

IME-1220 – AUTOMOBILE IN SOCIETY: SCIENTIFIC, SOCIAL AND TECHNOLOGICAL CONSEQUENCES

Course Syllabus – Spring 2011

Catalog Data: Application of Physics, Chemistry, Biology and Technology to the automobile. Topics included are: Occupant Protection, Vehicle Control, Physical Strength and Durability of Drivers, Power Production, Global Warming, Power Transmission, Energy Storage and Retrieval, Air Pollution, Use and Re-use of Natural Resources, Choices dealing with Vehicle Selection, Purchase Options, Insurance, Productivity, Maintenance, Societal Consequences and a history of the industry's record of successes and failures.

Prerequisites: None

Textbook: Alternative Cars in the 21st Century, a new transportation paradigm, 2nd Edition, by Robert Q. Riley, Society of Automotive Engineers, 2003, ISBN 0-7680-0874-3

SPECIAL NOTE ON THE TEXT. PURCHASE ONLY A USED COPY IF AVAILABLE! THE LISTED ABOVE IS BEING USED FOR THE LAST TIME THIS SEMESTER. IT IS NECESSARY FOR YOU TO PURCHASE A PERSONAL COPY AND BRING IT TO CLASS AND EXAMS. I PLAN ON USING A NEW BOOK REINVENTING THE AUTOMOBILE-Personal Urban Mobility for the 21st Century by MIT Press authored by Mitchell. If you have an interest in a more futuristic look you may wish to look at this book.

Suggested Possible Term Paper References: (While this does not include all of the information in Waldo Library this sample represent a valid source of information. If you choose to use online references you will be responsible for choosing factual or refereed sources as support for your term paper)

Aging and Disability: crossing network lines, Michelle Putnam, 2007-HV1451 .A318

Elegant Soluttion: Toyota's formula for mastering innovation, 2007, Matthew E. May, HD9710 .J34

Globalization and health, 2007, Ichiro Kawachi

Alternative Automotive Technologies and Energy Efficiency, 2006, United States Congress 4.EC 7:AU8/6 Bill to Authorize the National Traffic Safety Administration to set Passenger Car Fuel Economy Standards, 2006, May 3, 2006

Billy, Alfred and General Motors: the story of two unique men and a legendary company and a remarkable time in America, 2006, HD9710.U64G47544

Buying a new car, 2006, Electronic Resource

Car title fraud, 2006, United States Congress, 109th Congress, Y 4 C

Cars and Culture: the life story of a technology, 2006, Rudi Volti, TL15.V65

Changing Lanes in China, 2006, Eric Thun, HD9710.C528T48

China Shifts Gears: Automakers, Oil, Pollution and Development, 2006, Kelly S. Gallagher, HD9710.C52G34

Consider the Alternatives Electronic Resource: Alternative Fueled Vehicles and Alternative Vehicle Fuels, 2006, WWW

Cross Country: Fifteen years and ninety thousand miles on the roads and interstates of America with Lewis and Clark, and lot of bad, 2006, Robert Sullivan

Driver Rehabilitation and Community Mobility: Principals and practice, 2006, Joseph Pellerito, TL152.35.P455x

Ethics of Waste: how we relate to rubbish, 2006, Gay Hawkins. TD793.9.H38

Forensic Science: an encyclopedia of history, methods and techniques, 2006, William Tilstone, HV8073.T55

Globalization, Competition and Growth in China, 2006, Jian Chen, HC427.95.G56

H. R. 2048, The Motor Vehicle Owners' Act of 2005, 2006Y 4 C 73/8: 109-93

Noon High in the Automotive Industry, 2006. Helmut Becker, HD9710.A2 B43

In the Shadow of Detroit, 2006, David Roberts, TL140.M35 R63

Inside the Mind of Toyota: management principles for enduring growth, 2006, Satoshi Hino, HD9710.J34

[Overcoming The Trauma of your Motor Vehicle Accident](#), 2006, Edward Hickling, RC1045.P78H532
[Plug-In Hybrid Electric Vehicle](#), Act of 2006, Y 4 C SCI 2.109-466, United States Senate
[Road Rage](#), 2006, Mary E. Stuckey, TL867.S78
[Sprawltown](#): Looking for the city on its edge, 2006. James A. Vedda, HT3 71.I547
[Sustainable Cities](#): Japanese perspectives on physical and social structures, 2006, HT169.J3 S87
[SUV Safety](#): Issues relating to the safety and of sport utility vehicles, 2006, Y 4 C 73/7.HRG.108-901
[Tires and Passenger Vehicle Fuel Economy](#): Informing consumers improving performance, 2006, Transportation Research Board, HE5623.T57
[Unacceptable Death](#), 2006, Barbara Seranella, PS3569.66U53
[Undercover Economist](#): Exposing why the rich are rich, the poor are poor and why you can never buy a decent used car, 2006, Tim Hartford, HC5915.H35
[US-China Trade Disputes](#): Rising Tide, Rising Stakes, 2006, Gary C. Hufbauer, KF6660.H84
[Vehicle Fuels Technology: Next generation](#), 2006, US Congress, Y4C 73/8:109-103
[100 years of vehicle safety development](#), 2005, Daniel Holt, TL242.A145x
[2004/2005 Federal Tax Deduction, For Hybrid Electric Vehicles](#) 2005. Electronic Resource, WWW
[Automotive Service Technology Intersectional Skills Proficiency and assessment, 2005](#), David MacQuarrie, HC9999.2 .M32
[Building a North American Community](#): A report of an independent council on foreign relations with Canada and Mexico, 2005, HF1746.B84
[Canada and the end of Empire](#), 2005, Phillip Buckner, F1034.2.C2797
[Car-Sharing](#): Where and how it succeeds, 2005, Adam Millard-Ball, HEh620.C3 C37
[Commercial Motor Vehicle Driver: Seat Belt Usage](#), 2005, Gene Bergoffen, TL230.3.C666x
[Community Mobility: Driving and Transportation Alternatives for Older Persons, 2005](#), RC952.a1 p48 v23 no 2-3
[CAFÉ Reform, 2005, United States Congress, Y 4 C 73/7:S.HRG.107-1137](#)
[Designing Modern America](#): Broadway to Main Street, 2005, C. D. Innes, NK1404.I55
[Dodge Brothers: The Men, and the Motor Cars, and the Legacy](#), 2005, Charles K. Hyde,
[Drives Like A Dream](#), 2005, Porter Shreve, PS3569.H7395 75
[End of the Road](#): The true story of the down fall of Rover, 2005, Christopher Bradley, HD9710.G74 B649
[Enduring Passion](#): The story of Mercedes Benz Brand, 2005, Butterfield, TL215.M4 B88
[Energy Storage Fuel Cell Vehicle Analysis](#), Electronic Resource, T. Markel, WWW
[Environmental Sociology: from analysis to Action](#), 2005, GE195.E588
[Final Energy Crisis](#), 2005, McKillop, TP318.F525
[Tinkering](#): Consumers reinvent the early Automobile, 2005, Kathleen Franz, TL23.F745
[Future Retro](#) : Drawings from the great age of American Automobiles, 2005, Frederic Sharf, TL7.U62 B67
[General Motors and the Nazis](#): The struggle to control Opel, 2005, Henry Ashby Turner, HD9710.G44 O648
[Highway Congestion](#): Intelligent Transportation System, 2005, Electronic Resource, USGAO, WWW
[Impact of Extended Vehicle Emission Warrantee](#), 2005, Lloyd Dixon, TL153.D548
[Improving Battery Design with electro-Thermal Modeling](#), 2005, A Pesaran, Electronic Resource, WWW
[Improving the Safety of Older Road Users](#), 2005, Jane Stutts, HE5620.A24 I47
[Japanese Multi-nationals in Europe](#): A comparison of the automobile and pharmaceutical Industries, 2005, Ken-ichi, HD2907.A657
[Knoxville Area Transportation: Propane Hybrid Electric Trolleys. 2005, NREL, Electronic Resource, WWW](#)

Course Learning Objectives – By the end of the semester the student should be able to:

1. Evaluate the past, current and projected use patterns of the automobile use in the U.S./World and the effect these patterns on resource use, GDP, cost and environmental impact.
2. Evaluate vehicular use and life style changes that can be made to reduce the negative impact of the automobile while allowing positive aspects to occur.
3. Evaluate source, processes and politics involved with producing fuels and the technology of fuel economy and safety.

4. Evaluate current and future technology of alternative energy and fuel sources.
5. Evaluate current and future power plant and drive line technology.
6. Evaluate current and future vehicle body and seating technology as a means of reducing traffic and space requirements to reduce gridlock.
7. Apply science to energy reduction, improved vehicle safety and reduced environmental impact.
8. Evaluate the effects of global manufacturers; government and cost intervention in design.
9. Consider the effects of outsourcing on a global economy

Book Chapters

1. Private Cars under Siege in regard to population, life style, national productivity, cost of operation, energy use, pollution, highway limitations and lack of recycling. **Introduction and Chapter 1 of textbook**
2. The technology of Pollution Control and opportunities involved **Chapter 2 of the textbook 1st test and grade**
3. The technology involved with fuel economy and resource use and reuse **Chapter 3 of the textbook**
4. Alternative Fuels, short term and long term solutions. **Chapter 4 of textbook Midterm test and grade – Assignment of Term Paper**
5. Intelligent transportation systems and safety. **Chapter 7 & 8 of textbook**
6. Three wheel cars. **Chapter 6 of textbook**
7. Hybrid and Electric Vehicles. **Chapter 5 of textbook Drive and Ride Test**
8. LEV, ULEV, SULEV and zero emission vehicles opportunities and challenges. **Chapter 5**
9. Evaluation of experiences in other countries where fuel is high in cost, short in supply and pollution control is mandated. **Chapter 9 of textbook**

Evaluation:

1. Attendance is very important. A 5 point quiz at each class will with no make up. 10 daily quizzes equals one exam. Each exam is valued at 100 points with the Final exam valued at 200 points
2. Homework assigned in class
3. A major paper (5-7 pages) will be approved by the instructor for one of the objectives/topics. (Each student will analyze a different objective associated with the automobile and the students chosen career field) Paper will include at least one reference from a minimum of 1 book from Waldo Library; (or substantiated online publication) the paper will include an introduction, body, conclusion and bibliography. The paper will be associated with the automobile and the student's career choice.
4. 3 or more exams will be given during the semester along with a final exam.
5. The term paper is equal to one exam or 100 points
6. Students will be notified of **1st Grade by October 1 or the finish of textbooks Introduction and Chapter 1.**

Performance Criteria (Learning Outcomes), Based on course objectives above:

The student will demonstrate on a test the command and understanding of the subjects.

The student will demonstrate communications skills and an understanding of the subject listed by writing of a term paper.

The student will demonstrate communication skills and an in-depth understanding of any one of the objectives by writing a term paper on one of the subject's listed using reference/s listed above or other applicable library references.

Computer Usage:

Computers will be used to search databases, websites and word processing printing is required in the writing of all papers.

Library Usage:

See above list of suggested books for use in the short and major papers.

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Students Responsibilities: Students shall abide by the conduct specified in the 2003-2005 Undergraduate Catalog Pages 274-278 regarding student conduct.

Prepared by: J. VanDePolder, Associate Professor

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