



Engineering and Technology Management

COURSE SYLLABUS

Course Number: E M 426

Course Name: Constraints Management

Instructor: Russ Johnson

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Semester Credits: 3

Prerequisites: None

Course Description and Objectives:

This course develops the ability to think clearly about any situation and identify the constraint or limiting factor that prohibits improvement. Improvement implies change. The real issue then becomes, "What to change?" among the many options. Students learn to think logically and formulate the cause and effect relationships that define the system and identify the few root causes (the core problems) creating most of the problems. Next is, "What to change to?" It is easy to complain and point out flaws, but more difficult to present a better, even a breakthrough, solution. Students identify the goal and necessary conditions that open the way for solutions without causing devastating side effects. They learn to overcome obstacles within the system. Last, "How to cause the change?" It is extremely frustrating to know the answer and have it ignored. Students learn the step-by-step process of how to cause (influence or effect) reality to change in the direction they desire (even when the solution appears to be beyond their control). The student effectively applies these principles in day-to-day situations and in a major project relevant to his field of study. These concepts are collectively called the Theory of Constraints Thinking Process.

Application: The theoretical material is applied in a variety of systems. Simple and complex organizations are examined. Manufacturing, design, construction, process systems, distribution, sales, and service organizations are used for case study and theory development. Students learn to apply the theory in everyday situations and in a significant work related application.

Successful completion of this course qualifies the student for the TOCICO Jonah Certificate of Recognition for the Goldratt Thinking Process.

Course Topics:

- Sufficiency- and Necessary-Based Logic
- Cause and Effect
- Strategic Thinking
 - Agreeing on the problem – identifying ongoing unresolved symptoms
 - Agreeing on the direction of the solution - Linking common symptoms to a root cause (conflict)
 - Agreeing on a potential solution – identifying a breakthrough change with system level impacts
 - Addressing missed or unintentional side effects of the proposed solution
 - Identifying obstacles to implementing the proposed solution
 - Identifying actions to overcome the obstacles to implementation
 - Building an implementation plan
 - Getting buy-in - Selling the plan to other stakeholders
 - Judging progress – Are the outcomes what was expected? If not were the expectations too much or too little or were there incorrect assumptions made?

Grading:

Two team Homework assignments: 10%, Project: 75% Peer Review: 15%