INFM 718V - Organizational and Business Process Modeling  
Fall 2012 - Tentative Syllabus

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<tr>
<th>Instructor:</th>
<th>Vedat G. Diker</th>
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<tr>
<td>Office:</td>
<td>SG-III, Room 5131</td>
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<tr>
<td>Office Hours:</td>
<td>By appointment</td>
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**Class meeting time and place:**  
Tuesday evenings (9/4/2012 - 12/11/2012)  
6:00 PM to 8:45 PM  
in SG-III, Room 4206 *(Shady Grove campus)*

**Catalog Description:**  
General principles of modeling. Methods for modeling organizational and business process for information applications development. Approaches to evaluating models based on their accuracy and usefulness.

**Extended Description:**  
Contemporary organizational and managerial structures involve many layers of intricate complexities. Those complexities pose unique challenges when an intervention is needed for improving the effectiveness and efficiency of a given organizational or managerial structure, including but not limited to information applications development projects. One way to deal with those complexities is to frame the structure at hand as a system, and develop a model, or a number of models, which would eliminate the unnecessary details, and retain only the relevant aspects of the system.  
Organizational and Business Process Modeling will introduce a number of contemporary methods for framing and modeling organizational and business processes for a variety of purposes, including information applications development. Among those methods are UML, data and logic requirements modeling, and system dynamics simulation modeling.  
The Fall 2010 offering of INFM 718V will have an emphasis on modeling of non-linear feedback dynamics in business and organizational settings with a focus on sustainability issues in information management and information technology. Growing complexities in organizations has brought about systemic problems that are impossible to fully understand and address using traditional linear approaches. System thinking and system dynamics approaches provide tools that can be used for modeling complex non-linear feedback systems. The models can then be simulated in order to identify root causes of the systemic problems, and develop solution strategies for addressing those problems.

**Goals:**  
After completing this course the student will:  
- be familiar with Unified Modeling Language (UML), and its various diagram types,  
- be able use UML for modeling basic organizational and business processes,  
- be able to identify feedback dynamics in phenomena encountered in organizational and business settings,  
- develop cause-and-effect diagrams of problems for identifying major feedback loops, and simple models that can be simulated for analysis of organizational and managerial processes and problems,  
- analyze a systemic problem that may impair the sustainable operation of an organization, and develop strategies to solve the problem by making use of modeling and simulation.
Elements of the Course:

Active Participation: The course will involve in-class (and possibly online) discussions, as well as in-class exercises. The students are expected to come to class prepared, and participate actively. Please inform the instructor in advance if you will not be able to participate in a class meeting.

Assignments: Student will be given take-home assignments over the semester. Students are expected to work individually on the assignments. Timely submission of the completed assignments is essential. Students should refer to the course space on BlackBoard for the due date of each assignment. If an assignment due date is a religious holiday for you, please let the instructor know at least one week in advance, so an alternate due date can be set for you.

Individual Project: Each student will work on building a UML model of a reasonable size information system (either in-existence or planned). Each project will involve a number or different UML diagrams to articulate the specifications of the information system in question. There will be interim submissions, and a final submission for the project. The final submission will include a UML model and a report presenting the information system in question and documenting the modeling process. The models and reports will be of professional quality, in the sense that they could be used as the basis for actual system development in real world. Each student will have another student and his/her “peer coach.” Peer coaches will review their partner’s model on an ongoing basis, and provide comments, suggestions and encouragement. In order to keep things simple:

1) Each student will be his/her peer coach’s peer coach, and
2) The peer coach pair will also form the team for the team project.

Details about the expectations for the individual project and submission deadlines will be given on the course website on BlackBoard. The individual project will be due about midway in the semester.

Team Project: Students will form two-person teams to work on building a simulation model for analyzing a systemic problem, and developing strategies to solve that problem. Each project will focus on a dynamic feedback problem that will be identified by the team, and approved by the instructor. Although a wide variety of problems (including business-related, macro-economic, socio-economic, urban growth-related, environmental, ecological issues) are potentially acceptable as project topics, the teams are particularly encouraged to focus on sustainability-related problems, since there is a growing need for individuals who possess the knowledge and skills to address a variety of sustainability issues on either a micro or a macro level, or potentially on both levels. There will be interim submissions, and a final submission for the project. The final submission will include a model and a report documenting the modeling process and the findings of the study. The reports will be of publishable quality, and the teams will be expected to submit their reports to student project competition both on and off campus. Two such venues are UMD’s Graduate Research Interaction Day (GRID) competition, and the student paper competition of the International System Dynamics Conference, which will be held in Cambridge, MA (near Boston) in Summer 2013. Details about the expectations for the team project and submission deadlines will be given on the course website on BlackBoard. The team project will be due by the last two-three weeks of the semester.
Grading:
Assignments (On Time) 30%
Individual Project (On Time) 35%
Team Project (On Time) 35%
Active Participation and Attendance Although this component will not be added as extra points to your grade, excessive absence (missing more than three sessions with documented explanation, or more than one session without explanation,) non-participation, disruptive behavior in class, or other unwanted behavior may affect your grade negatively.

Recommended Texts:
1) Learning UML 2.0 (Russ Miles and Kim Hamilton)
   O'Reilly Media, Inc. - ISBN: 0596009828
   (An electronic version of this book is available, which you may be able to access online as an e-book. The electronic version is also available on O'Reilly's Safari site through the university libraries website at lib.umd.edu. Please note that there is a "3 simultaneous user" limit on the electronic version when accessed through the university libraries. You can access the book by following this link (you will need to login with your UMD Directory ID and password):

AND

2) Business Dynamics: Systems Thinking and Modeling for a Complex World with CD-ROM
   (This book will be available on course reserves at the USG Priddy Library for short (hourly) checkouts.)

These books are not available through the university book store.

Online Readings:
1) A History of the Kaibab Deer (Chris Young)
   Part 2: http://depts.alverno.edu/nsmt/youngcc/research/kaibab/story2.html

2) The Global Citizen (Dana Meadows)
   http://www.donellameadows.org/article-category/global-citizen-columns/
   (Selected readings from this website will be assigned during the semester. The readings will be discussed in class.)

Other Relevant Texts:
The Fifth Discipline Fieldbook (Peter M. Senge et al.)

The Fifth Discipline (Peter M. Senge)

Other relevant UML, requirements modeling, and systems analysis and development books.
Required Software:
Vensim PLE: This software is freely available at http://vensim.com/freedownload.html. We will use Vensim PLE later in the course (about last one-half of the semester) for developing feedback diagrams and simulation models. However, you may wish to download and install the software early on to avoid last minute hassles.

Other Software:
Your choice of a software tool to draw UML diagrams. Many free or commercial tools are available; please see http://en.wikipedia.org/wiki/List_of_UML_tools. Students used StarUML, ArgoUML, and Modelio in the past. These are freely available tools, but each may have certain limitations, some of which may be critical (such as not supporting a specific UML diagram type.) Fell free to research for other tools and use them, including commercial tools, if you have access to those. You may also choose to use Visio, or use some other program with diagramming capabilities, including MS PowerPoint, or even MS Word. I am not able to provide detailed support that is specific for any given tool, so choose a tool that you will be comfortable with. Note that this course is not aimed at teaching you a specific UML diagramming tool, but rather the core principles of UML as a modeling approach.

Please also note that you will need to import or paste your diagrams in a file whose format I can read on my computer, such as .doc or .ppt, since I do not have the means to open each and every file format on my computer. (UML tools generally come with their own specific file formats.) Consequently, before you settle on a UML tool, make sure that you can import or paste the diagrams from that tool into MS Word or MS PowerPoint.

Policy on Academic Misconduct
Cases of academic misconduct will be referred to the Office of Student Conduct irrespective of scope and circumstances, as required by university rules and regulations. It is crucial to understand that the instructors do not have a choice of following other courses of actions in handling these cases. There are severe consequences of academic misconduct, some of which are permanent and reflected on the student’s transcript. For details about procedures governing such referrals and possible consequences for the student please visit http://www.studentconduct.umd.edu/

University of Maryland Code of Academic Integrity:
"The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.studenthonorcouncil.umd.edu/whatis.html."

Special needs
Students with disabilities should inform the instructor of their needs at the beginning of the semester. Please also contact the Disability Support Services (301-314-7682 or www.counseling.umd.edu/DSS/). DSS will make arrangements with the student and the instructor to determine and implement appropriate academic accommodations. Students encountering psychological problems that hamper their course work are referred to the Counseling Center (301-314-7651 or www.counseling.umd.edu/) for expert help.
**Tentative Course Plan** (Subject to possible change during semester):

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<tr>
<th>Date</th>
<th>Topics</th>
<th>Readings</th>
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<tr>
<td>1</td>
<td>Sept. 4 Introduction to modeling Classes and objects; Introduction to UML</td>
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<td>2</td>
<td>Sept. 11 Use-case models</td>
<td>[UML] pp. 1-42</td>
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<td>External readings <em>(see ELMS)</em></td>
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<td>3</td>
<td>Sept. 18 Activity diagrams</td>
<td>[UML] pp. 43-62</td>
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<td>4</td>
<td>Sept. 25 Class diagrams; Object diagrams</td>
<td>[UML] pp. 63-100; pp. 101-107</td>
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<td>5</td>
<td>Oct. 2 Sequence diagrams; Communication diagrams Entity-Relationship models</td>
<td>[UML] pp. 108-130; pp. 131-144</td>
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<td>6</td>
<td>Oct. 9 Complex Systems; Systems Thinking; System Dynamics</td>
<td>[BD] pp. 3-39; pp. 41-81</td>
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<td>10</td>
<td>Nov. 06 Dynamics of Simple Structures; Negative Feedback; S-Shaped Growth</td>
<td>[BD] pp. 263-291; pp. 295-347</td>
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<td>11</td>
<td>Nov. 13 Positive Feedback; Delays</td>
<td>[BD] pp. 349-406; pp. 409-467</td>
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<td>13</td>
<td>Nov. 27 In-class work on Team Project</td>
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<td>14</td>
<td>Dec. 04 In-class work on Team Project</td>
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<tr>
<td>15</td>
<td>Dec. 11 In-class work on Team Project</td>
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Additional readings may be assigned as necessary through the semester.