ECE 590
EMERGING TECHNOLOGIES

OVERVIEW: This course studies emerging technologies, how they are identified, how they evolve, actions which may encourage or stifle their growth, government influences, societal influences, examples of success and failure, and some lessons to be learned which are unique to government information technology. Topics covered will include a general introduction to emerging technologies, with emphasis on IT, discussion of difficulty in letting go of legacy systems, investment strategies for technical companies, emerging technologies in the intelligence community, Cyber Security, Federal Government support of Research and Development, and specific technology topics such as Virtualization, Open Source-Internet protocols, Geospatial Information Systems, etc.

COURSE GOALS: Upon completion of the course, the student will be able to a) identify emerging technologies b) analyze examples of successful management of emerging technologies c) suggest appropriate actions to encourage and promote emerging technologies d) communicate the importance and potential impact of an emerging technology.

Requirements: The course will employ lectures, guest speakers, class discussion, individual and team presentations, case analyses, and quizzes. Students will be asked early in the course to identify an emerging technology and prepare a 5-8 minute presentation/proposal on how and why they would study and report on it in more detail. The instructor will select 4-5 topics and ask students to form into groups for presentations near the end of the term. There will be two quizzes, one at about mid way through the term and one at the end (non-cumulative).


Supplemental Readings (to be provided by instructor):
“Mastering the Three Worlds of Information Technology”, Andrew McAfee, Harvard Business School Case, R0611J.


“Learning from Corporate Mistakes: The Rise and Fall of Iridium”, Finkelstein and Sanford,

“Good technology, Bad Management: A Case Study of the Satellite Phone Industry, Lim, Klein, and Thatcher, J. of Information Technology Management, ISSN# 1042-1319.

“USAF Cyberspace Command: To Fly and Fight in Cyberspace, William T. Lord, Strategic Studies Quarterly, Fall 2008.


“Innovation and Commercialization of Emerging Technology”


CLASS SCHEDULE

1 Introduction to Emerging Technologies – Jan 20
   a. Textbook, Preface and Ch 1, “A Different Game”
   b. Social and Digital Media Video
   c. Master the Three Worlds of IT

2 Legacy Systems – Jan 27
   a. Textbook, Chapter 2, “Avoiding the Pitfalls of Emerging Technologies
   b. Webcast – Securing Intellectual Property

3 Investment Strategies for Technical Companies – Feb 3

4 Geospatial Information Systems and Applications – Feb 10

5 Textbook Ch 6, “Assessing Future Markets for New Technologies” - Feb 17
   a. KZO Innovations, “Multimedia Environment for Perpetual Knowledge Exchange and Communication

6 Emerging Technologies in the Intel Community – Feb 24

7 Technology Speciation and Assessment – Mar 3
   a. Textbook, Ch 3, “Technology Speciation and the Path of Emerging Technology”
   b. Biometrics Case Study – Technology Insertion the Federal Government

8 Quiz and Presentations – Mar 17

9 GMU’s Air Traffic Research Center - George Donohue – Mar 24

10 Assessing Future Technology Markets and Planning for Disruptive Technology – Mar 31
a. Textbook Ch 4, “Identification and Assessment of Emerging Technologies”

b. Virtualization and Cloud Computing

11 Government Influence on Technology – Apr 7

a. In-Q-Tel Case Study - “Innovation and Commercialization of Emerging Technologies”

12 Textbook Ch 5, “Emerging Technologies and Public Policy – Apr 14

a. The intersection of computation and data analysis (large scale, parallelized data processing)

13 Cyber Security and the Global Information Grid – Apr 21

14 Presentations – Apr 28, May 2/9th

15 Quiz 2 – May 12 (TBD)