BAX 411 - Problem Structuring

TERM	Fall 2017
SESSIONS	Alternate Fridays 2-4 PM and 4-6 PM 2017: October 6, 20; November 3, 17; December 1
INSTRUCTOR	Srikrishna Shrinivas (612) 770-3241 sshrinivas@ucdavis.edu
OFFICE HOURS	Fridays 6 - 7 PM or other days by prior appointment. Usually flexible with times and can do zoom.us/ phone calls on other days.
DESCRIPTION	Students learn how to structure business issues, produce formal structured models that serve as direction to the analyses and interpretation of results.
	The course covers methods for idea generation, identification of business objectives, controllable factors, internal and environmental constraints, etc. For business issues with uncertainty, conflicting criteria and tradeoffs, and multiple stakeholders, students learn structuring methods such as issue trees, utility theory, decision trees, and influence diagrams.
COURSE MATERIAL	There is no textbook for this course. However, there will be reading material including academic papers posted prior to each class (on Canvas).
	It is the student's responsibility to download the material and <u>come prepared</u> to the class. Students will be tested on the required reading material prior to each class.
COMPUTING TOOLS	None. (Microsoft PowerPoint and Word shall be used for presentations and reports.)
PEDAGOGICAL APPROACH	The course will use a series of lectures to cover the outlined topics and techniques. Case study discussions will be used to illustrate application of techniques for structuring problems.
	Students are expected to complete case study assignments, working as a group, and present outputs during the class and lead discussions.

	Problem structuring in the real world is often an interactive exercise with stakeholders - requires dealing with alternate ideas, engaging in debates and negotiation of multiple objectives before the final structure emerges.	
	Therefore, the case assignments and presentation of outputs will be used to encourage such interactions between team members as well as with the entire class during the case presentations.	
GRADING	 Weekly quizzes - 25% of the grade - weekly quiz to be completed prior to each class, designed to test understanding of the required reading material - will be administered via Canvas. Case study/ assignments - 50% of grade - Four group case study assignments to apply various techniques for problem structuring. Mid-term examination - (take home) - 20% of grade Class and Canvas participation - 5% of grade - Interactions are encouraged during in-class case study discussions and via Canvas. 	
ADDITIONAL POINTS	The class is organized as 10 sessions over five meetings.	
	The case study assignments are designed as a group exercise - real world analyses requires interaction with multiple points of view and students are encouraged to use the exercises to negotiate multiple views and conflicting objectives.	
	While there are no required textbooks, the course will use materials that outline techniques useful for problem structuring.	

Schedule (subject to adjustment)

#	Date	Subject	Topics
1	Session 1 October 6, 2-4 PM	Introduction	Introduction to the courseWhy? The nature of business

			 problems and the importance of problem structuring What? Benefits of problem structuring How? A survey of commonly used problem structuring approaches.
2	Session 2 October 6, 4-6 PM	Structured thinking & MECE hypotheses	Structure of simple business problems - Deep dive into problem structuring approach #1: Structured thinking (using the Minto Pyramid principle), MECE hypotheses generation and the use of decision trees.
			Post class Assignment: Application of the MECE hypotheses generation to three (3) assigned case studies - to be completed in groups of 3- 4 students - three different case studies will be circulated.
			Submissions due Thursday (10/19) before class.
3	Session 3 October 20, 2-4 PM	Strategic Options Development Approach (SODA)	 4-5 PM: Case study presentation & discussion 5-6 PM: Introduction of SODA as a knowledge acquisition tool, to facilitate deeper discussions with stakeholders around complex problems.
4	Session 4 October 20, 4-6 PM	Influence Diagrams	 Structure of complex business problems - nature of uncertainties, alternatives, consequences of actions and alternatives. Influence diagrams and the value of graphically representing complex problems. Illustration of the use of Influence diagrams to structure a complex business problem case study. Assignment Application of SODA and Influence diagrams to two (2) assigned case studies around a complex business

			problem - to be completed in groups of 2 class members. Submissions due Thursday (11/02) before class.
5	Session 5 November 3, 2-4 PM	Influence Diagram case studies	Presentation and discussion of the application of influence diagrams to structure business problems
6	Session 6 November 3, 4-6 PM	System Dynamics	 Introduction to system dynamics as a way of thinking about messy problems. Use of Causal Loop Diagrams and Stock-flow diagrams to facilitate discussion with stakeholders, elucidate interrelationships and constraints within messy problems. Demonstration of group modeling as a way of problem structuring. Assignment Application of System Dynamics to group model problems in two case studies - to be completed in groups of 3-5 students. Different roles and constraints will be provided to each group member, with the intent to demonstrate how a group negotiates a problem structure. Submissions due Thursday (11/16) before class.
7	Session 7 November 17, 2-4 PM	System Dynamics case studies	Presentation and discussion of case studies by class members Guest lecture (planned)
8	Session 8 November 17, 4-6 PM	Negotiating multiple objectives	 Revisit complex business problems that involve multiple stakeholders, with different and/ or conflicting objectives that require resolution and alignment. Utilize principles of Drama theory, hypergame analysis and other ideas to highlight dilemmas around co-operation, trust,

			deterrence, threat that might occur and pave a path for achieving a negotiated alignment of objectives. Assignment A final group problem structuring assignment that requires navigation of multiple objectives, creation of influence diagrams, negotiated group models and finally arriving at a problem structure that address the collective objectives. Group members will take on different roles, and be provided with different objectives for each role. Grading will be based on how well the solution addresses the multiple objectives of the individual roles and quality of arguments put forth by each group member. Students will work together in groups of 5 class members each. Submissions due Thursday (11/30) before class.
9	Session 9 December 1, 2-4 PM	Review final case	Presentation and discussion of group
			5-6 PM: Review additional problem structuring tools in literature and practice - discussion will include strategic choice approach (SCA), strategic assumption surfacing and testing and robustness analysis.
10	Session 10 December 1, 4-6 PM	Summary and wrap up	A discussion on a framework for selecting the appropriate problem structuring toolkit that is best fit for different types of business problems.
			Approaches to estimating potential benefits from analytical problem solving.
			Summarize objectives of the course - the importance of problem structuring in the analytical problem solving process. A summary of covered material including MECE analysis, influence diagrams, system dynamics. A review of dealing

	with multi-objectives and conflict resolution.