LIS 5113 Knowledge Representation

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I. COURSE DESCRIPTION

Imparts general concepts of knowledge representation in Knowledge Management Context. Principles, theories and techniques are examined.

II. OBJECTIVES

The goal of the course is to explore the basic principles underlying different approaches that will help to understand the conceptual foundations knowledge, its sources, and related concepts in the context of decision making process.

Upon successful completion of the course students should be able to:
Understand the complexity of the concepts related to knowledge representation, its challenges, concepts associated and its relationships.

Distinguish among dissimilar kinds of knowledge: a priori knowledge, a posteriori knowledge, procedural knowledge, declarative knowledge, and tacit knowledge.

Discover the process of generation, transfer, and internalization of different types of knowledge.

Understand the complexity of the concepts related to knowledge representation, its challenges, concepts associated and its relationships.

Learn the fundamentals of knowledge representation in the context of artificial intelligence: logic, semantic networks, and others.

Explore knowledge representation from the cognitive perspective.
II. OBJECTIVES
Examine various tools, techniques and for representing visual, graphical, and textual representation, and learn how to critique and evaluate the different alternatives.

In order to achieve these objectives, students will learn how to analyze problems and develop innovative knowledge representations to support knowledge exploration, decision making, communication and knowledge sharing in a variety of domains from Knowledge Management. And it will require the acquisition of knowledge from human experts, other knowledge repositories, or via learning techniques from raw data.

III. READINGS:
Nature of Knowledge (Jan. 23)

The tacit dimension, Polanyi, Michael, (pg. 1 – 25), Gloucester, Mass. 1983.


Knowledge & Science (Jan. 30, and Feb. 6)

Cognitive Psychology (Feb. 13)

Managing Knowledge with Artificial Intelligence (Feb. 20 & March 27)

Information Representation and Retrieval (March 12)

Envision Information (March 26)

Modeling with Soft Systems Methodology (April 2)

Communication Styles (April 9)

Creativity (April 16)


III. READINGS:
Collaboration (April 23)


IV. TEACHING/LEARNING METHODS
Class will be a seminar that will include class activities, class discussion, quizzes reading and synthesis of the involved concepts.

VI. ASSIGNMENTS AND GRADING
A. Readings Percentage of final grade-15%
THE PURPOSE of reading assignments is to familiarize students with most important concepts related to knowledge representation

B. Quizzes: Percentage of final grade-15%
THE PURPOSE of quizzes is to measure student's ability to: recall concepts, theories and principles, and to assure the student reads the texts as assigned. Quizzes will cover readings. Students should read the assigned Sections and Chapters for each session PRIOR to class - students will be tested on them, and the format of the quizzes will open ended questions. The number of questions will vary between 5 and 10.

VI. ASSIGNMENTS AND GRADING
C. Class Discussions: Percentage of final grade-15%
Discussions will allow the students to analyze and synthesize the course material.

D. Book Presentation Percentage of final grade-20%
Each student will choose any book they want related to the topics studied in this class, and s/he will read it, analyze, and synthesize it, and made a 30 minutes presentation. After the presentation, it will be a 10-minute Q&A session.
VI. ASSIGNMENTS AND GRADING

E. Class Activities: Percentage of final grade-10%
During the course will be class activities will allow to the student to understand concepts related to the course and develop skills in an active process.

F. Final Project: Percentage of final grade-20%
Each student will develop a project in which s/he will have to represent some type of knowledge in an original format.

G. Grading scale
- A = 100-93
- B = 92-85
- C = 84-77
- D = 76-69

V. COURSE AGENDA-Topics to be covered

- Nature of Knowledge
- Knowledge and its place in Nature
- Knowledge & Science
- The Structure of Scientific Revolutions
- Cognitive Psychology
- Managing Knowledge with Artificial Intelligence
- Information Representation and Retrieval
- Envision Information
- Modeling (Soft Systems Methodology)
- Communication Styles
- Creativity
- Collaboration
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Activities</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan. 16</td>
<td>Class Introduction</td>
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<tr>
<td>2</td>
<td>Jan. 23</td>
<td>Nature of Knowledge</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<tr>
<td>3</td>
<td>Jan. 30</td>
<td>Knowledge &amp; Science</td>
<td>Chapters 1, 2, 3</td>
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<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<tr>
<td>4</td>
<td>Feb. 6</td>
<td>Knowledge &amp; Science</td>
<td>Chapters 4, 5, 6</td>
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<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>5</td>
<td>Feb. 13</td>
<td>Cognitive Psychology</td>
<td>Notify the instructor what book the student will present.</td>
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<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>6</td>
<td>Feb. 20</td>
<td>Managing Knowledge with Artificial Intelligence</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>7</td>
<td>Feb. 27</td>
<td>Managing Knowledge with Artificial Intelligence</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>8</td>
<td>Mar. 5</td>
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<td>Book presentations by students</td>
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<td>9</td>
<td>Mar. 12</td>
<td>Information Representation and Retrieval</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>10</td>
<td>Mar. 19</td>
<td>Spring Break</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>11</td>
<td>Mar. 26</td>
<td>Envision Information</td>
<td>Notify the instructor what the final project will be.</td>
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<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>12</td>
<td>April 2</td>
<td>Modeling with Soft Systems Methodology</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>13</td>
<td>April 9</td>
<td>Communication Styles</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>14</td>
<td>April 16</td>
<td>Creativity</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>15</td>
<td>April 23</td>
<td>Collaboration</td>
<td>Readings, Quizzes, Class discussion, and Class activities</td>
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<td>16</td>
<td>April 30</td>
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<td>Project presentations by students</td>
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<td>17</td>
<td>May 5</td>
<td>Party</td>
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VI. RELATED POLICIES

**Class Attendance:** Attendance in class is expected.

**Incompletes:** The University advises the faculty to be very strict about the conditions under which a student is allowed to take an incomplete.

**Codes and Policies of Behavior:** To protect its faculty and students, the School fully subscribes to the University's codes, policies, and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination based on physical handicap. Each student should acquaint her or his self with these policies.

**Reasonable Accommodation:** Any student in this course who has a disability that may prevent her or him from fully demonstrating his/ her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

**Academic Integrity Policy:** OU's basic integrity expectations for students can be found: [http://ou.edu/provost/integrity](http://ou.edu/provost/integrity)

**Plagiarism:** Plagiarism includes:

- submitting someone else's words or ideas as if they were one's own
- copying a paper/parts of a paper/sentences word for word from information found in another source including the Internet,
- paraphrasing one or more articles without crediting your sources

Plagiarism is a serious offense and infractions will result in a zero for that assignment with no opportunity to redo the assignment.