

**Course Syllabus AGEC 610**  
**Homeland Security - Economic issues and implications for Policy Design**

**Course Intent:**

A class for MS and PhD Students from multiple disciplines that will expose them to economic and policy issues involved with decision making under the risk of accidental or deliberate events regarding mainly agricultural threats involved with animal diseases, food contamination, invasive species, infrastructure disruption etc. This will involve issues regarding assessments of damages, vulnerability and decision making regarding prevention, detection, response, and recovery.

**Instructors:**

	Bruce McCarl	David A. Bessler
<b>Email:</b>	<a href="mailto:mccarl@tamu.edu">mccarl@tamu.edu</a>	<a href="mailto:d-bessler@tamu.edu">d-bessler@tamu.edu</a>
<b>Phone:</b>	979-845-1706	979 845 3096
<b>Office:</b>	340D Blocker	349A Blocker
<b>Class hours:</b>	2:20 -3:35, Tues.-Thur. in Heldenfels Hall 118	

**Prerequisites:**

MS or PHD standing. The first several weeks of the class students will provide basic economics instruction to bring students to a common basis.

**Textbook:**

No textbook is required. Reading materials include lecture notes, journal articles, and governmental reports, a list of which will be provided on a topic-by-topic basis. Most materials can be found on Google Scholar or through the website.

**Dr. McCarl has a relevant web site at**

<http://agecon2.tamu.edu/people/faculty/mccarl-bruce/689Homeland.htm> .

**Grading:**

The class grade will be made up of

<u>Instrument</u>	<u>Percent of Final Grade</u>	<u>Schedule</u>
Class topic lecture	25%	
Project	25%	Due by 4pm, Nov 11 th
Homework	15%	
Final	25%	December 15, 1-3 pm
Class participation	10%	

**Class Topic Lecture Details:**

Students will be develop and deliver a power point supported one period topic lecture on a topic of their choice addressing a broad homeland security issue, describe it from a technical and economic viewpoint. We expect that the topic will be one listed in the topics below beginning with week 7.

The topic lecture dates will roughly correspond to the order of topics in the schedule below. Topics will be allocated on a first-come, first-served basis.

## Project Details:

Students will empirically or theoretically address a broad homeland security issue, describe it from a technical and economic viewpoint and come up with a maximum 10 page document applying class concepts to the issue. Projects can be conducted by teams of no more than 2 people. We expect that a ½-1 period presentation will be given in class on the material.

The project report is due by 4pm on the first class period on November 11<sup>th</sup>.<sup>1</sup> Tentatively the dates for project presentation begin on Nov 16 that students can choose. The presentation dates will be allocated on a first-come, first-served basis.

## Detailed Class Outline (Tentative and will emerge during semester):<sup>2</sup>

Lecture	Description	Recommended Reading	Instructor
<b>Week 1: Homeland Security as an Economic Problem</b>			
8/31/10	Threats Differential nature of Agricultural threat, Terrorism deliberate vs. inadvertent Why address this in economics <ul style="list-style-type: none"> <li>• Nature of issue</li> <li>• Significance</li> <li>• Prior damages</li> <li>• Decision making/decision support</li> </ul>	Hagerman, A.D., B.A. McCarl and J.H. Mu. 2009. "Economic Impact of a Livestock Attack." Voeller, J.G. (ed). <i>Wiley Handbook of Science and Technology for Homeland Security</i> . John Wiley and Sons.	Bruce McCarl
9/2/10	Nature of economic focus: <ul style="list-style-type: none"> <li>• Event Costing               <ul style="list-style-type: none"> <li>○ Direct production</li> <li>○ Market impact</li> <li>○ Indirect impact</li> </ul> </li> <li>• Strategy evaluation</li> <li>• Risk appraisal</li> <li>• Strategy design               <ul style="list-style-type: none"> <li>○ Compensation</li> <li>○ Cooperation</li> <li>○ Regulatory design</li> </ul> </li> <li>• Market impacts               <ul style="list-style-type: none"> <li>○ Supply/demand</li> <li>○ Trade</li> <li>○ Dynamic</li> </ul> </li> <li>• Induced/regional impacts</li> </ul>	Pritchett, J., D. Thilmany, and K. Johnson. 2005. "Animal Disease Economic Impacts: A Survey of Literature and Typology of Research Approaches." <i>International Food and Agribusiness Management Review</i> . 8(2): 23-46  Morgan, N. and A. Prakash. 2006. "International Livestock Markets and the Impact of Animal Disease." <i>Revue Scientifique et Technique de l'Office International des Epizooties</i> 25(2): 517-528.	Bruce McCarl

<sup>1</sup> The project proposal will be distributed so that students have time to prepare the questions for discussion on the projects other than their own.

<sup>2</sup> The order of topics may change over the course depending on the progress of the course as well as communications between instructors and students.

<b>Weeks 2: Economic background for homeland security</b>			
9/7/10	Review of the Basics <ul style="list-style-type: none"> <li>• Demand/supply analysis</li> <li>• Cost benefit analysis</li> <li>• Decision making theory</li> <li>• Risk analysis</li> <li>• Externality</li> <li>• Cooperative / Non Cooperative behavior</li> <li>• Induced effects (indirect input output)</li> <li>• Spatial nature of homeland security issue</li> <li>• Robustness</li> </ul>	Class Notes	Bruce McCarl
9/9/10	Basic decision problem <ul style="list-style-type: none"> <li>• Context</li> <li>• Ex Ante- and ex-post-investment /management mix</li> <li>• Information needs</li> </ul>	Class Notes	Bruce McCarl
<b>Week 3: Markets</b>			
9/14/10	General Market Issues <ul style="list-style-type: none"> <li>• Measured through prices and production</li> <li>• Measured through equity prices</li> </ul>	Thompson, D., P. Muriel, D. Russell, P. Osborne, A. Bromley, M. Rowland, S. Creigh-Tyte, and C. Brown. "Economic Costs of the Foot-and-Mouth Disease Outbreak in the United Kingdom in 2001." <i>Revue Scientifique et Technique de l'Office International des Epizooties</i> 21(3 2002): 675-687  Leeming and Turner. 2004. "The BSE Crisis and the Price of Red Meat in the UK." <i>Applied Economics</i> . 36:1825-1829.	David Bessler
9/16/10	Case studies: AI Impacts	Huang, W., D.A. Bessler. 2010. "How Does Avian Influenza Impact Poultry Related Equities Listed on US Public Stock Markets?" Unpublished Working Paper,	David Bessler

		Texas A&M University.	
<b>Week 4: Markets</b>			
9/21/10	Case studies: Meat Market Impacts	Park, M. Y.H. Jin, and D.A. Bessler. 2008. "The Impacts of Animal Disease Crises on the Korean Meat Market." <i>Agricultural Economics</i> . 39: 183-195.	David Bessler
9/23/10	Case studies: H1N1 Impacts	Attavanich, W., B.A. McCarl, and D.Bessler. "The Effect of H1N1 (Swine Flu) Media Coverage on Agricultural Commodity Markets." <i>Applied Economic Perspectives and Policy</i> (Revised and Resubmitted)	Witsanu Attavanich
<b>Week 5: Human Health Implications</b>			
9/27/10	Food Security (case studies) <ul style="list-style-type: none"> <li>• Oregon salad bar</li> <li>• Japanese radishes</li> <li>• FMD in England</li> <li>• BSE in England, Canada, US</li> <li>• AI in China</li> <li>• Spinach event</li> </ul>	Marsh et al. 2004. "Impacts of Meat Product Recalls on Consumer Demand in the USA." <i>Applied Economics</i> . 36:897-909.  Lloyd, T.A., S. McCorriston, C.W. Morgan and A.J. Rayner. 2006. "Food Scares, Market Power and Price Transmission: The UK BSE Crisis." <i>European Review of Agricultural Economics</i> 33(2): 119-147.	Jianhong Mu
9/30/10	Human Health Implications: RVF <ul style="list-style-type: none"> <li>• Value of a Life</li> <li>• Lost Productivity</li> </ul>	Landefeld, J.S. and E.P Seskin. 1982. "The Economic Value of Life: Linking Theory to Practice." <i>American Journal of Public Health</i> , 72(6):555-568.  Viscusi, W.K. 1993. "The	Randi Hughes-Fraire

		<p>Value of Risks to Life and Health." <i>Journal of Economic Literature</i>, 31(4): 1912-1946.</p> <p>Gold, M.R., D.Stevenson, D.G. Fryback. 2002. "HALYs and QALYs and DALYs, Oh My: Similarities and Differences in Summary Measures of Population Health." <i>Annual Review of Public Health</i>, 23:115-134.</p>	
<b>Week 6: Vulnerability assessment for animal disease</b>			
10/5/10	FMD Carcass disposal	<p>Carpenter, T.E., J. O'Brien, A.D. Hagerman and B.A. McCarl. 2010. "Epidemic and Economic Impacts of Delayed Detection of Foot-and-Mouth Disease: a Case Study of a Simulated Outbreak in California" forthcoming <i>Journal of Veterinary Diagnostic Investigation</i>.</p> <p>Jin, Y, W. Huang, and BA. McCarl, 2005. "Economics of Homeland Security: Carcass Disposal and The Design of Animal Disease Defense." <i>Paper presented at the American Agricultural Economics Association Meetings</i>, Providence, Rhode Island.</p>	Amy Hagerman
10/7/10	RVF H1N1 and Climate	Class Notes	Randi Hughes-Fraire, Mark Masumba and Ruth Amuta
<b>Week 7: Vulnerability assessment for animal disease</b>			
10/12/10	Avian Influenza: China	Rouliot, S. and D. Sumner.	Jianhong

		<p>2008. "Traceability, Liability, and Incentives for Food Safety and Quality." <i>American Journal of Agricultural Economics</i> 90:15-27.</p> <p>Brouwer, R., P. van Beukering and E. Sultanian. 2008. "The Impact of the Bird Flu on Public Willingness to Pay for the Protection of Migratory Birds." <i>Ecological Economics</i> 64:575-585.</p>	Mu
10/14/10	Avian Influenza: Texas	<p>Robert H. Beach and Chen Zhen, (2008), "Consumer Purchasing Behavior in Response to Media Coverage of Avian Influenza", Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Dallas, Texas, February 2-5, 2008.</p> <p>Verbeke W and Ronald W. Ward, (2001), "A fresh meat almost ideal demand system incorporating negative TV and advertising impact", <i>Agriculture Economics</i>, 25.</p>	Jianhong Mu
<b>Week 8: Investment and Response</b>			
10/19/10	Balance studies for animal disease Inspection and FMD	<p>Elbakidze, L., and B.A. McCarl. "Animal Diseases Prevent Preparedness Versus Post-event Response: When Is It Economic to Protect." <i>Journal of Agricultural and Applied Economics</i> 38(2 2006):327-336.</p>	Bruce McCarl
10/21/10	Vaccination and carcass disposal Animal ID	<p>Hagerman, A., B.A. McCarl, T.E. Carpenter, J. O'Brien. 2010. "Emergency Vaccination and Control of FMD: Consequences of Its Inclusion as a US Policy Option."</p>	Bruce McCarl

		<p>Working Paper.</p> <p>Hagerman, A.D., J.C. Looney, B.A. McCarl, D.P. Anderson, M. Ward. 2010. "Rapid Effective Trace-Back Capability Value in Reducing the Cost of a Foot and Mouth Disease Event." <i>Journal of Agricultural and Applied Economics</i>. Selected paper for the 2010 SAEA Annual Meeting Proceedings</p>	
<b>Week 9: Policy decision making</b>			
10/26/10	<p>Policy interventions</p> <p>Public versus private goods</p> <p>Incentive mechanisms</p> <p>Non-cooperative behavior</p> <p>Compensation</p>	<p>Gramig, B., R.D. Horan and C.A. Wolf. 2009. "Livestock Disease Indemnity Design When Moral Hazard is Followed by Adverse Selection." <i>American Journal of Agricultural Economics</i>. 91(3): 627-641.</p> <p>Gramig, B.M., B.J. Barnett, J.R. Skees, and J.R. Black. 2006. "Incentive Compatibility of Risk Management of Contagious Livestock Diseases." <i>Economics of Livestock Disease Insurance: Concepts, Issues and International Case Studies</i>. S.R. Koontz, D.L. Hoag, D.L. Thilmany (eds). CABI Publishing: Wallingford, Oxfordshire.</p>	Amy Hagerman
10/28/10	<p>Experiences</p> <p>Trade and Events</p>	<p>Paarlberg, P.L., and J.G. Lee. 1998. "Import Restrictions in the Presence of a Health Risk, an Illustration using Foot and Mouth Disease." <i>American Journal of Agricultural Economics</i> 80(1998):175-183</p>	Fred Boadu
<b>Week 10: Policy decision making</b>			
11/2/10	Regulation / legal issues	Seitzinger, A.H. and Forsythe.	Fred Boadu

	<p>Strategy</p> <ul style="list-style-type: none"> <li>• Zoning/regionalization</li> <li>• Assurance</li> </ul>	<p>1999. "Regionalization's Potential in Mitigating Trade Losses Related to Livestock Disease Entry." <i>Annals of the New York Academy of Sciences</i>. 894: 95-99.</p>	
11/4/10	<p>Probability Risk Stochastic Dominance</p>	<p>McCarl, B.A. "Forming Probability Distributions: Applied Simulation for Economic Analysis Notes." Unpublished manuscript, Texas A&amp;M University, 1996.</p> <p>McCarl, B.A. "Choosing Among Risky Alternatives Using Stochastic Dominance." Unpublished Manuscript, Texas A&amp;M University, August 2008.</p>	<p>Bruce McCarl</p>
<b>Week 11: Assessing policy and Challenges</b>			
11/9/10	<p>Advanced Stochastic Dominance BRAC</p>	<p>McCarl, B.A. "Preference Among Risky Prospects Under Constant Risk Aversion." <i>Southern Journal of Agricultural Economics</i> 20(December 1988): 25-34.</p> <p>McCarl, B.A. and D. Bessler. "Estimating an Upper Bound on the Pratt Risk Aversion Coefficient when the Utility Function is Unknown." <i>Australian Journal of Agricultural Economics</i> 33(April 1989): 56-63.</p>	<p>Bruce McCarl</p>
11/11/10	<p>Evaluation Terrorism</p>	<p>Casagrande, R. 2002. "Biological Warfare Targeted at Livestock." <i>Bioscience</i> 52(July): 577-581</p>	<p>Bruce McCarl</p>
<b>Week 12-14 Student Presentations (20 minutes plus 10 minutes class discussion)</b>			
<b>Week 15 Related issues and Wrap-up</b>			
FINAL SCHEDULED TIME: DECEMBER 15, 1-3PM			