Linkages Among Technology, Economics and Societal Values

SPECIAL NOTE No. 1: This course is cross-listed between OMGT and BENG. While open to all UA students through the UA semester offering, it is part of the 8-week term elective offerings for OMGT and MSE students. This course was taught previously (between 2010-2012) in both “live” and “distance education” formats under the special topics numbers OMGT 577V, GNEG 590V and BENG 500V.

SPECIAL NOTE No. 2: This is an interdisciplinary course that appeals most to those who enjoy such things as history, politics, business, economics, and exploring the role of technology and engineering, both in the past and in the foreseeable future. It is especially appealing to those who like to engage in open-ended discussions in the context of analyzing the systems at work, whether that system is a family, a business, a non-profit organization or a nation. The course is not well-suited for those seeking highly technical material, but it does offer a valuable perspective on sustainable prosperity and wellbeing. Those who have taken this course have often reported in evaluations that it has changed their lives (hopefully for the better!) and opened their eyes to viewing the world very differently. The course is intended to be both fun and fulfilling. However, it does require engagement and a lot of independent, creative and critical thinking. It is the type of course that allows a student to add structure to what he/she already knows instinctively.

SPECIAL NOTE No. 3: This course will be offered concurrently in both 8-week and regular semester formats, and thus may include a mix of students from different sections in the discussion groups and blogs depending upon enrollment. While it will be the same course, the instructor will work with students enrolled in the different programs as necessary to account for any logistical differences.

I. Last Updated: July 3, 2012
II. Title: Linkages among Technology, Economics and Societal Values

III. Subtitle: *Understanding Change, Sustainable Prosperity and the Emerging Chaos*

IV. Instructor: Otto J. Loewer, Professor of Biological & Agricultural Engineering Dept., PhD, PE and former Dean of Engineering

V. Contact Information:
- Office No: 226 Engineering Hall
- Office Phone: 479-575-5118
- Home Phone: 479-521-6133
- Mobile Phone: 479-409-8182
- Email: OJL@uark.edu

VI. Office Hours: An appointment time can be arranged via email for either in-person visits or phone conversations (including Skype). Should the need arise, communication software in Blackboard may be used for broader class discussion (but this has not been necessary to date). The instructor will strive to respond to requests within 24 hours and usually much quicker but is not available for consultation between 11:00 pm and 8:30 am or on Sunday mornings.

VII. Terms/Semester offered: Term 1, 2, 3 and 4 (but probably not the summer term) and perhaps both the fall and spring semesters but certainly one of these.

VIII. Course credit: 3 hours

IX. Time and Day: Asynchronous offering (Students will watch lecture and topical videos at their convenience). A combination of Blackboard's Discussion Groups (that focus on current events) and Blogs (that focus on questions for the class as a whole) will be used to facilitate class discussion and interaction throughout the semester.

X. Place: Distance Education via Blackboard

XI. Course Goal: To help develop, prepare and equip Society's future leaders in the quest to obtain sustainable prosperity and
wellbeing.

XII. Course Objectives:
This course focuses on providing students with the following in the context of the course goal:

a. A macro-level understanding of how the linkages among technology, economics and societal values have shaped history and will likely impact changes in society in the foreseeable future.

b. Knowledge of past societal demographics and the associated influence on current events, long-term trends and future societal directions.

c. The opportunity to enhance effective communication skills in a supportive but challenging environment designed to foster critical thinking in the face of societal change.

d. The ability to convey the nature of change to those having differing expertise, experiences, backgrounds and perspectives.

e. The underlying but necessary skills and insights required to provide the enlightened leadership needed for society to obtain sustainable prosperity and wellbeing.

XIII. Use of the word "Sustainability" in the Course:
Today, the term "sustainability" is used to reflect a wide range of views; that is, it means very different things to different people. At one extreme, sustainability may mean basic survival of the human species. At the other extreme, sustainability may mean that the trends in increased consumption can continue indefinitely and unabated. The position taken by this course is that what Society is really seeking is "sustainable prosperity and wellbeing", something that has yet to be fully defined but that reflects, for the most part, an eventual level of satisfaction with life as it reveals itself over time.

XIV. Present Situation:
Sustainable prosperity and wellbeing are threatened in the foreseeable future because change is occurring at an increasingly fast rate. The associated complex challenges that these changes offer will be difficult to overcome without a reduction in current standards of living, especially in the developed world. Growing
population and environmental pressure coupled with the need for sustainable supplies of food and energy are problematic, especially in the face of concerns about climate change. Solving progressively more complex problems will require that those of differing expertise, experiences, backgrounds and perspectives have the ability to effectively communicate a basic understanding of the linkages among technology, economics and societal values.

XV. Need for the Course:

The course focuses on the need for Society to have enlightened leadership if sustainable prosperity and wellbeing are to be efficiently and effectively achieved. Via this course, students will gain the following critical leadership skills:

a. Understanding via systems analysis how macro-level change has occurred in the past and how it is likely to occur in the future.

b. Becoming familiar with supporting data that point the way to future circumstances and opportunities.

c. Acquiring greater communication skills so as to become more effective in leading various societal segments towards sustainable prosperity and wellbeing.

XVI. Text:

Note the following:

a. The text is a 1400-page document on this topic written in book form by the instructor. It was extensively upgraded in 2011-2012 and contains over 600 graphs and tables. Furthermore, it will be provided electronically at no charge to the students. (NOTE: At the time of this writing, an IPAD version of the text is currently under development and may (without certainty as to if or when) be offered to students at an extra cost. Regardless, a free PDF version will continue to be offered until further notice.)

b. The student may copy portions of the text for class purposes and are encouraged to do so as they wish. However, other distribution of this material is prohibited without the written approval of the instructor.

c. Note that the draft text may contain a number of typos
and similar errors, and these may be corrected over the semester. **Pointing these out to the instructor would be greatly appreciated (and certain bonus points may also apply!).**

### XVII. Other Material to be provided by the student:

Note the following:

a. Assignments 5, 6 and 7 will involve formal presentations as well as written reports while Assignment 4 will require only a written report. The student is responsible for providing his/her video of the formal presentation in the desired format (details will be provided in other material) using a combination of a webcam video and PowerPoint. (This simple but effective approach has worked well in the past).

b. Assignment 6 will require ready access to at least one book of interest to the student, and this will **NOT** be provided by the instructor.

### XVIII. Class material and assignments:

All class material including submission of assignments will be administered through Blackboard using some combination of Discussion Groups and Blogs.

### XIX. Other Supporting Material used in Class:

Assigned and supplemental material is provided via Blackboard and includes but is not limited to the following:


c. PBS Video: "Frontline - Digital Nation"

d. Articles, books, and similar material identified by students and the instructor during the course.
XX. Course Environment and Disclaimers: Note the following:

a. This is a self-paced course for the most part, but not entirely, in that certain assignments will be spread out over the 8-week term/semester to foster discussion and group interaction insofar as possible via Discussion Groups and Blogs.

b. Class lectures and supporting videos are intended to supplement the Text. Students will be asked to verify that they have read the Text, and viewed the lecture videos and the supporting videos over the course of the term/semester (see assignments). The Text, all the lectures, and all the external Videos will be provided at the beginning of the course so that students may proceed at whatever pace desired. However, a suggested rate of progress is given via Blackboard along with the due-date assignment schedule so as to enhance the learning environment as much as possible. Please note that some of the text chapters are much longer than others, and some speak to broad issues while others focus more on the mechanics. Thus, the student to read judiciously and in the context of gaining a general appreciation of the material and the concept.

c. While the opportunity for face-to-face discussion is limited, there will be opportunities to provide insight, analysis, and opinions via Discussion Groups and Blogs in the context of the goals of the course as noted by many of the entries to follow.

d. One goal of the course is to promote the proverbial visualization of the entire system under consideration in order to enhance effective communication among people with different backgrounds, experiences, expertise and perspectives. In terms of discussion, this means that the focus will be on exploring all views around a particular issue as opposed to presenting and/or defending a personal view.

e. This is not a course that advocates a particular philosophical, social, religious or political perspective as to whether something is "good or bad" or "right or wrong." However, the means by which these
perspectives have influenced societal values will be discussed extensively. In these discussions, students should expect to be challenged in a professional manner regarding the evidence they present to support their personal observations or those of others.

f. The course does not offer specific solutions, emphasize individual personalities or focus on the issue of climate change, but these topics may be introduced by the instructor and/or the students as part of the discussion about the goal of sustainable prosperity and wellbeing for Society.

g. Emphasis is placed on creating a class environment where differences in societal values, past and present, can be openly and freely discussed in a professional manner.

h. A widely-acclaimed and nationally/internationally broadcast TV video series is used occasionally as supporting material for the course. Understand that this material was developed for adult audiences and reflects the societal values of the BBC at the time of production (in the 1970's). Accordingly, on some occasions these values may differ from those of some students enrolled in the class as well as the instructor in areas such as humor, philosophy and depiction of violence, the human body and/or other cultures. Students should contact the instructor privately beforehand to discuss any misgivings that they may have about viewing this material so that other arrangements may then be made as appropriate.

i. Blackboard is a great tool for the Distance Education format. However, there are likely to be a number of "glitches" along the way. Thus, a greater level of flexibility is to be expected from both the students and the instructor than might normally be the case with a "live" class.

j. The instructor expects the students to conduct themselves ethically in all matters related to the offering of the course. In effect, the "do right law" is in effect. (Students should ask the instructor about the "do right law" if there is any doubt as to its history or what it implies.)
XXI. General Outline and Structure of Course:

While the class does not have any set meeting time, it is structured around having 15 "class sessions" that are in the form of 15 "on demand" video lectures (via Blackboard) that in total constitute 3-hours of academic credit. These 15 sessions are organized as follows:

a. Sessions 1-3: Developing a model for understanding how macro-level change has occurred over history. Lectures 1-3. Text chapters 1-9. PBS/BBC videos. One major assignment (No. 4).

b. Sessions 4-8: Examining change from an historical view in order to develop an appreciation for Society's current situation with regard to the linkages among technology, economics and societal values. Lectures 4-8. Text Chapters 10-24. PBS/BBC videos. No major assignments.


d. Sessions 1-15: Each session will require response to a question of interest (15 separate questions) using a Blog format via the guidelines given for Assignment 1 (See “Content – 4. Assignment Instructions” in Blackboard).

c. Sessions 2-12: Each of these sessions will require an entry to a separate Current Event Discussion Group as well as a response to other entries as stated in the details given for Assignment 3 (See “Content – 4. Assignment Instructions” in Blackboard).

XXII. Frequently used acronym:

LATESVOLOGY (pronounced "lots-vology": LATESV (Linkages Among Technology, Economics, and Society Values; "ology" - the study of).

XXIII. Overview of Course Assignments:

The course is "report and presentation based" rather than "test based". A total of 1100 points may be earned from all assignments excluding any bonus points.
(Note that details are provided in separate documents under “Content – 4. Assignment Instructions” in Blackboard.) Assignments are as follows:

Assignment 1. 150 points - Class Discussion and Participation via the class Blog (15 separate assignments [one per class session or ~ two per week for the 8-week terms and one per week for the semesters] at 10 points each that are due as posted with no late submissions accepted without prior approval). These will be spread out uniformly over the 8-week term/semester. Each student is to reply at least twice to the other entries as a group (not each individual entry).

Assignment 2 (a, b and c). 310 points - Assigned reading of the (a) 39 chapters in the Text, (b) viewing the 15 Lecture videos, and (c) viewing the 8 supporting videos in a timely manner (62 items, all at 5 points each).

Assignment 3. 110 points - Brief informal written current event reports using a standard input form with written documentation based on current web, newspaper or magazine articles (11 reports spread over the 8-week term/semester at 10 points each - no late submissions without prior approval). Submitted as part of a Current Event Discussion Group. Each student is to reply at least twice with some limited comments concerning the content of submissions by classmates (twice total, not for each individual entry).

Assignment 4. 130 points - Written formal report based on using a simple spreadsheet model provided by the instructor to draw general conclusions about how the movement of one Segment in a Competing Society into the Domestic Society impacts the Societal Values of both. (Half-credit potential if submitted late).

Assignment 5. 130 points - Written formal report and formal video presentation that reflects the Latesvolology perspective on how a type of Technological Wherewithal has influenced historical changes in the world relative to technology, economics and societal values. (Half-credit potential if submitted late).

Assignment 6. 130 points - Written formal evaluation and formal video presentation from a Latesvolology perspective on a book that in some way projects or predicts foreseeable societal changes relative to one or more of the following:
technology, economics or societal values. (Half-credit potential if submitted late).

Assignment 7. 140 points - Written formal report and formal oral presentation from a Latesvology perspective on what will be required by a decision maker (whoever the student wishes) at some level to obtain a foreseeable future defined by Sustainable Prosperity and Wellbeing (half-credit potential if submitted late).

XXIV. Course grading: The course has 1100 possible points plus any bonus points that may be accrued. Bonus points are given under the condition that some credit was received for each of the required assignments.

Grades will be given on the following basis: A=1000 points or higher; B=900-999 points; C=800-899 points; D=700-799 points; F=below 700 points. Note the following concerning grading standards and bonus point possibilities:

a. For the four major written/oral reports (assignments 4, 5, 6 and 7), credit will be based on the following general areas: conclusions (20%); calculations, data, data analysis (20%); logic and assumptions (20%); organization (20%); grammar (10%); and overall appearance (10%). The quality of the oral presentation will be factored into the overall grading as applicable.

b. Up to 30 Bonus points maybe given for EACH "self assessment report" submitted from Assignments 5, 6, and 7 (3 possible reports for a total of 90 points). Each report is based on the student providing a critical review of his/her presentation based on the individual videos taken during the presentation. Report length should be limited to one page. Grading will be based on the instructor's evaluation of how well the student evaluated him/herself. Each report is due before the next major presentation except for Assignment 7 which is due before final grades are to be submitted. No late submissions will be considered for bonus points.

c. Up to 30 Bonus points will be given for a formal presentation before some type of professional group based on Assignments 5, 6 and 7. Examples include a special departmental faculty and/or student (graduate or undergraduate) meeting or conference or a formal
presentation to business colleagues. More than one student may make presentations at the same event. Such presentations would need to be advertised beforehand and arranged independently by the student(s). For bonus points to be received, the instructor would also need to approve of the quality of the professional setting and the level of student participation beforehand as well as being invited to attend.

d. Up to 30 Bonus Points may be given for confirming that the reports by classmates for Assignments 5, 6 and 7 were viewed (one point each).

e. Up to 30 points may be given for identifying typos or other corrections in the electronic text (typically 1 point per correction but subject to the judgment of the instructor).

XXV. Methods:
The course will draw heavily on a conceptual model for understanding how change is driven by the linkages among technology, economics and societal values as supported by a wide range of anecdotal and statistical data. Emphasis will be placed on the following:

a. The base of material contained in the chapters of a text which students are expected to read as scheduled before the session in question [Note: (a) Lectures and associated class discussion via the Current Event and Blog assignments build on the reading material; (b) Read the text in the context of developing a broad but not detailed understanding of what is being presented and not in the attempt to memorize the historical or statistical data.]

b. Supporting material via BBC and PBS video presentations that will be used occasionally (ideally, these should be viewed in the order given by the Suggested Schedule in that Discussion Questions may involve material from these videos.

c. In some combination, reading assignments, formal video lectures, supplementary videos, independent investigation, group interactions, written reports, and student video presentations will all be part of all Current Event and Blog discussion.
d. Subject matter that will focus on the implications of both historical and current events and developments over a wide range of topics, many of which will be selected by the individual student.

e. Students will be challenged to defend their interpretations of current events and blog questions, as well as their proposals for developing solutions designed to lead to sustainable prosperity and wellbeing (Assignment 7).

f. Student presentations for the three formal written papers [assignments (5, 6 and 7)] will be videoed by the student and submitted in an acceptable format. *(Usually, “wmv” files are best because they are smaller than most and of acceptable quality. Other file types can be converted to wmv files via free conversion software on the web.) The key is that all other students are able to view the presentation via BlackBoard. Students are encouraged to critique themselves (See Bonus Points under Course Grading).*

XXVI. Student-student and student-instructor Interactions in class:

Insofar as electronic techniques allow, there will be a lot of student-student and student-instructor interactions in this course geared around the interpretation of data (both statistical and anecdotal), historical events, current affairs and the impact of technology. These interactions are intended to generate a full perspective of opinions within Society regardless of whether the views being expressed are personally held or advocated by the students or the instructor. Associated exchanges are always to be respectful, professional and courteous but challenging in a manner so as to generate enlightened discussion that might be provocative at times. In fact, students will often be asked to present what they believe to be the views of certain Societal Segments of which they may or may not consider themselves being a part. Accordingly, students should expect a great deal of “give and take” in the class that is designed to enhance the learning environment and better equip the student for roles as enlightened leaders within Society, especially as related to the goal of sustainable prosperity and wellbeing.

XXVII. Other goals: This is intended to be a “fun course”! And, part of being
"fun" is to enjoy participating in the "give and take" of having and defending positions that might not be fully embraced by everyone in the class including the instructor. If you enjoy this type of interaction, you will likely enjoy the course. The one promise is that if the material and interactions are taken seriously, a student will never again see the world in exactly the same way!

XXVIII. Other university guidelines, policies and regulations:

The instructor will make every effort to adhere to university guidelines, policies and regulations with regard to the course including the student code of conduct. This will include matters related to issues such as the cheating, plagiarism, ethical conduct, special accommodations, and inclement weather, the details of which are not given in this syllabus but rather through other official UA documents. With regard to Disability Accommodation, the student should let the instructor or the Center for Students with Disabilities (CSD) know if this is a situation that needs to be addressed. Likewise, each student is encouraged to become familiar with the “Academic Integrity at the University of Arkansas” video currently posted on the Blackboard site.