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 concepts and methods 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 concepts and methods via readings and class lecture. The students then apply these concepts and methods on team-based projects. The course will emphasize critical thinking about how the concepts and methods are applicable to the problematic situations of the projects and how well the project teams were able to perform the required activities.

This document contains basic information about the SYS 530 class, including contact information for the instructor. The distribution of reading material, project assignments, etc. uses Purdue's Blackboard site. Students must register for SYS 530 to access the class page on Blackboard.

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
Tuesday, Thursday 12:00 – 1:15 pm
WANG 2579

Instructor
Dr. C. Robert Kenley
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SYLLABUS

Course Outcomes
There are five key learning outcomes for this course:
1. Learning about group project team formation, operation, and evaluation
2. Learning and applying a collection of functionalist systems methods in a team environment
3. Learning and applying an interpretive systems method in a team environment
4. Learning and applying critical systems heuristics and soft systems methodology in a team environment
5. Developing written and oral communication products to present results

Course Goals
This course has two major goals:

1. Introduce multiple systems concepts and methods via readings, class lecture, reflective writing assignments, and selected projects
2. Emphasize critical thinking about the concepts and methods
   a. How they relate to each other
   b. How they might be applied individually and in combination

Prerequisites
Graduate students and undergraduate students with Upper Division standing from all majors are welcome.

Course Topics
Table 1 shows the nominal course topics that cover the system concepts and methods. This is subject to change.

Table 1. Course Topics

High-Level Topics	Detailed Topics	Modules
Groups	1. General Group Methods	02
	2. Group Projects in Online Learning	
	3. Project Team Formation	
	4. Project Team Peer Evaluation	
Holism and Systems Practice	5. Applied Systems Thinking	03
	6. The Systems Language	
	7. System Modeling Concepts	04
	8. General Systems Approaches	
Functionalist Methods	9. Systems Engineering	
	10. Concept Generation	05, 06
	11. Concept Selection	06
Interpretive Systems	12. The Viable System Model	07, 08
Soft Systems Methodology and Critical Systems Heuristics	13. Soft Systems Methodology	09
	14. Critical Systems Heuristics	10

There is a Microsoft Excel Calendar File posted to Blackboard 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 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 and Projects
The course format is that of a reading / lecture / projects. An Excel file that shows the reading assignments for the lestures is posted to Blackboard. Check Blackboard often, as the schedule and assignments will change as the semester progresses. Access to Blackboard is restricted to students currently enrolled in the course.

Team Exercises and Projects
Students will complete three team exercises and three team projects during the semester. These exercises and projects will provide students with the opportunities to practice applying some of the concepts and methods encountered during the semester. Exercises and project will require students to submit team reports, team briefings, and individual peer evaluations of team members. The project assignment descriptions will be available from Blackboard.

The project teams will be formed the second week of the semester 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 three exercises and the three projects. It is advisable to do some of the activities toward completing the exercises and projects in parallel. ***Project teams have found that they need to meet at least twice per week to be successful.***

Project 1 provides practice applying functionalist systems methods to the situation of a single provider of a single-system, technology-based product or service that meets the needs of a segment of society in a manner that is equitable for the principal stakeholders.

Project 2 will apply an interpretive systems approach to the situation of a community partner / sponsor who is part of a single large, complex organizational system that meets multiple needs of society in a manner that is equitable for the principal stakeholders.

Project 3 will apply Soft Systems Methodology and Critical Systems Heuristics to a problematic situation identified jointly by the team and the community partner / sponsor based on the results of Project 2. The situation should include multiple participants who have different needs that

must be accommodated to meet a societal need in a manner that is equitable for the principal stakeholders.

Course Materials
The is no required book for this course. There will be readings from journal articles, online texts, and other sources. These readings can be accessed either as files posted on the Blackboard site or via the links provided.

You may will have to log into the Purdue library site first to gain access to some of the links. First go to https://www.lib.purdue.edu/ and enter a title in search area. After you search, the item you need usually is at the top of the list and after a couple clicks, it should ask you for your Career ID for access.

For journal articles, the title to use is the article title, e.g., for this reading:

O'Donnell, F.J., and A.H.B. Duffy. 2002. "Section 3 to Section 3.2" from "Modelling design development performance." International Journal of Operations & Production Management no. 22 (11):1204-1207. http://dx.doi.org/10.1108/01443570210450301

you should enter the following into the search area at https://www.lib.purdue.edu/:

Modelling design development performance

For book chapters or sections, the title to use is the book title, e.g., for this reading:

Buede, Dennis M. 2009. "1.8 Design and Integration Process" In The Engineering Design of Systems: Models and Methods, Second Edition, 38-41. Hoboken: Jon Wiley & Sons. https://doi.org/10.1002/9780470413791.ch1

you should enter the following into the search area at https://www.lib.purdue.edu/:

The Engineering Design of Systems: Models and Methods, Second Edition

Guidelines for Readings and Lectures
During each class period, the instructor will lecture on the assigned reading material. The timing of these readings appears in the Excel file on Blackboard. Students are expected to read the assigned material, prepare their answers to the questions that will be posted to Blackboard, and otherwise prepare for lecture sessions BEFORE the class period.

Most the lectures 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 lectures, how and where they fit into the universe of systems concepts and methods, 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.

Notebook Guidelines
As class lectures will comprise a major portion of this course, it is important for all class members to be prepared for class. Maintaining notebooks will help facilitate good lectures. There will be five notebooks that are compiled from answers to reading questions and a reflective summary that you will prepare for individual class sessions. You will compile each notebook from the Q&A and the summary of the individual class sessions as a SINGLE .docx file to be submitted on Blackboard for grading.

Use the following guidelines in preparing your notebooks:

- Read assigned material and answer the questions before the class. The list of readings and questions are provided by module in a Microsoft Word document (.docx) on the Course Materials page of Blackboard. They use a two-column table format for recording your answers in the right-hand column.
- In addition to recording your answers to the questions before coming to class, use your own words to list the main points in a summary reflections section at the end of the file. When possible, describe an actual or proposed application of the techniques, ideas, or theories from the reading to a research topic or an application problem.
- Take notes during the class lecture.
- Update your summary reflections section after the class lecture.
- Maintaining an up-to-date set of Word documents with all of your notes will be useful for referencing the cumulative material collected as we proceed through the semester and will allow you to have notebooks ready to be submitted for review when due.
- If there is handwritten material to be incorporated into your notebook, it should be scanned and incorporated into file that will be submitted

Missed or Late Work
<u>The instructor will not accept late work.</u>
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
Because this course will be a reading / lecture / project class, grades will be based on your ability to critically read and understand the readings, to write short summaries on the readings and topics covered, and to complete projects during the semester that make use of the topics and methods presented in the course.

There will be a numerical score for each assignment. The exercises and projects involve groups using the concepts and methods 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 / regrading 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:

Assignment	Due Date	Weight	Prerequisite Modules	Team or Individual Score	Evaluators
CATME Team Maker Survey	14-Jun	2%	02	Individual	Instructors
Notebook 1	14-Jun	2%	01, 02	Individual	Instructors
Notebook 2	18-Jun	2%	03, 04	Individual	Instructors
Team Charter	20-Jun	12%	02	Team	Instructors
Notebook 3	20-Jun	2%	05, 06	Individual	Instructors
Team Exercise 1	24-Jun	2%	05	Team	Instructors
Notebook 4	24-Jun	2%	07, 08	Individual	Instructors
Notebook 5	26-Jun	2%	09, 10	Individual	Instructors
Project 1 Concept Generation Report	28-Jun	10%	03, 04, 05, 06	Team	Instructors
Team Exercise 2	1-Jul	2%	06	Team	Instructors
Team Exercise 3	2-Jul	2%	06	Team	Instructors
Project 1 Concept Selection Report	9-Jul	8%	06	Team	Instructors
Project 1 Peer Evaluation Inputs on Rest of Team	9-Jul	3%	03, 04, 05, 06, 02	Individual	Instructors
Project 1 Peer Evaluation Result	9-Jul	5%	03, 04, 05, 06, 02	Individual	Peers
Project 2 Team Report	18-Jul	12%	07, 08	Team	Instructors
Project 3 Team Presentation	1-Aug	6%	09, 10	Team	Instructors
Project 3 Team Report	2-Aug	12%	09, 10	Team	Instructors
Projects 2 & 3 Peer Evaluation Inputs on Rest of Team	2-Aug	4%	07, 08, 09, 10, 02	Individual	Instructors
Project 2 & 3 Peer Evaluation Result	2-Aug	10%	07, 08, 09, 10, 02	Individual	Peers
Total		100%			

66% of the weighting is allocated to team results.
15% of the weighting is allocated to peer evaluation of individuals.
19% 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 79%	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, lecture, assignments, and/or announcements made.

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, Blackboard, or via e-mail.