

## INTRODUCTION

Engineers, social scientists, and managers frequently bring people and technology together to address complex problematic situations in an equitable way that benefits people and the environment. Multiple systems theories and approaches have been developed to address these situations, and typical courses in systems focus on a relatively small portion of the rich assortment of available approaches to addressing systems problems. This course introduces students to multiple systems theories and approaches via readings, class discussion, reflective writing assignments, and selected case studies and team projects. The course will emphasize critical thinking about how the theories and approaches relate to each other and how they might be applied individually and in combination to address complex problematic situations.

This document contains basic information about the SYS 400 class, including contact information for the instructor. The distribution of reading material, assignments, etc. uses Purdue's Brightspace site. Students must register for SYS 400 to access the class page on Brightspace.

All material needed for class should be available; if you find this is not the case, please e-mail the instructor. Any information given in class will supersede information given in this document.

### **Meeting Times and Location**

Monday, Wednesday, Friday, 9:30 – 10:20 am  
WALC 3127

### **Instructor**

Dr. C. Robert Kenley

Office: GRIS 370      Phone: + 1 765 494 5160      E-mail: [kenley@purdue.edu](mailto:kenley@purdue.edu)

Web: <http://web.ics.purdue.edu/~ckenley/>

Office Hours: You have two options to request a meeting with Professor Kenley.

1. For a more seamless meeting request interaction, create an Exchange meeting request by accessing your purdue.edu account via a browser at <https://outlook.office365.com> or via the Outlook desktop application, which has Meeting Planning and Scheduling Assistant capabilities
2. Check the calendar link at Professor Kenley's web site, type up and send an e-mail that suggests a couple of times to meet, and wait for an e-mail response from Professor Kenley

## **SYLLABUS**

### **Course Outcomes**

Students will be able to understand and reflect upon the complex issues raised by technological and scientific changes and its effects on society and the global world by making sense of, evaluating, and responding to present and future changes that shape individuals' work, public, and personal lives.

This course will teach systems theories for understanding the complex problematic situations that result from the interaction of scientific and technological changes, values held by individuals and groups, and organizational and social structures. Students will also learn approaches applicable to the workplace and the public sphere that respond to these situations by addressing them in an equitable way that benefits people and the environment.

This course completes one of the requirements of the Systems Certificate (15 credits total). For more information about the Systems Certificate visit <https://www.purdue.edu/collaboratory/>. Ask your advisor for more information.

### **Course Goals**

This course has two major goals:

1. Introduce multiple systems theories and approaches via readings, class discussion, reflective writing assignments, and selected case studies
2. Emphasize critical thinking about the theories and approaches
  - a. How they relate to each other
  - b. How they might be applied individually and in combination

### **Prerequisites**

Undergraduate students from all majors with Upper Division standing are welcome.

**Course Topics**

Table 1 shows the nominal course topics. This is subject to change.

Table 1. Course Topics

High-Level Topics	Detailed Topics
Holism and Systems Practice	1. System Thinking and Approaches
	2. Systems language and Key Terms
	3. System Modeling
	4. Working in Groups and Teams
Improving Viability	5. The Viable System Model
Exploring Purposes	6. Soft Systems Methodology
	7. Critical Systems Heuristics
	8. Interactive Management
Understanding Human Systems	9. Family Systems Theory
	10. Organizations as Systems
	11. Soft Systems Approaches
Improving Goal Seeking	12. Systems Engineering
	13. Concept Generation and Concept Selection
	14. Causal Loop Diagrams
Ensuring Fairness and Promoting Diversity	15. Participatory Appraisal
Creative Holism	16. Total Systems Intervention
	17. Critical Systems Thinking and Practice

**There is a Microsoft Excel Calendar File posted to Brightspace that serves as a master schedule for all class sessions and assignments that is updated regularly.**

**Policies***Academic Integrity*

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing [integrity@purdue.edu](mailto:integrity@purdue.edu) or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

Purdue's Honor Pledge was developed by students to advance a supportive environment that promotes academic integrity and excellence. It is intended that this pledge inspires Boilermakers of all generations to stay "on track" to themselves and their University.

As a Boilermaker pursuing academic excellence,  
I pledge to be honest and true in all that I do.  
Accountable together – We are Purdue.

*Assignments*

The course format includes readings, discussion, reflection, artifacts, group projects, and a case study. During many class periods, the students and instructor will discuss the related reading assignments. An Excel file that shows the reading assignments is posted to Brightspace, and the file may change as the semester progresses. Access to Brightspace is restricted to students currently enrolled in the course.

*Course Materials*

There is no required book for this course. There will be readings from journal articles, online texts, and other sources. These readings will be accessed via Perusall links from the Brightspace site.

*Guidelines for Readings and Class Discussions*

During class periods, the students and instructor will discuss the assigned reading material. Students will be assigned reading material via *Perusall*, which is linked to Brightspace; and enter their notes on the readings prior to class, which will be automatically graded by *Perusall's* proprietary algorithm. For each reading assignment, students will be assigned to a reading group by *Perusall* that will be randomly determined or according to project teams, depending on the nature of the reading material. The instructor will review the results from *Perusall* prior to the class period, and the instructor and students will discuss the readings.

Most the discussion should focus on assisting the entire class to bring themselves to a level at which they can evaluate the topics. This evaluation may include how the topics relate to previous class discussions, how and where they fit into the universe of systems theories and approaches, how the topics may improve systems thinking, and the practicality of the topics. Keep in mind that not everyone will share the same point of view.

*How Perusall Works*

*Perusall* helps you master readings faster, understand the material better, and get more out of your classes. To achieve this goal, you will be collaboratively annotating the readings with others

in your class. The help you will get and provide your classmates (even if you do not know anyone personally) will get you past confusions quickly and will make the process more rewarding. While you read, you will receive answers to your questions, help others resolve their questions (which also helps you learn), and advise the instructor how to make class time most productive. You can start a new annotation thread in *Perusall* by highlighting text, asking a question, or posting a comment; you can also add a reply or comment to an existing thread. Each thread is like a chat with one or more members of your class, and it happens in real time. Your goals in annotating each reading assignment are *to stimulate discussion by posting good questions or comments* and *to help others by answering their questions*.

Research shows that by annotating thoughtfully, you will learn more and get better grades, so here is what “annotating thoughtfully” means: Effective annotations *deeply engage points in the readings, stimulate discussion, offer informative questions or comments, and help others by addressing their questions or confusions*. To help you connect with classmates, you can “mention” a classmate in a comment or question to have them notified by email (they will also see a notification immediately if online), and you will receive a notification when your classmates respond to your questions.

For each assignment *Perusall* will evaluate the annotations you submit prior to the due date. Based on the overall body of your annotations, you will receive a score on a continuous scale from 0 to 100 for each assignment as follows

- 90 - 100 = demonstrates exceptionally thoughtful and thorough reading of the entire assignment
- 70 - 90 = demonstrates thoughtful and thorough reading of the entire assignment
- 60 - 70 = demonstrates superficial reading of the entire assignment OR thoughtful reading of only part of the assignment
- 0 - 60 = demonstrates superficial reading of only part of the assignment

When *Perusall* looks at your annotations, it is attempting to measure the effort you put in your study of the text. Superficial or short comments or questions can serve to initiate interaction with your peers, but do not reflect the effort that the *Perusall* looking for. Is it looking for thoughtful questions or comments that stimulate discussion or thoughtful and helpful answers to other students’ questions. The number of thoughtful annotations for each reading assignment varies according to the length of the assignment. Note, also, that to lay the foundation for understanding the in-class activities, you must familiarize yourself with each assignment *in its entirety*. Failing to annotate the entire assignment will result in a lower score.

### *Reflections and Artifacts*

Some modules will have assignments that request various reflections and artifacts based on readings, lectures, and discussions.

### *Team Project and Exercises*

Students will complete two team projects and two team exercises during the term. These projects and exercises will provide students with the opportunities to practice applying some of the

concepts and methods encountered during the term. Projects and exercises will require students to submit team reports and to complete individual peer evaluations of team members.

The project teams will be formed the first week of the term and a team charter will be required that will lay out the norms for operating the team and an initial schedule for how the team will complete the two exercises and the two projects. **Project teams have found that they need to meet at least once per week to be successful. Even when there are no team assignments during a given week, it will be valuable to meet as a team as a study support group.**

#### *Final Case Study*

The Final Case Study is an individual assignment that will provide students with the opportunity to practice applying some of the theories and approaches encountered during the semester. It will apply Critical Systems Thinking to evaluate how a complex situation can be addressed by using a combination of systems approaches to address the situation.

#### *Missed or Late Work*

##### **The instructor will not accept late work.**

In extreme circumstances, the instructor might accept late work with an appropriate penalty to the score. These circumstances most likely would be those that lead to a student filing to receive a grade of Incomplete in the class. For late homework to be considered for grading, the student must provide the instructor a written request with justification as to why the circumstance is extreme.

#### *Course Grades*

There will be a numerical score for each assignment and quiz. The case studies and projects involve individuals or groups using the theories and approaches with no single correct answer, so the grading of the course will account for this. If students have a concern about a grade on their work, they should first bring it to the attention of the person who graded the work. Requests for reconsideration / regarding must be made within one week of when the work is returned to students.

Computation of final course grades will use the following distribution of weights:

<b>Assignment</b>	<b>Due Date</b>	<b>Weight</b>	<b>Team or Individual Score</b>	<b>Evaluators</b>
<b>Module 01 Reading</b>	<b>25-Aug</b>	1%	Individual	Perusall
<b>Module 01 Reflection</b>	<b>27-Aug</b>	1%	Individual	Instructors
<b>Module 02 Reading</b>	<b>27-Aug</b>	1%	Individual	Perusall
<b>Module 02 Reflection</b>	<b>30-Aug</b>	1%	Individual	Instructors
<b>Module 03 Readings</b>	<b>30-Aug</b>	1%	Individual	Perusall
<b>Module 04 Readings</b>	<b>1-Sep</b>	1%	Individual	Perusall
<b>Module 03 Reflection</b>	<b>1-Sep</b>	1%	Individual	Instructors
<b>CATME Team Maker Survey</b>	<b>1-Sep</b>	2%	Individual	Instructors
<b>Module 04 Artifacts</b>	<b>3-Sep</b>	1%	Individual	Instructors
<b>Module 06 Readings</b>	<b>8-Sep</b>	1%	Individual	Perusall
<b>Team Charter</b>	<b>8-Sep</b>	2%	Team	Instructors
<b>Module 06 Reflection</b>	<b>10-Sep</b>	1%	Individual	Instructors
<b>Module 07 Reading</b>	<b>10-Sep</b>	1%	Individual	Perusall
<b>Module 07 Reflection</b>	<b>13-Sep</b>	1%	Individual	Instructors
<b>Module 11 Readings</b>	<b>20-Sep</b>	1%	Individual	Perusall
<b>VSM Team Report</b>	<b>20-Sep</b>	3%	Team	Instructors
<b>Individual Report on VSM</b>	<b>20-Sep</b>	5%	Individual	Instructors
<b>First Peer Evaluation Inputs</b>	<b>20-Sep</b>	2%	Individual	Instructors
<b>First Peer Evaluation Results</b>	<b>20-Sep</b>	4%	Individual	Peers
<b>Module 12 Readings</b>	<b>22-Sep</b>	1%	Individual	Perusall
<b>Project Proposal Presentation</b>	<b>27-Sep</b>	1%	Team	Instructors
<b>Module 16 Readings</b>	<b>1-Oct</b>	1%	Individual	Perusall
<b>Module 17 Readings</b>	<b>4-Oct</b>	1%	Individual	Perusall
<b>Module 18 Readings</b>	<b>6-Oct</b>	1%	Individual	Perusall
<b>Module 19 Readings</b>	<b>8-Oct</b>	1%	Individual	Perusall
<b>Module 19 Reflection</b>	<b>13-Oct</b>	1%	Individual	Instructors
<b>Module 20 Reading</b>	<b>13-Oct</b>	1%	Individual	Perusall
<b>Module 20 Reflection</b>	<b>15-Oct</b>	1%	Individual	Instructors
<b>Module 21 Readings</b>	<b>15-Oct</b>	1%	Individual	Perusall
<b>Module 22 Readings</b>	<b>18-Oct</b>	1%	Individual	Perusall
<b>Module 22 Reflection</b>	<b>20-Oct</b>	1%	Individual	Instructors
<b>Module 23 Reading</b>	<b>20-Oct</b>	1%	Individual	Perusall
<b>Module 24 Readings</b>	<b>22-Oct</b>	1%	Individual	Perusall
<b>Module 24 Reflection</b>	<b>25-Oct</b>	1%	Individual	Instructors

Assignment	Due Date	Weight	Team or Individual Score	Evaluators
Module 25 Readings	25-Oct	1%	Individual	Perusall
Module 26 Readings	27-Oct	1%	Individual	Perusall
Team Presentation	3-Nov	6%	Team	Instructors
Module 30 Readings	5-Nov	1%	Individual	Perusall
Module 30 Reflection	8-Nov	1%	Individual	Instructors
Module 31 Readings	8-Nov	1%	Individual	Perusall
SSM-CSH Team Report	8-Nov	10%	Team	Instructors
Module 31 Artifacts	10-Nov	1%	Individual	Instructors
Module 33 Readings	12-Nov	1%	Individual	Perusall
Module 35 Readings	17-Nov	1%	Individual	Perusall
Module 35 Reflection	19-Nov	1%	Individual	Instructors
Module 36 Reading	19-Nov	1%	Individual	Perusall
Module 36 Artifact	22-Nov	1%	Team	Instructors
Module 37 Reading	22-Nov	1%	Individual	Perusall
Second Peer Evaluation Inputs	22-Nov	2%	Individual	Instructors
Second Peer Evaluation Results	22-Nov	4%	Individual	Peers
Team Exercises	22-Nov	4%	Team	Instructors
Module 37 Reflection	29-Nov	1%	Individual	Instructors
Module 38 Readings	29-Nov	1%	Individual	Perusall
Module 38 Reflection	1-Dec	1%	Individual	Instructors
Module 39 Readings	1-Dec	1%	Individual	Perusall
Module 39 Reflection	1-Dec	1%	Individual	Instructors
Module 40 Readings	3-Dec	1%	Individual	Perusall
Case Study - Critical Systems Thinking and Practice	11-Dec	10%	Individual	Instructors
<b>Total</b>		100%		

**27% of the weighting is allocated to team results.**  
**8% of the weighting is allocated to peer evaluation of individuals.**  
**65% of the weighting is allocated to individual results.**



Final letter grades for the course will use the table below. The total numerical score will be rounded to the nearest integer percent.

Numerical to letter conversion for final grades							
Score	Grade	Score	Grade	Score	Grade	Score	Grade
98 to 100%	A+	88 to 89%	B+	78 to 79%	C+	68 to 69%	D+
93 to 97%	A	83 to 87%	B	73 to 77%	C	63 to 67%	D
90 to 92%	A-	80 to 82%	B-	70 to 72%	C-	60 to 62%	D-

A total score of 59% or lower will always fail.

*Attendance*

The University Regulations Handbook reads: "Students are expected to be present for every meeting of the classes in which they are enrolled." If you must miss a class, you are responsible for the reading material, discussion, assignments, and/or announcements made. Excessive absence from the class will negatively affect the participation portion of the grade and seriously degrade your ability to complete the team exercises and projects.

*Campus Emergencies*

In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Information about these changes will be available from the public website for this course, Brightspace, or via e-mail.