

# **WORK, TECHNOLOGY AND ORGANIZATION (ISE 440)**

**Sprig 2017 (Tu/Th 12:30-1:50), 3 units, prerequisite: junior or senior**

**Instructor:** Dr. Rahimi

**Email:** [mrahimi@usc.edu](mailto:mrahimi@usc.edu) (use this for all regular communication)

**Office:** OHE 310K

**Office hours:** 5-6 Tu/Th, or email mrahimigm@gmail.com to setup a Skype session using my ID name mansourr.rahimii.

**TA:** Sanaz Massoumi, email: [sanazmas@usc.edu](mailto:sanazmas@usc.edu); office hours: Tu/Th 2-3 pm at OHE 340.

## **COURSE SUMMARY AND OBJECTIVES**

This course is a like a soup. I give you the ingredients, you place them in your own pot and mix them together ... The ingredients are in the answers to these questions:

- What is a work system and are workers an important component of this system?
- Should jobs be matched with personalities?
- Does power and influence matter as a factor in a work system?
- Why are you motivated and happy when working on some projects and miserable working on others?
- Who should control the important decisions about your work processes and working conditions? Should these decisions be made from the top or the bottom?
- How can we work more effectively in a technical team?
- Do you wonder why some technologies fail when they are introduced in an organization but not others?
- How should a company reorganize itself in a more democratic way, given its employee skills, cultures and ethics?
- Why lean systems create tension for workers?
- What are the different metaphors that an organization can represent?

To build the conceptual foundations to address these questions, we divide any work system into its three components of work, technology, and organization (WTO). It is the complexity of interactions among these components that gives us a better understanding of how an organization behaves and changes.

## **INTRODUCTION**

This course is based on the contents outlined by the Stanford University's Center for Work, Technology and Organization. The course is mostly conceptual and the individual concepts are easy to learn. However, the difficulty begins when we try to integrate these concepts into a "real" organization. Therefore, you may think that you are not learning much now, but wait until you experience the reality of work in the future. The concepts in this course will come alive and you will appreciate what you are exposed to here.

In WTO, the problem is often not clearly delineated and understood, thus, requires a higher level of thinking and problem solving. So, it is recommended that you shift your learning paradigm to

understanding the connection among the many topics offered here, and integrating them as you move forward. We offer this integrative learning by providing lectures, videos, case study discussions, term projects, and team-based book readings and presentations.

## COURSE MATERIAL

### Lecture Sets:

These PowerPoint slides sets are designed to provide a basic understanding of many topics relevant to WTO. The files are uploaded in Blackboard.

### Book Readings and 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 contains a number of case studies. It includes a detailed analysis of the lean philosophy of WTO as it applies to automobile industry within a global context. Each chapter will be assigned to a team and presented in the class. This book is referred to as the "Flexibility" book.

### Organization Behavior Case Studies:

These cases are uploaded into the Blackboard. You must read each case before and bring the case to the class for in-class discussions. The more you get involved in these discussions, the more you enjoy them.

### Additional Materials:

The course schedule below contains a number of videos that are part of your study. Please view these videos before each assigned session.

### Student's Roles and Responsibilities:

- This class will be more interesting and attractive if you speak up your thoughts during the sessions.
- Complete assignments/papers/presentations on time and in a professional manner, without spelling or grammatical errors and using a professional/technical paper format. No late work will be accepted.
- The instructor will bring a Windows 8 laptop with a connection to the projector. You are responsible for the rest of the presentation hardware/software requirements. Always bring a backup drive.
- Check your email and Blackboard regularly for announcements and changes to the course schedule.
- Use of electronic devices are not allowed during the lectures. The only time you must bring them is for your case study sessions.

## COURSE SCHEDULE

Date	Topics/Readings/Assignments
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1/10	<ul style="list-style-type: none"> <li>• Syllabus, class requirements and expectations</li> <li>• Team selection</li> </ul>
1/12	<p>Philosophies of Work</p> <ul style="list-style-type: none"> <li>• Craft production system: <a href="https://www.youtube.com/watch?v=8wCFLRjAy88">https://www.youtube.com/watch?v=8wCFLRjAy88</a> (2 min)</li> <li>• Mass production system: <a href="https://www.youtube.com/watch?v=3KAny-1saS4">https://www.youtube.com/watch?v=3KAny-1saS4</a> (1 minute)</li> <li>• Problems with mass production: <a href="https://www.youtube.com/watch?v=TKfRksMbbSI">https://www.youtube.com/watch?v=TKfRksMbbSI</a> (2 min)</li> <li>• A newer work system: lean manufacturing <a href="https://www.youtube.com/watch?v=gaUxMGCTPv8">https://www.youtube.com/watch?v=gaUxMGCTPv8</a> (3 min)</li> <li>• Video: 5 principles of Lean: <a href="http://www.youtube.com/watch?v=lwWI-3z1wZ0">http://www.youtube.com/watch?v=lwWI-3z1wZ0</a> (6 min)</li> <li>• <b>Finalizing teams and spend a few minutes with your team members to select an organization for your WTO term project</b></li> </ul>
1/17	<ul style="list-style-type: none"> <li>• Introduction to Craft and Mass Leading to Lean and Beyond</li> <li>• Work in service industry: re-imagining work in information technology fields <a href="https://www.youtube.com/watch?v=G11t6XAIce0">https://www.youtube.com/watch?v=G11t6XAIce0</a> (9 min)</li> <li>• How to Make a Living When Robots Take Over Jobs: <a href="https://www.youtube.com/watch?v=UfUrgFmUvt8">https://www.youtube.com/watch?v=UfUrgFmUvt8</a> (4 min)</li> </ul>
1/19	<ul style="list-style-type: none"> <li>• <b>Deadline: the team leader must obtain the approval for your WTO project organization</b></li> <li>• What is a job? <a href="https://www.youtube.com/watch?v=kRtBgGE5kQw">https://www.youtube.com/watch?v=kRtBgGE5kQw</a> (3 min)</li> <li>• The Great Debate: Who creates jobs? <a href="https://www.youtube.com/watch?v=1HY-5bHO8w">https://www.youtube.com/watch?v=1HY-5bHO8w</a> (5 min)</li> <li>• Rich people don't create jobs: <a href="https://www.youtube.com/watch?v=CKCvf8E7V1g">https://www.youtube.com/watch?v=CKCvf8E7V1g</a> (6 min)</li> <li>• The Perfect Country: <a href="https://www.youtube.com/watch?v=shanIOl7MyE">https://www.youtube.com/watch?v=shanIOl7MyE</a> (8 min)</li> <li>• Introduction to ISE 440</li> </ul>
1/24	<ul style="list-style-type: none"> <li>• Personality Assessment</li> <li>• Read Case 4: Personality Assessment: Jung's Typology</li> </ul>
1/26	<ul style="list-style-type: none"> <li>• Learning Styles</li> <li>• Read Case 10: Learning Model Instrument</li> </ul>
1/31	<ul style="list-style-type: none"> <li>• Hollywood's clips on Power and Influence in Organizations: <a href="https://www.youtube.com/watch?v=z6ZPeq-wefs">https://www.youtube.com/watch?v=z6ZPeq-wefs</a> (4 min)</li> <li>• Power in Organizations</li> <li>• Influence and the "Science of Persuasion": <a href="https://www.youtube.com/watch?v=cFdCzN7RYbw">https://www.youtube.com/watch?v=cFdCzN7RYbw</a> (11 min)</li> </ul>
2/2	<ul style="list-style-type: none"> <li>• Theories of Motivation (at work)</li> <li>• Drive (<a href="https://www.youtube.com/watch?v=u6XAPnuFjJc">https://www.youtube.com/watch?v=u6XAPnuFjJc</a> (10 min))</li> <li>• Read Case 14: Mega Manufacturing</li> </ul>
2/7	<ul style="list-style-type: none"> <li>• Chapter 1 of Images of Organization book</li> <li>• <b>Team 1:</b> Presentation of Ch 2 of Images book (30 min.+10 min. Q/A)</li> </ul>
2/9	<ul style="list-style-type: none"> <li>• <b>Team 2:</b> Presentation of Ch 3 of Images book (30 min.+10 min. Q/A)</li> </ul>

2/14	<ul style="list-style-type: none"> <li>• <b>Team 3:</b> Presentation of Ch 4 of Images book (30 min.+10 min. Q/A)</li> </ul>
2/16	<ul style="list-style-type: none"> <li>• Read Case 59: Moral Dilemmas (<i>each team prepare a response to one dilemma</i>)</li> </ul>
2/21	<ul style="list-style-type: none"> <li>• Teams and Team-Building</li> <li>• Conflict Resolution slides</li> <li>• Review for the First Exam</li> </ul>
2/23	<ul style="list-style-type: none"> <li>• <b>FIRST EXAM (all materials through the last session)</b></li> <li>• <b>1<sup>st</sup> peer evaluation</b></li> </ul>
2/28	<ul style="list-style-type: none"> <li>• <b>WTO 1<sup>st</sup> Presentation: 5 min. + 2 min. Q/A (no papers due)</b></li> </ul>
3/2	<ul style="list-style-type: none"> <li>• <b>Team 4:</b> Presentation of Ch 5 of Images book (30 min.+10 min. Q/A)</li> </ul>
3/7	<ul style="list-style-type: none"> <li>• <b>Team 5:</b> Presentation of Ch 6 of Images book (30 min.+10 min. Q/A)</li> </ul>
3/9	<ul style="list-style-type: none"> <li>• <b>Team 6:</b> Presentation of Ch 8 of Images book (30 min.+10 min. Q/A)</li> </ul> <p style="text-align: center;"><b>SPRING BREAK</b></p>
3/21	<ul style="list-style-type: none"> <li>• Socio-Technical System Design</li> </ul>
3/23	<ul style="list-style-type: none"> <li>• <b>Team 7:</b> Presentation of Ch 9 of Images book (30 min.+10 min. Q/A)</li> </ul>
3/28	<ul style="list-style-type: none"> <li>• Job Design</li> <li>• Hackman and Oldham job design model <a href="https://www.youtube.com/watch?v=Y6C5YvifaEk">https://www.youtube.com/watch?v=Y6C5YvifaEk</a> (8 min)</li> <li>• Read Case 42: Job Design Exercise</li> </ul>
3/30	<ul style="list-style-type: none"> <li>• Read Case 22: WINDSOCK, Inc. (a design and manufacturing simulation)</li> </ul>
4/4	<ul style="list-style-type: none"> <li>• <b>Team 8:</b> Presentation of Ch 2 of Flexibility (30 min.+10 min. Q/A)</li> </ul>
4/6	<ul style="list-style-type: none"> <li>• <b>Team 9:</b> Presentation of Ch 4 of Flexibility (30 min.+10 min. Q/A)</li> </ul>
4/11	<ul style="list-style-type: none"> <li>• <b>Team 10:</b> Presentation of Ch 5 of Flexibility (30 min.+10 min. Q/A)</li> </ul>
4/13	<ul style="list-style-type: none"> <li>• Students critique the following videos, representing external forces shaping an organization system (capital, environment, new technology): <ul style="list-style-type: none"> <li>• The Crisis of Capitalism: <a href="https://www.youtube.com/watch?v=qOP2V_np2c0">https://www.youtube.com/watch?v=qOP2V_np2c0</a> (11 min.)</li> <li>• Story of Solutions (changing the goal of businesses from financial only to triple economic/social/environmental): <a href="http://www.youtube.com/watch?v=cpkRvc-sOKk">http://www.youtube.com/watch?v=cpkRvc-sOKk</a> (9 min.)</li> <li>• Corporate Greed Isn't New: The Internet Is Just the New Playing Field, by Douglas Rushkoff (<a href="https://www.youtube.com/watch?v=mAOyOULWKUo">https://www.youtube.com/watch?v=mAOyOULWKUo</a>) (12 min.)</li> </ul> </li> </ul>
4/18	<ul style="list-style-type: none"> <li>• A different way of organizing WTO: triple bottom line</li> <li>• Rural Electrification Administration <a href="https://www.youtube.com/watch?v=tenKnIx4ouY">https://www.youtube.com/watch?v=tenKnIx4ouY</a> (3 min.)</li> <li>• Workplace democracy <a href="https://www.youtube.com/watch?v=h1i0Miy6T7A">https://www.youtube.com/watch?v=h1i0Miy6T7A</a> (12 min.)</li> <li>• How do worker cooperatives work? <a href="https://www.youtube.com/watch?v=qbZ8ojEuN5I">https://www.youtube.com/watch?v=qbZ8ojEuN5I</a> (7 min.)</li> <li>• Do your course evaluations now...</li> </ul>
4/20	<ul style="list-style-type: none"> <li>• <b>SECOND EXAM (all materials after EXAM 1)</b></li> </ul>
4/25	<ul style="list-style-type: none"> <li>• <b>WTO 2<sup>nd</sup> Presentation and Paper: 10 min. + 2 min. Q/A</b></li> </ul>
4/27	<ul style="list-style-type: none"> <li>• <b>WTO 2<sup>nd</sup> Presentation and Paper: 10 min. + 2 min. Q/A (papers due at the end</b></li> </ul>

	of this session)
•	<b>2nd peer evaluation</b>

**Note 1:** The readings are to be completed **before** the class sessions indicated. Other items may be assigned prior to each session.

**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 on Blackboard and/or in the class. You are responsible for the revised materials.

## COURSE GRADING

<b>Deliverables</b>	<b>Grade Ownership</b>	<b>Grade Distribution</b>
Book Presentation	Team	<b>15%</b> (content and format)
WTO Term Project	Team	<b>25%</b> (half presentation, half paper)
Peer Evaluations	Individual	<b>10%</b> (half mid-term, half final)
First Exam	Individual	<b>25%</b> (Closed Book and Note)
Second Exam	Individual	<b>25%</b> (Closed Book and Note)

## 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)	N a m	N a m	N a m	N a m
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		e	e	e	e	e
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					
<b>Total Points/5</b>						

Please be honest and truthful in your evaluations of other students. All peer evaluations in this class will be kept *strictly confidential*. The mean sum value for each student will be entered into a spreadsheet for the final peer evaluation grade.

## **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:

- Read the chapter carefully and understand deeply the image discussed.
- Extra points will be considered for the teams that bring a case example from outside for this type of organizational behavior.

## **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 this image only. In other words, what are the three main take-away concepts from this image? 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?*

Other questions specific to each chapter are:

- Is mass production no longer applicable?
- Has “Japanization” given way to Lean and now 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 are that:**

- 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.

- 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 this image only. In other words, what are the three main take-away concepts from this image? 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.

## BOOK PRESENTATION FORMAT

- The instructor/TA are prepared to help the teams in presentation style, format, and content for 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 presentation. The instructor and TA will give a short assessment at the end of each presentation, based on the presentation format and content.
- The exam may include the Q/A items.

## WTO PROJECT AND TERM PAPER

### **Introduction**

This project is designed to explore the field of WTO in more depth in a real organization/company.

### **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 short description of the organization by the second week of the semester.

In your first presentation, you will include a short description of the organization and a reasonable description of a problem that this organization is facing. Then, explain the company's functional units, its relationship map, and a preliminary set of W, T and O variables that the team wants to study later on. 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. The variables must be identified using an organization map with matches and mismatches identified. The relationship map should include a 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 move in the right direction. The second presentation is scheduled at the end of the semester.

The paper length should be less than 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 copy into the Blackboard at the time of the final presentation.

### **A suggested approach on how to research for this 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 and often do 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 interaction (if possible) and explain how it impacts 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 One sentence on what you learned in this project	0.5	5
Introduction Why you selected this organization? Company's core technologies and competencies The nature of the WTO variables and why these are the important ones Assumptions about this company (e.g., unavailable information/data) What kind of data/information you collected?	1	15
Modeling the Organization Define the work and operations philosophy (e.g., "mass" (batch-and-queue)) Model the process flow Model the entire system in terms of a relationship map/diagram Write down the important finding from the relationship map	1	15
Defining WTO Variables Identify each key <i>influential</i> variable within the context of this problem Why did you choose these variables based on the theories given in class? Organizational capabilities and limitations for each variable Define the mismatches in these variables Define mismatches in the relationship map	2	15
WTO Interactions Explain how the key variables interact Discuss the impacts of mismatches on organizational performance	2	15
Design Alternatives and Suggestions Your alternatives to solving the "mismatch" problems Redesign the organization and include an improved relationship map Explain the resources you need to accomplish this redesign	2	15
Evaluation How would you evaluate the new design? Predict future direction after your intervention and justify your approach Can you find another organization that has the same problem(s)?	1	15
References Follow a standard ISE technical paper format List all the references you used in this project	0.5	5

Include web-based documents (no more than one-third of all references)		
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## 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](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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