



UNIVERSITI TEKNOLOGI MARA

AGR525: RISK MANAGEMENT IN AGRICULTURE

Course Name (English)	RISK MANAGEMENT IN AGRICULTURE APPROVED
Course Code	AGR525
MQF Credit	3
Course Description	This course presents a survey of risk analysis methods and their application in agricultural economics research. The first topic covered includes theoretical formulations for individual risk response. Then attention is turned to the development of probability distributions. Third, methods for resolving risky choices in agricultural production, marketing and policy decisions are reviewed. Finally, attention is turned to the development of measures of risk preference. This course is intended to be much more literature and student-effort based than most courses. Reading of required material and classroom discussion are required, with an attempt to reduce reliance on the lecture format.
Transferable Skills	Knowledge Communication skill Leadership Team work Life long learning
Teaching Methodologies	Lectures, Blended Learning, Case Study, Discussion, Presentation
CLO	CLO1 Discuss the methodology of making decisions, risk management and the analysis of risk management tools, math programming models, and non-optimizing simulation models. CLO2 Verbally, assess and employ the agricultural risk management such as an appropriate theoretical framework, a suitable analytical method, and methodology of making decisions, risk management and the analysis of risk management tools, math programming models, and non-optimizing simulation models. CLO3 Collaborate, motivate and truthful with team members the knowledge acquired in agricultural risk management, systematically and comprehensively.
Pre-Requisite Courses	No course recommendations
Topics	
1. Expected Utility 1.1) Expected Utility	
2. Risk Aversion 2.1) Risk Aversion and Arrow 2.2) Utility Functions, Risk Aversion Coefficients and Transformations	
3. Expected Value-Variance 3.1) Expected Utility, Mean-Variance and Risk Aversion 3.2) Meyer's Location Scale Transformation	
4. Portfolio Analysis 4.1) Portfolio and Risk Analysis 4.2) Derivation of the Expected Value-Variance Frontier without a Risk-Free Asset 4.3) Derivation of the Expected Value-Variance Frontier with a Risk-Free Asset	
5. Risk Programming 5.1) The Farm Portfolio Problem Part I: The Expected Value-Variance Frontier 5.2) The Farm Portfolio Problem Part II: MOTAD and Direct Utility Maximization 5.3) The Farm Portfolio Problem Part III: Target MOTAD and Discrete Sequential 5.4) Stochastic Programming	

6. Stochastic Dominance I 6.1) Overview of Stochastic Dominance 6.2) Derivation of First and Second Degree Stochastic Dominance 6.3) Definitions of Increasing Risk
7. Stochastic dominance II 7.1) Implications of Increasing Spreads 7.2) Generalized Stochastic Dominance with Respect to a Function
8. Stochastic dominance III 8.1) Applications of Stochastic Dominance in Agriculture
9. Dynamic Decision Rules 9.1) Value of Information
10. Market Models I 10.1) The Capital Asset Pricing Model 10.2) Capital Asset Pricing Model and the Arbitrage Pricing Theorem
11. Market Models II 11.1) The Arbitrage Pricing Model 11.2) Empirical Applications of Capital Market Models
12. Option Models of Risk I 12.1) Introduction to Options and Futures 12.2) Options pricing using Black-Scholes
13. Option Models of Risk II 13.1) Real Option Valuation
14. State Contingent Production Models 14.1) State Contingent Production Model: The Stochastic Production Set Distance 14.2) Functions and Risk Aversion 14.3) Constant Relative and Absolute Risk Aversion and the Derivation of the StateContingent 14.4) Dual Functions

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Written assignment	20%	CLO1
	Presentation	Individual presentation	20%	CLO2
	Test	Online test	20%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> Lowell B Catlett and James D Libbin 2006, <i>Risk Management in Agriculture</i>, Delmar Cengage Learning
Article/Paper List	Reference Article/Paper Resources	<ul style="list-style-type: none"> John C. Hull. (2010, Risk Management and Financial Institutions, <i>Prentice Hall.</i>, 2nd Edition Mark S. Dorfman 2008, Introduction to Risk Management and Insurance,, <i>Prentice Hall.</i>, 9th Edition Aswath Damodaran 2008, Strategic Risk Taking:A Framework for Risk Management., <i>Prentice Hall.</i> Helyette Geman 2009, Risk Management in Commodity Markets, <i>From Shipping to Agriculturals and Energy. Wiley.</i> Dana L. Hoag. 2009, Applied Risk Management in Agriculture., <i>CRC Press.</i> J B Hardaker, R B M Huirne, J R Anderson and G Lien 2004, Coping with Risk in Agriculture, <i>Cabi</i>
Other References	This Course does not have any other resources	