA will ask questions during the presentation.
- The team must prepare three Questions/Answers at the end of the presentation. These questions should reflect the summary of the presentation from the perspective of the image presented. We want to know *what the three main take-away concepts from this chapter are*. We would like to see how these questions are framed, explained and how to get the students involved in the process of answering these questions.

"Flexibility at Work"

The concept of lean operation has been a leading philosophy of work design in the past several decades. This book is a critical assessment of the lean systems in international automobile industry. The book is written with a case study approach. The students are encouraged to

explore and bring data and concepts from outside the book to complement the chapter content. The main question of this book is: *Does the lean system provide a superior treatment of labor in a global automobile industry or not?*

Assignment:
- Read the chapter carefully and understand the contents deeply.
- Find and show a short video that highlights the main points as an introduction.
- DO NOT present the entire chapter! Present a few important concepts.
- NOTE: Grades will be deducted if the team does not bring extra materials, short videos, and a case example from outside.

Below are some important questions to consider for these chapters:
- Is mass production no longer applicable?
- Do the lean systems automatically lead to High Performance Work systems?
- Do we believe that labor issues become problems of management?
- Is the labor stupid and management smart? Does lean attempt to make labor smarter?
- The first philosophical war against lean was waged by the Canadian Auto Workers (CAW) union. Is it true that the "New politics of production" has caused the work situation "more onerous for all workers?"
- Are labor unions still powerful players in "Factory Regimes?"
- Why the three variables of: management power, product policy, and firm's employment relationship (Quality of Working Life) important?
- Are success or failure of lean implementation depend on variables related to: geography, social, political, and cultural influences?

Some conclusions you may want to consider are:
- Lean has not helped Quality of Working Life by increasing worker stress and work intensification/extensification.
- "Market relations" is the driving force for employment relations.
- Lean may be neutral on the production line, but not on "social effects on workers."
- Unions are still uneasy with lean implementations at local/state/international levels.

Q/A:
- The instructor and TA will ask questions during the presentation.
- Grades will be deducted if the team does not analyze and criticize the results of the chapter.
- The team must prepare three Questions/Answers at the end of the presentation. These questions should reflect the summary of the presentation from the perspective of the image presented. We want to know *what the three main take-away concepts from this chapter are*. We would like to see how these questions are framed, explained and how to get the students involved in the process of answering these questions.

<p style="text-align:center">BOOK PRESENTATION FORMAT</p>

- The instructor/TA are prepared to help the teams in presentation style, format, and content of each chapter. Please note that you do **not** have sufficient time to present **all** details of the chapter. You must select and present only the **important concepts** of the chapter.
- See the file on Blackboard on how to deliver an effective PowerPoint presentation. The instructor and TA will give a short assessment at the end of each presentation.
- The exam may include the Q/A items.

<p style="text-align:center">WTO PROJECT AND TERM PAPER</p>

Introduction
This project is designed to explore the field of WTO in more depth in a real organization/company. There will not be exam questions from this work.

Team Design for the Project
After the team formations, each team decides on an organization for this project. A team leader will lead the negotiations and discussions with the instructor for a final approval of the project. The team is responsible for finalizing the name and a short description of the organization by the second week of the semester. We also accept any projects that you are working on for ISE 495, or any term project in other courses. Email us your proposals for approval.

1st Presentation
In your 1st presentation, you will include a short description of the organization and a reasonable description of a problem that this organization is facing. The problem is usually defined by the company management. Then, you explain the company's functional units, and draw a preliminary relationship map. You also identify a few variables within each category of W, T and O that the team feels may be important to analyze. You may change these variables later throughout the semester. The team must justify why these variables are the ones that need to be looked at, based on the objectives of the company (vision, mission, unit production goals, etc.) and the nature of the problem that the organization is facing now. Also give us an indication of who are the key decision makers to potentially solve this problem. Identify the preliminary mismatches in a high-level process map. The relationship map should include a preliminary map of the flows for *materials/energy*, *information*, and *decision* networks. This presentation is not graded. The professor will use this presentation to help the team to move in the right direction.

2nd Presentation
The second presentation is scheduled at the end of the semester. The requirements are explained in the following paragraphs.

A suggested approach on how to research for the Term Project:
- Select an organization/company and state the reason why you picked this organization.
- Find out the mission and goal of the organization.

- In talking to the management, figure out what are some of the most critical problems they are facing at this time.
- Draw a relationship map for this organization.
- Increase your understanding of how this organization works from the different perspectives we discussed in class.
- Go back to the problem to be solved and try to frame the problem within the context of WTO.
- Visit the company regularly and collect data on the company's WTO variables.
- Select a particular work environment in this company in which the variables of WTO may be critically important for productivity improvement.
- Reduce the WTO variables into a small set, so you can study them in one semester.
- Justify your selection.
- State how WTO variables interact in your organization.
- Discuss the matches and mismatches among these variables.
- Be creative and give ways to change these variables to reduce mismatches.
- Describe how and with what costs/resources you will be able to reduce/eliminate these mismatches.
- Redraw the relationship map for the new organization.
- Finally predict future directions and the changes that might take place in this company with your redesign. Make sure that you give specific examples and/or applications.

In addition, you may want to include the following:
- A list of electronic references you used for this project. This may include web sites, etc. Web sites may represent research, consulting, or specific expertise.

A suggested approach on how to organize and analyze WTO variables:

This project requires that you think deeply about the interplay between the three primary elements of WTO. These elements can be viewed from a variety of perspectives. For this project assume that *Worker/employee* variables center around people, *technology* as means by which the objective of work can be accomplished and *organization* as a context within which the other two can be located. The following list gives you some idea as to the possible set of variables for each WTO.

Worker/Employee (the characteristics of and interactions among employees)

- Physical characteristics (sex, age, strength, race, ethnicity)
- Mental characteristics (imaginative, analytic, systematic, intuitive, etc.)
- Human nature (basic human needs, some 'under control', some unmet, some currently emerging or pressing)
- Attitude
- Conflict among workers
- Life-experience characteristics (employment history, learned skills, profession/occupation by training/experience, class background, financial security, computer literate/illiterate)

- Value system ("success" factors, being regarded as an "expert", contributing to societal or global improvement, job security, creativity, etc.)
- Habits
- Expectations
- Goals of the individual worker on the job
- Union and other worker protections
- Attitude toward management

Technology/Job Content (the tasks and tools associated with a particular job and the way a job is structured, ostensibly to enable those tasks to be successfully accomplished)

- Content (what is typically done, mentally or physically, and how it is done by a worker in the course of doing the work in question)
- Core technologies (what are the tools, methods and processes by which the main tasks are accomplished)
- Level of automation (manual, semi-automated, fully automated)
- Requisite knowledge (i.e., the mental, physical, and experiential abilities and skills and the training that an individual must have to be able to do the work in question)
- Resources typically drawn upon in doing the work in question (intellectual, organizational, technological, personal, etc.)
- Profession or occupation in which the work in question falls or with which it is associated (e.g. information technology versus labor)
- Job character (e.g., repetitive/diverse, people-intensive/solitary, abstract/concrete, task duration, intensity, etc.)
- Job structure (opportunities afforded by a certain kind of work as structured in a particular work setting) for example:
  Relations with coworkers and others
  Creativity and self-expression
  Challenge and growth
  Advancement possibilities
  Security
  Recognition and opportunities
  Autonomy and responsibility
  Development of job-specific or transferable skills
  Closure (opportunity to *finish* a task or project as opposed to task shifting)
- Job design: skill variety, task identity, task significance, autonomy, and feedback

Organizational Context (the system that people and work elements are organized with a common purpose)

- Organizational characteristics of:
  Size
  Type (manufacturing, service, agriculture; for-profit, not-for-profit) structure (number and location of units, how centralized/decentralized is planning and decision-making, how hierarchical is authority, number of job classifications, how stratified is workforce along

status and salary/wage lines)
Output and societal effects of output (as perceived by worker)
Culture (innovative?, entrepreneurial?, risk-averse/risk-taking?, militant vs. cooperative workers, paternalistic, tradition of excellent service to customers?, tradition of community support or involvement? of corporate philanthropy?)
Policies and practices of management and labor
- Maturity/trend in technological innovation (past, future)
- The work group (in which the worker does her or his work), characteristics of:
Size
Type (production, planning, clerical, shipping, maintenance, service, etc.)
Structure (hierarchy, decision-making, planning, etc.)
Community/solidarity
Culture (democratic, authoritarian, etc.)
Policies and practices
- Physical (vs. social) characteristics of the work environment
Locale (home, factory, laboratory, farm, office building, store, "on the road")
Work environment (clean/dirty, light/dark, hot/cold, noisy/quiet, etc.)
Aesthetic features (architecture, art work, plants, machine-intensive)
Amenities (work out room, employee lounges, etc.)
- Macro context (external forces to the organizational system)
Economic forces (up or down)
governmental policies and practices, regional, national, and international
Technological change in pertinent and related fields
Product market situation, regional, national, and international
Political-economic situation, regional, national, and international
Union policies and practices, national and international
Management policies and practices, national and international
- Culture, regional, national, and international

IMPORTANT: IN ADDITION TO THE ABOVE, YOU MAY ADD AND JUSTIFY OTHER IMPORTANT VARIABLES FOR YOUR SPECIFIC COMPANY.

By using this matrix approach we emphasize the fact that any aspect of work may be affected by other factors within a dynamic operational system -- and conversely: these effects can transform the way in which people and technologies interact in an organization.

Finally, it is important to include the important **matches** and **mismatches** between the main three variables of WTO and their sub-variables. For example, there can be mismatches between (1) work and worker [e.g., is the job requirements consistent with human abilities and limitations?]; (2) local context and worker [e.g., is the firm's culture appropriate for the newly proposed intellectually trained work force?]; (3) technological context and work [e.g., is technological innovation changing work requisites and processes? How?]; and (4) technology versus organizational context [e.g., are changes in technology and relations leading to changes in company policies, such as with the "lifetime employment" practice in Japan?]. And, you should be able to come up with three-way interactions and explain how they impact the overall company's operation.

Organization of the Paper: For each term paper the following standard for contents are expected.

Section	Max. Pages	Max. Grade

Cover Page
    Title of Project
    Team #
    Team member names
    Date of delivery
    8.5x11 sheets		

Abstract
    A sentence describing the type of organization
    A sentence on the problems faced by this organization
    The WTO variables that you studied
    Your design alternatives
    Your design suggestion to improve the company productivity
    Potential results
	0.5	5

Introduction
    A short description of the organization?
    Company's core technologies and competencies
    The nature of the WTO variables and why these are the important ones
    What kind of data/information you collected?
    Assumptions you made due to lack of data
	1	15

Modeling the Organization
    Define the work and operations philosophy (e.g., "mass" (batch-and-queue))
    Model the high-level process flow
    Model the entire system in terms of a relationship map
    Analyze important findings from the relationship map
	1	15

Defining WTO Variables
    Describe each of the *influential* variable within the context of this problem
    Why did you choose these variables based on the theories given in class?
    Organizational capabilities/limitations for each variable
    Define the mismatches for each variable
	2	15

Analyzing WTO Interactions
    Explain how the key variables interact
    Analyze the mismatches in the relationship map
    Discuss the impacts of mismatches on the overall performance
	2	15

Design Alternatives and Suggestions
    Offer alternatives to solve the "mismatch" problems
    Redesign the organization with a new process and a new relationship map
    Explain the resources you need to accomplish this redesign
	2	15

Evaluation
    How can you measure the performance of the new system?
    Predict future direction after your intervention and justify your approach
    Search the Internet for a similar problem and solution
	1	15

References
    Follow a standard ISE technical paper format (e.g., APA style)
    List all the references you used in this project
    Include any web-based references (less than one-third of all references)
	0.5	5

The paper length should be 10 single-spaced pages, _including_ figures and tables. The term paper should list the team number, team members, a title, and date of delivery (on the cover page). You should upload a Word or pdf copy into the Blackboard by the deadline.

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in _SCampus_ in Section 11, _Behavior Violating University Standards_ https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions. Other forms of academic dishonesty are equally unacceptable. See additional information in _SCampus_ and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

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Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the _American Language Institute_ http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. _The Office of Disability Services and Programs_ http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, _USC Emergency Information_ _http://emergency.usc.edu_ will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

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