Programme Code: GECO 81

Programme Name: Ph.D. Agricultural Economics

Programme Outcomes for PhD

PO1. In-depth knowledge of literature in the specialised area of research.

PO2. Apply theories, methodologies and techniques to address fundamental research problems.

PO3. Creativity and originality in planning and executing research independently.

PO4. Critical thinking, problem solving and evaluation of published work.

PO5. Ability to formulate and test novel hypotheses.

PO6. Develop practical research skills and expertise in state-of-the art techniques in research.

PO7. Effective scientific writing and oral presentation skills.

PO8. Collegiality in a research setting with people from diverse backgrounds as leaders/mentors/team members.

PO9. Ethical principles in conducting and reporting research.

PO10. Life-long commitment to expanding the frontiers of knowledge in a specialised field.

Programme Specific Outcomes

PSO1: This programme will enhance the employability of students in niche emerging areas like data analysis, data management etc.,

PSO2: This programme will bolster the graduate's confidence and skill to take up independent research and prepare and evaluate projects which will facilitate their employability by NGOs to carry out survey, data analysis, interpretation and policy formulation.

PSO3: This programme will kindle the student's aptitude for novel and futuristic research thus they will imbibe the passion for pursuing independent research and post doctoralprogrammewherebytheir prospects for recruitment as teaching (Assistant Professors) will become bright.

Department of Agricultural Economics

Ph.D Agricultural Economics (by course work)

Full time / Part time / External

2019-20

Major Courses

AEC 811	Advanced Micro Economic Analysis	2+1
AEC 812	Advanced Macro Economic Analysis	3+0
AEC 813	Advanced Production Economics	2+1
AEC 814	Advanced Agricultural Marketing and Price Analysis	2+1
AEC 821	Applied Econometrics	2+1
AEC 822	Agricultural Development and Policy Analysis	3+0
AEC 823	Environmental Economics	2+1
AEC 824	Agricultural Finance and Project Management	2+1

Minor Courses

AEC 815	Natural Resource Management	2+1
AEC 825	International Trade and Intellectual Property Management	2+1
MOO	MOOC	2+0

Supportive Courses

COM 811	Advances in Computer Applications	0+1
PGS/LIB812		0+1
STA 821	Advanced Statistical Methods for Social Sciences	2+1
Seminar		0+2
Research		0+45

Ph.D in Agricultural Economics (Revised Syllabus 2019-20 onwards)

Semester wise Distribution of Courses

Semester I

Major Courses

AEC 811	Advanced Micro Economic Analysis	2+1
AEC 812	Advanced Macro Economics Analysis	3+0
AEC 813	Advanced Production Economics	2+1
AEC 814	Advanced Agricultural Marketing & Price Analysis	2+1

Minor Course

AEC 815	Natural Resource Management	2+1

Supportive Courses

COM 811	Advances in Computer Applications	0+1
PGS/LIB 812		0+1
AEC 011	Research	0+1
AEC012	Seminar	0+1

16 credits

Semester II

Major Courses

AEC 821	Applied Econometrics	2+1
AEC 822	Agricultural Development & Policy Analysis	3+0
AEC 823	Environmental Economics	2+1
AEC 824	Agricultural Finance & Project Management	2+1

Minor Courses

AEC 825	International Trade & Intellectual Property Management	2+1
MOO	MOOC	2+0

Supportive Courses

STA 821	Advanced Statistical Methods For Social Sciences	2+1
AEC 802	Research	0+2
AEC 082	Seminar	0+1

17 credits

Semester III

AEC 803	Research	0+12

Semester IV

AEC 804	Research	0+12

Semester V

AEC 805	Research	0+9

Semester VI

AEC 806	Research	0+9

Grand Total = 75 Credits

Choose 3 out of 4 and 2 out of 4 major courses in I and II semester respectively
All minor courses should be from other Departments or Disciplines

AEC 811 Advanced Micro Economic Analysis (2+1)

Learning Objectives

- To introduce the theoretical models and applications of microeconomic theory to the students
- To give exposure to price determination under different market situations
- To study about welfare economics including the theory of public choice.

Theory

UNIT I: Theory of consumer behaviour

Introduction – duality in consumer theory – expenditure function and indirect utility function. Measurement of income effect and substitution effect. Measurement of changes in consumers' welfare – consumer's surplus, compensating variation and equivalent variation.

UNIT II: Demand functions

Dynamic versions of demand functions – integrability of demand functions. Demand models – linear expenditure system, Almost ideal demand system. Applications of consumer theory – household model and time allocation – labour supply decisions by households.

UNIT III: Market structure

Perfect competition, imperfect market - monopoly, monopolistic competition and oligopoly. Oligopoly models – collusive and non-collusive models of oligopoly - Cournot model, Chamberlin model, Stackleberg solution. Market equilibrium - impact of tax on equilibrium

UNIT IV: General equilibrium theory

Conceptual overview - general equilibrium conditions with production and consumption. Existence, uniqueness and stability of general competitive equilibrium. Walrasian general equilibrium – mathematical derivation of conditions for general equilibrium.

UNIT V: Welfare economics

Concepts, problems, approaches and limitations of welfare economics, Pareto conditions of maximum welfare – criteria for social welfare - social welfare functions, social versus private costs and benefits.

Current streams of thought

Practical

Problems in consumer utility maximization – estimation of income and substitution effects; Estimation and comparison of consumer's surplus, equivalent variation and compensating variation. Estimation of demand models –derivation and estimation of labour supply equations from household models comparative static analysis in consumption. Advanced problem solving in price determination under perfect competition, monopoly, oligopoly and monopolistic competition.Price discrimination - game theory models. Problems in General

Equilibrium Theory and welfare economics.

Theory lecture schedule

1. Theory of consumer behavior - introduction
2. Duality in consumer theory
3. Expenditure function
4. Indirect utility function
5. Measurement of income effect and substitution effect
6. Measurement of changes in consumers' welfare
7. Consumer's surplus
8. Compensating variation and equivalent variation
9. Demand functions – types and forms
10. Dynamic versions of demand functions
11. Supply functions
12. Demand models – introduction
13. Linear expenditure system
14. Almost ideal demand system
15. Applications of consumer theory
16. Household model and time allocation
17. Labour supply decisions by households
18. **Mid Semester Examination**
19. Market structure, conduct and performance
20. Perfect competition
21. Imperfect market – monopoly
22. Monopolistic competition and oligopoly
23. Oligopoly models – collusive and non-collusive models of oligopoly
24. Cournot model, Chamberlin model and Stackleberg solution
25. Price determination under different market situations
26. Market equilibrium
27. Impact of tax on equilibrium
28. General equilibrium theory - conceptual overview
29. General equilibrium conditions with production and consumption.
30. Existence, uniqueness and stability of general competitive equilibrium
31. Walrasian general equilibrium – mathematical derivation of conditions for general equilibrium

32. Welfare economics - concepts, problems, approaches and limitations of welfare economics
33. Pareto conditions of maximum welfare – criteria for social welfare
34. Social welfare functions, social versus private costs and benefits.

Practical schedule

1. Problems in consumer utility maximization
2. Estimation of income and substitution effects
3. Estimation and comparison of consumer's surplus
4. Equivalent variation and compensating variation
5. Estimation of demand models
6. Almost ideal demand system
7. Derivation and estimation of labour supply equations from household models
8. Market equilibrium
9. Comparative static analysis in consumption
10. Price determination under perfect competition
11. Price determination under monopoly
12. Price discrimination
13. Price determination under oligopoly
14. Price determination under monopolistic competition
15. Game theory models
16. General equilibrium theory
17. Welfare economics

Course Outcomes

At the end of the course students will be able to

CO1: Identify the way to maximize profit through cost minimisation.

CO2: Know the different market structures and to identify long run and short run equilibrium.

CO3: Apply micro economic principles for the welfare of farming community.

References

1. Ahuja, H.L., (2016), *Principles of Micro Economics,* Sultan Chand, New Delhi.
2. Barthwal, R,R,, (2012), *Microeconomic Analysis,* New Age International (P) Ltd., New Delhi.
3. Chauhan, S.P.S., (2008), *Micro Economics, Theory and Applications*, Prentice Hall India Learning Private Limited, New Delhi.

4. David Besanko and Ronald Braeutigm, (2013), *Micro Economics*, Willey Black Well, New York.
5. David, L. Debertin (2012), *Applied Micro Economics, Consumption, Production and Markets,* Create Space Independent Publisher, New Delhi.
6. Gregory Mankiw, N., (2007), *Principles of Microeconomics*, Cengage Learning India Pvt. Ltd., New Delhi.
7. Hal. R. Varian, (2010), *Intermediate Micro Economics: A Modern Approach*, Springer Publishing Company, New York.
8. Henderson, JM., and RE.Quandt (2001),*MicroeconomicTheory:AMathematicalApproach*, McGraw-Hill, New York.
9. Koutsoyiannis A. (2003), *Modern Microeconomics*, London The Macmillan PressLtd..
10. Sankaran, S., (2012), *Micro Economics*, Margham publications, Chennai.

CO – PSO – PO Mapping

	PSO1	**PSO2**	**PSO3**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**
CO1	X		X	X			X						X
CO2		X	X				X						X
CO3		X			X								X

AEC 812 Advanced Macroeconomic Analysis (3+0)

Learning Objectives

- To impart the knowledge on the macroeconomic theory and macroeconomic policy issues.

Theory

UNIT I: Macro economics - review

Review of macro economics concepts- Keynesian theory- consumption function and theories of consumption – saving function and theories of saving – actual and potential GNP – fluctuations and growth – a review of the national income and product accounts introduction to income determination – the multiplier - national income determination – the static equilibrium model demand – side equilibrium – income and interest rate – consumption and consumption expenditure.

UNIT II: Investment - savings

Theories of investment- savings and investment equality - IS – LM Framework. Demand for and supply of money- monetary policy in the static model –an introduction to fiscal policy –investment demand – monetary and fiscal policy in the extended model – inflation, productivity and income distribution.

UNIT III: Labour market

Stagflation and supply side economics - theories of unemployment - Phillips curve– demand and supply in the labour market supply – side equilibrium – output and the price level equilibrium in the static model – search, wage rigidity and unemployment rational expectations and demand policy – sectoral demand functions and extensions of the static model – macroeconomics when markets do not clear.

UNIT IV: Growth models

National income accounting - recent concepts – green accounting – medium term dynamics – between static equilibrium and long run growth – introduction to stock adjustment dynamics – trend growth in the static model – long run growth with full employment – introduction to growth models – the basic model extended – varying saving assumptions – the golden rule and an introduction to optimal growth models.

UNIT V: Macroeconomic policy

BOP & adjustment policies - foreign exchange policy - foreign sector: capital and current account - impact of WTO on indian economy - impact of IMF & IBRD on Indian economy - review of macro economic policies in India – the foreign sector and balance of payments. **Current streams of thought**

Theory lecture schedule

1. Review of macro economics concepts
2. Keynesian theory- consumption function
3. Theories of consumption
4. Saving function and theories of saving
5. Actual and potential GNP – fluctuations and growth
6. Review of the national income and product accounts
7. Introduction to income determination
8. Multiplier national income determination
9. Static equilibrium model
10. Demand – side equilibrium
11. Income and interest rate
12. Consumption and consumption expenditure
13. Investment – savings, theories of investment
14. Savings and investment equality - IS – LM Framework
15. Demand for and supply of money- monetary policy in the static model
16. Introduction to fiscal policy
17. Investment demand – monetary and fiscal policy in the extended model
18. Inflation, productivity and income distribution
19. Labour market
20. Stagflation and supply side economics
21. Theories of unemployment - Phillips curve
22. Demand and supply in the labour market
23. Supply – side equilibrium
24. Output and the price level equilibrium in the static model
25. Wage rigidity and unemployment
26. **Mid Semester Examination**
27. Rational expectations and demand policy
28. Sectoral demand functions and extensions of the static model
29. Macro economics when markets do not clear
30. Growth models
31. National income accounting - recent concepts
32. Green accounting – medium term dynamics – between static equilibrium and long run growth
33. Introduction to stock adjustment dynamics
34. Trend growth in the static model

35. Long run growth with full employment
36. Basic growth model
37. Varying saving assumptions
38. Golden rule and an introduction to optimal growth models
39. Macroeconomics – basic concepts
40. Macroeconomic policy
41. BOP and adjustment policies
42. Foreign exchange market
43. Foreign exchange policy
44. Foreign sector -capital and current account
45. Objectives and functions of WTO
46. Role of IMF in foreign trade
47. Impact of WTO on Indian economy
48. Impact of IMF on Indian economy
49. Impact of IBRD on Indian economy
50. Review of macroeconomic policies in India
51. Foreign sector and balance of payments.

Course Outcomes

At the end of the course students will be able to

CO1: Understand the nature of inflation and ways to control it.

CO2: Analyze monetary and fiscal policies.

References

1. Ahuja, H.L., (2016), *Macroeconomics, Theory and Policy*, Sultan Chand and Sons, Pvt. Ltd., New Delhi.
2. Cauvery, R., U.K. Sudhanayak, M. Girija, and R.M. Meenakshi, (2015), *Macro Economics,* Sultan Chand, New Delhi.
3. Chandana Ghosh, Ambar Ghosh, (2011), *Macro Economics,* PH Learning Pvt. Ltd., New Delhi.
4. Frogen, RT., (1999), *MacroEconomic:TheoryandPolicies*, PrenticeHall, New Delhi.
5. Gupta, G. S., (2017), *Macro Economics Theory and Applications,* McGraw Hill Education, New Delhi.
6. Jhingan, M.L., (2014, *Macro Economics Theory,* Vrinda Publication Pvt. Ltd., New Delhi.
7. Maria John Kennedy, M., (2011), *Macro Economics,* Prentice Hall India Learning Private Limited, New Delhi.
8. RudigerDornbusch, Stanley Fischer and Richard Starz, (2017), *Macro Economics,* McGraw Hill, New Delhi.

9. Samuelson,PA.,and WD.Nordhaus, (2004),*Economics*, McGraw-Hill, New Delhi.

10. Sankaran, S., (2016), *Macro Economics*, Marghum publication, Chennai

CO – PSO – PO Mapping

	PSO1	**PSO2**	**PSO3**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**
CO1	X									X			X
CO2			X						X				X

AEC 821 Advanced Econometrics (2+1)

Learning Objectives

- To impart knowledge on advanced econometric tools to the students of agricultural economics
- To analyze the economic problem by applying quantitative techniques.

Theory

UNIT I: Classical regression model

Review of classical regression model – assumption – OLS estimation in CLR model – review of hypothesis testing –restrictions on parameters – single equation techniques.

UNIT II:Ordinary least squares

Ordinary least squares – weighted least squares – generalized least squares – method of principal components – instrumental variables method - maximum likelihood method – errors in variables, non-linearity and specification tests – nonspherical error terms.

UNIT III: Dummy variables

Introduction - Qualitative and truncated dependent variables – limited dependent variables –LPM, probit and logit models, their multinomial extensions.

UNIT IV: Models for panel data

Autoregressive distributed lag models – panel data fixed and random effects models and their extensions.

UNIT V: Indirect least squares

Simultaneous equation methods –identification – estimation by indirect least squares 2SLS, PIML, SURE, 3SLS. **Current streams of thought**

Practical

Estimation of multiple regression model - GLS estimation methods – testing misspecification errors – Testing and managing multicollinearity, heteroscedasticity and autocorrelation - estimation of LPM, Logit and Probit models - comparing two regressions - Chow test - estimation of distributed lag models – panel data random and fixed effects models - Indirect least squares 2SLS, SURE, 3SLS, estimation of simultaneous equation models

Theory lecture schedule

1. Econometrics – basic concepts
2. Regression and correlation – basics
3. Classical regression model – introduction
4. Review of classical regression model – assumption
5. Auto correlation, Heteroscedasticity
6. Selection of variables
7. OLS estimation in CLR model
8. Review of hypothesis testing
9. Restrictions on parameters
10. Single equation techniques
11. Weighted least squares
12. Generalized least squares
13. Method of principal components
14. Instrumental variables method
15. Maximum likelihood method
16. Errors in variables
17. Non-linearity and specification tests
18. **Mid Semester Examination**
19. Nonspherical error terms
20. Dummy variables - introduction
21. Qualitative and truncated dependent variables
22. Limited dependent variables –LPM
23. Probit model
24. Logit model
25. Time series data and panel data
26. Models for panel data
27. Autoregressive distributed lag models
28. Panel data fixed and random effects models and their extensions
29. Indirect least squares– introduction
30. Simultaneous equation methods –identification
31. Estimation by indirect least squares - 2SLS
32. Estimation by PIML
33. Estimation by SURE
34. Estimation by 3SLS

Practical schedule

1. Identification of variables
2. Estimation of multiple regression model
3. GLS estimation methods
4. Testing misspecification errors
5. Testing and Managing multicollinearity
6. Heteroscedasticity
7. Autocorrelation
8. Estimation of LPM
9. Logit model
10. Probit model
11. Comparing two regressions - Chow test
12. Estimation of distributed lag models
13. Panel data - random and fixed effects models
14. Indirect least squares 2SLS
15. ILS – SURE
16. ILS - 3SLS
17. Estimation of simultaneous equation models

Course Outcomes

At the end of the course students will be able to

CO1: Develop the necessary skills needed for empirical research using econometrics techniques.

CO2: Conduct independent research using secondary data.

CO3: Deepen their other transferable skills such as written communication, teamwork, numeracy, computer library, problem solving and analytical skills.

CO4: Identify the appropriate research design for different research problem.

CO5: Interpret the results and write research report & research articles

References

1. Christopher Dougherty, (2011), *Introduction to Econometrics,* Oxford University Press.
2. Damodar N. Gujarati and S. Sangeetha, (2005), *Basic Econometrics (with Cd ROM)*, Tata McGraw Hill Education, New Delhi.

3. Damodar N. Gujarati, (2002), *Student Solution Manual For Use with Basic Econometrics*, McGraw Hill, New Delhi.
4. Damodar N. Gujarati, Dawn C. Porter and Sangeetha Gunasekar (2011), *Basic Econometrics*, McGraw Hill Education (India) Pvt. Ltd., New Delhi.
5. Greene, WH.,(2002),*Econometric Analysis*, Pearson Education, New Delhi.
6. Harper, Row and GS.Maddala, (2002), *Econometrics,* McGraw Hill, New Delhi.
7. Johnston, J., and J. Dinardo, (2000), *Econometric Methods*, McGraw-Hill, New Delhi.
8. Peter Kennedy, (1992), *A Guide to Econometrics,* Blackwell Publishers, UK.
9. Shyamala, S., and Navdeep Kaur (2013), *A Text Book on Econometrics, Theory and Applications,* Vishal Publishing Company, New Delhi.
10. Studenmund, A.H., (2017), *Using Econometrics a Practical Guide*, Pearson Education, New Delhi.

CO – PSO – PO Mapping

	PSO1	PSO2	PSO3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10
CO1	X		X	X									X
CO2		X	X		X								X
CO3		X			X		X						X
CO4	X								X				X
CO5			X							X			X

AEC 813 Advanced Production Economics (2+1)

Learning Objectives

- To provide applied and practical understanding of production economics
- To explain farm management techniques with emphasis on its economic analysis

Theory

UNIT I: Production function

Production functions, components, assumptions, properties and their economic interpretation - concepts of homogeneity, APP, MPP, elasticities of substitution and their economic relevance – production relations –optimality- commonly used functional forms, nature, properties, limitations, estimation and interpretation -linear, Spillman, Cobb Douglas, quadratic, multiplicative (power) functional forms - translog, and transcendental functional forms - CES.

UNIT II: Economic optimum

Conceptual and empirical issues in specification, estimation and application of production functions- Analytical approaches to economic optimum - determination of economic optimum with constant and varying input and output prices- economic optimum with production function analysis - input use behaviour.

UNIT III: Decision making under different situations

Decision making with multiple inputs and outputs – MRT and product relationships-cost of production and adjustment in output prices-single input and multiple product decisions- multi input, and multi product production decisions - decision making with no risk - cost of wrong decisions – cost curves – principles and importance of duality theory - correspondence of production, cost, and profit functions - principles andderivation of demand and supply functions.

UNIT IV: Economic efficiency

Technology, input use and factor shares - effect of technology on input use decomposition analysis-factor shares-estimation methods- economic efficiency in agricultural production – technical, allocative and economic efficiency – measurement - yield gap analysis – concepts and measurement - Risk and uncertainty in agriculture – incorporation of risk and uncertainty in decision making –risk and uncertainty and input use level – risk programming.

UNIT V: Programing techniques

Simulation and programming techniques in agricultural production- multiple course objective programming – goal programming and compromise programming – applications. **Current streams of thought**

Practical

Estimation of different forms of production functions- Optimal input and product choice from estimated functions – Derivation of demand and supply functions and estimation – Estimation of cost function and interpretations – Optimal product and input choice under multi input and output system- Estimation

of factor shares from empirical functions estimated- Estimating production functions incorporating technology changes - Decomposition analysis and incorporation of technology – Estimation of efficiency measures – Stochastic, probabilistic and deterministic frontier production functions- Risk programming – MOTAD - Quadratic programming-Simulation models for agricultural production decisions - Goal programming.

Theory lecture schedule

1. Production functions - components, assumptions
2. Properties and their economic interpretation - concept of homogeneity
3. APP, MPP, elasticities of substitution and their economic relevance
4. Production relations – optimality
5. Commonly used functional forms - nature, properties, limitations
6. Estimation and interpretation - linear, Spillman
7. Cobb Douglas, quadratic, multiplicative (power) functional forms
8. Translog,transcendental functional forms and CES
9. Economic optimum
10. Conceptual and empirical issues in specification
11. Estimation and application of production functions
12. Analytical approaches to economic optimum
13. Determination of economic optimum with constant and varying input and output prices
14. Economic optimum with production function analysis
15. Input use behavior
16. Decision making under different situations
17. Decision making with multiple inputs and outputs
18. **Mid Semester Examination**
19. MRT and product relationships
20. Cost of production and adjustment in output prices
21. Single input and multiple product decisions
22. Multi input, and multi product production decisions
23. Decision making with no risk - cost of wrong decisions
24. Cost curves
25. Principles and importance of duality theory - correspondence of production, cost, and profit functions
26. Principles and derivation of demand and supply functions
27. Economic efficiency, technology

28. Input use and factor shares -effect of technology on input use
29. Decomposition analysis-factor shares-estimation methods
30. Economic efficiency in agricultural production–technical, allocative and economic efficiency – measurement
31. Yield gap analysis – concepts and measurement
32. Risk and uncertainty in agriculture – incorporation of risk and uncertainty in decision making – risk and uncertainty and input use level –risk programming.
33. Simulation and programming techniques in agricultural production-multiple course objective programming
34. Goal programming and compromise programming – applications.

Practical schedule

1. Estimation of different forms of production functions
2. Optimal input and product choice from estimated functions
3. Derivation of demand and supply functions
4. Derivation of cost function from production function
5. Estimation of cost function and interpretations
6. Optimal product choice under multi input and output system
7. Optimal input choice under multi input and output system
8. Estimation of factor shares from empirical functions
9. Estimating production functions incorporating technology changes
10. Decomposition analysis and incorporation of technology
11. Estimation of efficiency measures – Stochastic frontier
12. Probabilistic frontier
13. Deterministic frontier production function
14. Risk programming – MOTAD
15. Quadratic programming
16. Simulation models for agricultural production decisions
17. Goal programming.

References

1. Bruce R. Beattie, Charles Robart Taylor and Myles J. Watss, (2009),*The Economics of Production*, Krieger Publishing Company, New Delhi.
2. Chambers,RG.,(1988),*Applied Production Analysis,* Cambridge Univ. Press.
3. David L. Debertin, (2012), *Agricultural Production Economics*, Create Space Independent Publishing Platform, New Delhi.
4. David Ludden, (2005), *Agricultural Production and South Asian History*, Oxford Indian Paper Books, New Delhi.
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6. KanishkaBedi, (2013), *Production an Operation Management*, Oxford University Press.
7. Palanisami, K., P. Paramasivam and C.R. Ranganathan, (2016), *Agricultural. Production Economics Analytical Methods and Applications*, Associated Publishing Company, Chennai
8. Pannerselvam, (2012), *Production and Operation Management*, Prentice Hall India Learning Private Limited, New Delhi.
9. Ronald William Shepherd, (2016), *Theory of Cost and Production Economics*, Princeton University Press.
10. YacobKhojasteh, (2017), *Production Management: Advanced Models, Tools and Applications for Full System*, McGraw Hill, New Delhi...

Course Outcomes

At the end of the course students will be able to

CO1: Differentiate technological, allocative and economic efficiency and applications

CO2: Understand and apply production and cost function and implication for profit maximization in the short and long run

CO3: Analyze market structure and implications for profit maximization

CO4: Apply production theory to practical problems such as agricultural supply response

CO5: Quantify risk and uncertainty in agricultural production

CO – PSO – PO Mapping

	PSO1	PSO2	PSO3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10
CO1	X		X	X									X
CO2		X	X	X									X
CO3		X			X		X						X
CO4	X								X				X
CO5			X				X		X				X

AEC 822Agricultural Development and Policy Analysis (3+0)

Learning Objectives

- To impart an indepth knowledge and analytical thinking and various development in agriculture
- To understand recent trends in agriculture related policy analysis

Theory

UNITI:Theories of growth

Introduction to theories of growth –Harrod-domar model –slow model – cass-yarn model – Cambridge school of thought – Neuman growth model – Kaldors' model of growth – the new endogenous growth theory – policy framework – goals, values and beliefs – welfare maximization – characteristics of under development and agricultural development.

UNIT II: Theories of development

Introduction to theories of development – classical and conservation theories – rostow theory – marx theory – schumpeter theory – urban industrial model and lead sector – induced innovation model – high pay off input model and multi sector – role of state economic development.

UNIT III: Agricultural policy

Economic and agricultural situation during plan periods and policy implications – sectoral allocation policies –policies related to major agricultural commodities – policies on resource development conservation and exploitation – energy needs for agricultural / rural development – agricultural wage policy – infrastructural support for agriculture – transport, storage and markets.

UNIT IV: Market policy

Market – policy and state – state Vs market – failure of policy – failure of markets – rationale for government intervention – demand analysis for policy making – alternative approaches to demand analysis – policy implication. Supply response – approaches to measurement of supply response – nerlovian models of supply response – policy implications.

UNIT V: Development planning and policy modeling

Meaning of economic planning – plan formulation – controls under planning – transfer of technology – investment criteria in economic development – economic planning and price mechanism – price, trade and international assistance – agricultural taxation trade – off between agricultural development and environment quality – policy modeling for agricultural support – structural transformation. **Current streams of thought**

Theory lecture schedule

1. Introduction to theories of growth
2. Harrod-domar model –slow model

3. Cass-yarn model
4. Cambridge school of thought
5. Neumangrowth model
6. Kaldors' model of growth
7. New endogenous growth theory
8. Policy framework – goals, values and beliefs
9. Welfare maximization
10. Characteristics of under development and agricultural development
11. Introduction to theories of development
12. Classical and conservation theories – Rostow theory
13. Marx theory
14. Schumpeter theory
15. Urban industrial model and lead sector
16. Induced innovation model
17. High pay off input model and multi sector
18. Role of state economic development
19. Agricultural policy
20. Economic and agricultural situation during plan periods and policy implications
21. Sectoral allocation policies
22. Policies related to major agricultural commodities
23. Policies on resource development
24. Policies on resource conservation and exploitation
25. Energy needs for agricultural / rural development
26. **Mid Semester Examination**
27. Agricultural wage policy
28. Infrastructural support for agriculture – transport
29. Storage and markets
30. Market policy and state
31. State vs market
32. Failure of policy
33. Failure of markets
34. Rationale for government intervention
35. Demand analysis for policy making
36. Alternative approaches to demand analysis
37. Policy implication

38. Supply response
39. Approaches to measurement of supply response
40. Nerlovian models of supply response
41. Policy implications
42. Development planning and policy modeling
43. Meaning of economic planning – plan formulation
44. Controls under planning – transfer of technology
45. Investment criteria in economic development
46. Economic planning and price mechanism
47. Price, trade and international assistance
48. Agricultural taxation
49. Trade – off between agricultural development and environment quality
50. Policy modeling for agricultural support
51. Structural transformation.

Course Outcomes

At the end of the course students will be able to

CO1: Provide orientation to the students in economic development.

CO2: Provide orientation on theories of policy analyze in developing countries.

CO3: Understand the agricultural policy development.

CO4: Understand the globalization and liberalization.

CO5: Discuss various development issues and identify the policy options for sustainable agricultural development.

References

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CO – PSO – PO Mapping

	PSO1	**PSO2**	**PSO3**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**
CO1	X		X	X			X						X
CO2		X	X	X						X			X
CO3		X			X								X
CO4	X			X				X		X			X
CO5			X						X				X

AEC 814 Advanced Agricultural Marketing and Price Analysis (2+1)

Learning Objectives

- This course aims at teaching the students about the various principles and dynamic changes of Agri marketing
- To explain price analysis with their application at both micro and macro levels

Theory

UNIT I: Market analysis

Importance of market analysis in the agricultural system - types of marketing - advantages and disadvantages - quantitative estimation – the distinguishing characteristics and role of agricultural prices – data sources for agricultural products and prices - software used in market analysis.

UNIT II: Market institutions

Role of various formal institutions in agricultural marketing - and functions - measuring their efficiency - public - private partnership – institutional arrangements. Successful casestudies.

UNIT III: Market integration

Multi market estimation, supply response models. Market integration and price transmission-supply/value chain management. GAP analysis. Current trends in information in the changing agri food system.

UNIT IV: Spot and future market

Agricultural commodity marketing - spot and futures- marketing of derivatives- speculation, hedging, swap, arbitrage etc. commodity exchanges - price discovery and risk management in commodity markets- Regulatory mechanism of futures trading.

UNIT V: Econometric models in agricultural marketing

Lag operators and difference equations; stationary and stochastic processes - UNIT roots and cointegration - conditional heteroscedasticity - ARCH and GARCH models – forecast evaluation - methods of forecasting. Price indices and econometric estimation and simulation. **Current streams of thought**

Practical

Estimation of demand/ supply forecasting, supply chain / value chain analysis for different commodities - Commodity models multi market estimation- time series analysis - market integration studies- price discovery price volatility estimation – commodity price forecasting using econometric software.

Theory lecture schedule

1. Market analysis - importance of market analysis in the agricultural system

2. Types of marketing- advantages and disadvantages
3. Quantitative estimation
4. Distinguishing characteristics of agricultural prices
5. Role of agricultural prices
6. Data sources for agricultural products and prices
7. Software used in market analysis
8. Market institutions
9. Role of various formal institutions in agricultural marketing
10. Functions of formal institutions
11. Measuring their efficiency
12. Public - private partnership, institutional arrangements
13. Successful case studies
14. Market integration
15. Multi market estimation
16. Supply response models
17. Market integration and price transmission
18. **Mid Semester Examination**
19. Supply/value chain management
20. GAP analysis
21. Current trends in the changing agri food system
22. Spot and future market
23. Agricultural commodity marketing
24. Marketing of derivatives, speculation, hedging, swap, arbitrage etc.
25. Commodity exchanges
26. Price discovery and risk management in commodity markets
27. Regulatory mechanism of futures trading
28. Econometric models in agricultural marketing
29. Lag operators and difference equations
30. Stationary and stochastic processes
31. UNIT roots and cointegration
32. Conditional heteroscedasticity, ARCH and GARCH models
33. Forecast evaluation - methods of forecasting
34. Price indices and econometric estimation and simulation.

Practical schedule

1. Estimation of demand function

2. Estimation of supply function
3. Supply chain / value chain analysis for different commodities
4. Commodity models
5. Multi market estimation
6. Time series analysis
7. Market integration studies
8. Price discovery
9. Price volatility estimation
10. Methods of forecasting demand
11. Methods of forecasting supply
12. Commodity price forecasting using econometric software
13. Cointegration analysis
14. ARCH and GARCH models
15. Estimation of price indices
16. Simulation technique
17. Supply response model

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Course Outcomes

At the end of the course students will be able to

CO1: Use marketing concepts for analyzing market structures and performance **a**nd formulate effective agricultural marketing policy.

CO2: Apply theoretical models of imperfect market structures to inform public policy.

CO3: Appraise organizational forms unique to agricultural industries.

CO4: Understand price discovery mechanism under differentiate market structures.

CO5: Forecast price for different products

CO – PSO – PO Mapping

	PSO1	**PSO2**	**PSO3**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**
CO1	X		X	X			X						X
CO2		X	X		X		X						X
CO3		X			X			X					X
CO4	X			X						X			X
CO5			X		X		X		X				X

AEC 823 Environmental Economics(2+1)

Learning Objective

- To provide an advanced treatment of the economic theory of environmental management and policy, externalities and market and non- market approaches to environmental improvement.

Theory

UNIT I: Environmental pollution

Environmental pollution - causes and consequences – externalities - public goods and externalities – economics of pollution – private vs social cost of environmental pollution – property rights, environment and development – theory of environmental policy.

UNIT II: Cost benefit analysis

Environmental cost benefit analysis - environmental impact assessment techniques - non-market valuation of environmental resources (WTP / WTA) - environment, market and social welfare.

UNIT III: Economic growth and environmental cost

Growth oriented economic policies and their environmental impacts - population and environmental quality - poverty and environmental degradation – sustainable development – indicators of sustainable development – issues in sustainabledevelopment.

UNIT IV: Environmental policy

Environment and ecology - environmental accounting – environmental pollution with respect to water and air - land and forest resources related environmental pollution - coastal externalities - urbanization and environment. Basic approaches to environmental policy (tax, subsidy, pollution permits etc.) green taxes - political economy of environmental regulation and management.

UNIT V: Global warming

Transboundary environmental problems - economics of global warming, climate change and emission trading - environment, international trade and development. **Current streams of thought**

Practical

Contemporary global environmental issues, movement, policies, programmes, laws and other regulatory mechanisms – criteria for evaluating the environment related projects and review of Environmental Impact Assessment (EIA) techniques - recreation demand models of environmental valuation - contingent valuation techniques – environmental resource accounting techniques- discussion on the techniques dealing with air pollution and review of case studies on air pollution and its impacts - forest environment and wild life conservation-

green GDP and greenhouse insurance – practical considerations and comparison of instruments of environmental policy - non-point source pollution control methodologies - environment in macroeconomic modeling - meta-analysis, economic valuation and environmental economics - multi-criteria methods for quantitative, qualitative and fuzzy evaluation problems related to environment-input output analysis, technology and the environment-computable general equilibrium models for environmental economics and policy analysis.

Theory lecture schedule

1. Environmental pollution – introduction
2. Environmental pollution – air, water, soil.
3. Causes and consequences
4. Externalities - public goods and externalities
5. Economics of pollution
6. Private vs. social cost of environmental pollution
7. Property rights, environment and development
8. Theory of environmental policy
9. Environmental cost benefit analysis
10. Environmental impact assessment techniques
11. Non-market valuation of environmental resources
12. Environment, market and social welfare
13. Economic growth and environmental cost
14. Growth oriented economic policies
15. Environmental impacts of economic policies
16. Population and environmental quality
17. Poverty and environmental degradation
18. **Mid Semester Examination**
19. Sustainable development
20. Indicators of sustainable development
21. Issues in sustainable development
22. Environmental policy
23. Environment and ecology
24. Environmental accounting
25. Environmental pollution with respect to water and air
26. Land and forest resources related environmental pollution
27. Coastal externalities
28. Urbanization and environment

29. Basic approaches to environmental policy
30. Green taxes - political economy of environmental regulation and management
31. Global warming - causes and effects
32. Transboundary environmental problems
33. Economics of global warming, climate change and emission trading
34. Environment, international trade and development.

Practical schedule

1. Contemporary global environmental issues, movement, policies, programmes, laws and other regulatory mechanisms
2. Criteria for evaluating the environment related projects
3. Review of Environmental Impact Assessment (EIA) techniques
4. Demand models of environmental valuation
5. Contingent valuation techniques
6. Environmental resource accounting techniques
7. Discussion on the techniques dealing with air pollution
8. Review of case studies on air pollution and its impacts
9. Forest environment and wild life conservation
10. Green GDP and greenhouse insurance
11. Practical considerations and comparison of instruments of environmental policy
12. Non-point source pollution control methodologies
13. Environment in macroeconomic modeling - meta-analysis, economic valuation
14. Multi-criteria methods for quantitative, qualitative and fuzzy evaluation
15. Problems related to environment – input output analysis
16. Technology and the environment
17. Computable general equilibrium models for environmental economics and policy analysis.

Course Outcomes

At the end of the course students will be able to

CO1: Understand the evaluation of environmental benefits

CO2: Analyze economic problems related to natural resource use including climate change problems.

CO3: Assess the ways to manage common property resources.

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CO – PSO – PO Mapping

	PSO1	PSO2	PSO3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10
CO1	X		X	X									X
CO2		X	X		X		X						X
CO3		X			X		X		X				X

AEC 825 International Trade and Intellectual Property Management (2+1)

Learning Objectives

- To inculcate the students a thorough knowledge on various aspects of international trade and intellectual property rights
- To prepare them to meet the challenges of agrl. sector in the present WTO regime

Theory

Unit-I: International trade – concepts

Basic concepts – classical trade theory – introduction to neo-classical trade theory – supply side analysis – opportunity cost: trade under increasing opportunity costs-factor endowments; trade and factor prices – factor price equalization-demand side analysis; community indifference curves-demand and international trade-integration of demand and supply-offer curve analysis - general equilibrium - equilibrium in product and factor markets.

Unit-II: Theories in international trade

Application of trade theory-terms of trade – supply and demand shifts-technological change – factor supplies and trade; factor intensities; transport costs, location – trade with many goods and countries; leontief paradox; human skills; technological gaps-product cycle – scale economies. Trade policies – instruments, impacts of trade policies – economic integration and regional groupings-introduction to international finance-balance of trade and balance of payments-foreign exchange market – transactions, determination of foreign exchange rates.

Unit-III: International trade organizations

International economic organizations – IMF, World Bank, IDA , IFC, ADB – their role in international trade and terms of trade-international trade agreements Uruguay round – GATT, WTO – their role in promotion of trade-agrl. Export and import policies of India – role of State Trading Corporation - export promotion organizations-Export Promotion Zones (EPZ) – Agrl. Export Zones (AEZ) – EXIM bank.

Unit-IV: Intellectual property rights – meaning and concepts

Introduction to IPR – benefits of IPR – environment implications of IPR – status of India's IPR registration – TRIPS – WIPO – laws and acts related to IPR – Indian patent act – trademark act – geographical indications of good act – designs act – international intellectual property law – registration of plant varieties and essentially derived variety – license – tribunal – patent office – role of department of industrial policy and promotion - protection of plant varieties and farmers' rights act.

Unit-V: IPR in agriculture

IPR in agriculture – patents and copyrights – patents – patent system in India – designs – copyrights – trademark – geographical indications – India's plant variety bill – patent disputes – complete specification – bio piracy – patenting of microbiological

inventions – bio safety protocol – economic implications of genetically modified organisms.
Current streams of thought

Practical

Assessing the performance and export marketing strategies for fruits and vegetables, cut flowers, tea, coffee and medicinal and aromatic plants – market composition of commodity export – major destination and export instability – Markov chain analysis - export competitiveness – prices and non-price factors – import restraint and their impact on export – visiting a manufacturing center and observe production, packaging, quality control, labelling, method of pricing etc. – procedures for applying the patent application – case studies on basmati rice,turmeric, Bt cotton,Darjeeling tea, Kondapalli toys, Madurai jasmine etc. – directions of trade – India's foreign trade policy

Theory lecture schedule

1. International trade – basic concepts
2. Classical trade theory
3. Introduction to neo-classical trade theory
4. Supply side analysis: opportunity cost- trade under increasing opportunity costs
5. Factor endowments; trade and factor prices – factor price equalization
6. Demand side analysis; indifference curves-demand and international trade
7. Integration of demand and supply-offer curve analysis
8. General equilibrium-equilibrium in product and factor markets
9. Theories in international trade
10. Application of trade theory-terms of trade
11. Supply and demand shifts-technological change
12. Factor supplies and trade; factor intensities
13. Transport costs, location
14. Trade with many goods and countries - Leontief paradox
15. Human skills, technological gaps
16. Product cycle – scale economies
17. Trade policies – instruments, impacts of trade policies
18. **Mid Semester Examination**
19. Economic integration and regional groupings
20. Introduction to international finance - balance of trade and balanceofpayments
21. Foreign exchange market – transactions, determination of foreign exchange rates
22. International trade organizations
23. International economic organizations – IMF, World Bank
24. IDA , IFC, ADB – their role in international trade and terms of trade
25. International trade agreements - Uruguay round – GATT
26. WTO – their role in promotion of trade
27. Agrl. Export and import policies of India – role of State Trading Corporation
28. export promotion organizations - Export Promotion Zones (EPZ) – Agrl. Export Zones (AEZ) – EXIM bank
29. Intellectual property rights – meaning and concepts– benefits of IPR – environment implications of IPR
30. Status of India's IPR registration – TRIPS – WIPO – laws andacts related toIPR
31. Indian patent act – trademark act – geographical indications of good act – designs act – international intellectual property law
32. Registration of plant varieties and essentially derived variety – license – tribunal – patent office – role of department of industrial policy and promotion - protection of plant varieties and farmers' rights act
33. IPR in agriculture – patents and copyrights – patents – patent system in India –

designs – copyrights – trademark – geographical indications – India's plant variety bill – patent disputes – complete specification

34. Bio piracy – patenting of microbiological inventions – bio safety protocol – economic implications of genetically modified organisms.

Practical schedule

1. Assessing the performance and export marketing strategies for fruits and vegetables
2. Export performance of cut flowers
3. Export performance of tea, coffee
4. Export performance of medicinal and aromatic plants
5. Market composition of commodity export
6. Major destination and export instability
7. Markov chain analysis
8. Export competitiveness – prices and non-price factors
9. Import restraint and their impact on export
10. Visiting a manufacturing center and observe production, packaging, quality control, labelling, method of pricing etc.
11. Procedures for applying the patent application
12. Case studies on basmati rice, turmeric
13. Case studies on Bt cotton, Darjeeling tea
14. Case studies on Kondapalli toys, Madurai jasmine
15. Role of export promotion organisations
16. Direction of trade
17. India's foreign trade policy

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Course Outcomes

At the end of the course students will be able to

CO1: Understanding the international business and management

CO2: Understand the procedure to obtain patent rights.

CO3: Know the way to protect extinct varieties.

CO4: Create awareness about geographical indications of goods and commodities.

CO5: Identify the way to commercialize intellectual properties

CO – PSO – PO Mapping

	PSO1	**PSO2**	**PSO3**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**
CO1	X		X	X									X
CO2		X	X	X									X
CO3		X			X				X				X
CO4	X								X				X
CO5			X				X		X				X

AEC815 Natural Resource Management (2+1)

Learning Objective

- To focus on the economic analysis of natural resources and seeks to identify
- To solve natural resource management problems via mathematical approach using dynamic optimization techniques.

Theory

UNIT I: Classification of natural resources

Natural resources – definition – characteristics and classification. Stock dynamics of renewable and non-renewable resources. Equation of motion for renewable and non- renewable resources. Fundamental equation of renewableresources – application of institutional economic concepts in natural resource management.

UNIT II:Optimum use of resources

Growth curves of fishery and forest resources. The role of time preference in natural resource use. Simple two-period model of optimal use of renewable and non-renewable resources. Advanced models of optimal resource use – Static Vs. dynamic efficiency in natural resource use Applications of dynamic programming and optimal control.

UNIT III: Economics of groundwater use

Optimal extraction of groundwater. Analytical and numerical solutions for optimal inter-temporal allocation of natural resources. Optimal harvesting of single rotation and multiple rotation forests. Optimal management of fishery.

UNIT IV: Natural resources and property rights

Property rights in natural resources and their implication for conservation and management of natural resources. Management of common property natural resources – Institutional arrangements for conservation and management of common pool fishery, groundwater and forestry resource.

UNIT V: Valuation of natural resources

Resource scarcity – Natural resource degradation – Poverty and resource degradation – Natural resource accounting - Pricing and valuation of natural resources – Natural resources policy. **Current streams of thought**

Practical

Derivation of the fundamental equation of renewable resources – Estimation of growth curves and stock dynamics for fishery and forestry resources. Simple two period problem of optimal resource use – Numerical solution for simple two-period model of dynamic efficiency in natural resource extraction. Multi-period dynamic efficiency – Using Excel Solver in solving dynamic natural resource harvesting problems. Using analytical solution procedures for solving natural resource management problems– Optimal control.

Theory lecture schedule

1. Natural resources-definition-characteristics
2. Classification of natural resources
3. Stock dynamics of renewable and non-renewable resources
4. Equation of motion for renewable and non- renewable resources
5. Fundamental equation of renewable resources
6. Application of institutional economic concepts in natural resource management
7. Optimum use of resources
8. Growth curve of fishery resource
9. Growth curve of forest resource
10. Role of time preference in natural resource use
11. Simple two-period model of optimal use of renewable resource
12. Two model of optimal use of non-renewable resource
13. Advanced models of optimal resource use
14. Static vs. dynamic efficiency in natural resource use
15. Applications of dynamic programming and optimal control
16. Economics of groundwater use
17. Optimal extraction of groundwater
18. **Mid Semester Examination**
19. Analytical and numerical solutions for optimal inter-temporal allocation of natural resources
20. Optimal harvesting of single rotation forests
21. Multiple rotation forests
22. Optimal management of fishery
23. Natural resources and property rights
24. Property rights in natural resources and their implication for conservation and management of natural resources
25. Management of common property natural resources
26. Institutional arrangements for conservation and management of common pool fishery
27. Institutional arrangements for conservation and management of groundwater
28. Institutional arrangements for conservation and management of forestry resource
29. Valuation of natural resources
30. Resource scarcity – Natural resource degradation
31. Poverty and resource degradation

32. Natural resource accounting
33. Pricing and valuation of natural resources
34. Natural resources policy

Practical schedule

1. Derivation of the fundamental equation of renewable resources
2. Estimation of growth curve and stock dynamics for fishery
3. Growth curve of forestry resource
4. Simple two period problem of optimal resource use
5. Numerical solution for simple two-period model of renewable resource
6. Numerical solution for simple two-period model of non renewable resource
7. Dynamic efficiency in natural resource extraction
8. Multi-period dynamic efficiency
9. Solving dynamic natural resource using economic software
10. Using analytical solution procedures for solving natural resource management problems
11. Optimal control
12. Valuation of natural resources
13. Resource scarcity – Natural resource degradation
14. Natural resources policy
15. Natural resources and property rights
16. Economics of groundwater use.
17. Optimal extraction of groundwater

Course Outcomes

At the end of the course students will be able to

CO1: Analyze economic problems related to natural resource use including climate change problems.

CO2: Understand environmental legislations in India.

CO3: Analyse economic problems related to natural resource use including climate change problems.

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CO – PSO – PO Mapping

	PSO1	PSO2	PSO3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10
CO1		X	X		X		X						X
CO2	X			X									X
CO3			X				X		X				X

AEC 824 Agricultural Finance and Project Management (2+1)

Learning Objectives

- To impart knowledge on issues related to lending to priority sector credit management and financial risk management.
- To understand various appraisal techniques in project management.

Theory

UNIT I: Role and importance of agricultural finance

Introduction of concepts in agricultural finance. Financial Institutions and credit flow to rural/priority sector. Agricultural lending – direct and indirect financing – financing through co-operatives, NABARD and commercial banks and RRBs. District credit plan and lending to agriculture/priority sector. Micro-financing and role of MFIs - NGOs, and SHGs.

UNIT II: Principles of credit

The concept of 5 C's, 7 P's and 3 R's of credit. Estimation of technical feasibility, economic viability and repaying capacity of borrowers and appraisal of credit proposals. Understanding lenders and developing better working relationship and supervisory credit system. Credit inclusions –credit widening and credit deepening.

UNIT III:Financial statements

Financial decisions – investment, financing, liquidity and solvency. Preparation of financial statements - balance sheet, cash flow statement and profit and loss account. Ratio analysis and assessing the performance of farm/firm.

UNIT IV:Appraisal of projects

Financial, economic and environmental appraisal of investment projects. Identification, preparation, appraisal, financing and implementation of projects. Project appraisal techniques – undiscounted measures. Time value of money – use of discounted measures – B:C ratio, NPV and IRR. Agreements, supervision, monitoring and evaluation phases in appraising agricultural investment projects. Net work techniques – PERT and CPM.

UNIT V: Risks in financing agriculture

Risk management strategies and coping mechanism. Crop Insurance programmes – review of different crop insurance schemes - yield loss and weather based insurance and their applications. **Current streams of thought**

Practical

Development of Rural Institutional Lending - branch expansion, demand and supply of institutional agricultural credit and over dues and loan waiving- An overview, rural lending programmes of commercial banks, lead bank scheme-preparation of district credit plan, rural lending programmes of co-operative lending institutions, preparation of financial statements using farm/firm level data, farm credit appraisal techniques and farm financial analysis through financial

statements, performance of micro financing institutions – NGOs and self-help groups, identification and formulation of investment projects, project appraisal techniques – undiscounted measures and their limitations. Project appraisal techniques – discounted measures, network techniques – PERT and CPM for project management, case study analysis of an agricultural project, financial risk and risk management strategies – crop insurance schemes, financial instruments and methods – e banking, kisan credit cards and core banking.

Theory lecture schedule

1. Role and importance of agricultural finance
2. Introduction of concepts in agricultural finance
3. Financial institutions
4. Credit flow to rural/priority sector
5. Agricultural lending – direct and indirect financing
6. Financing through co-operatives
7. NABARD
8. Commercial banks and RRBs
9. District credit plan and lending to agriculture/priority sector
10. Micro-financing and role of MFIs - NGOs, and SHGs
11. Principles of credit
12. Concept of 5 C's, 7 P's and 3 R's of credit
13. Estimation of technical feasibility , economic viability and repaying capacity of borrowers
14. Appraisal of credit proposals
15. Understanding lenders and developing better working relationship
16. Supervisory credit system
17. Credit inclusions–credit widening and credit deepening
18. **Mid Semester Examination**
19. Financial statements
20. Financial decisions
21. Investment, financing, liquidity and solvency
22. Preparation of financial statements - balance sheet, cash flow statement and profit and loss account
23. Ratio analysis and assessing the performance of farm/firm
24. Appraisal of projects
25. Financial, economic and environmental appraisal of investment projects
26. Identification, preparation, appraisal, financing and

implementation of projects

27. Project appraisal techniques – undiscounted measures
28. Time value of money
29. Use of discounted measures – B:C ratio, NPV and IRR
30. Agreements, supervision, monitoring and evaluation phases in appraising agricultural investment projects
31. Network techniques – PERT and CPM
32. Risks in financing agriculture
33. Risk management strategies and coping mechanism
34. Crop Insurance programmes – review of different crop insurance schemes - yield loss and weather based insurance and their applications.

Practical schedule

1. Rural Institutional Lending
2. Demand and supply of institutional agricultural credit, over dues and loan waiving
3. Rural lending programmes of commercial banks
4. Lead bank scheme, district credit plan
5. Rural lending programmes of co-operative lending institutions
6. Preparation of financial statements using farm/firm level data
7. Farm credit appraisal techniques
8. Farm financial analysis through financial statements
9. Performance of micro financing institutions – NGOs, self-help groups
10. Identification and formulation of investment projects
11. Project appraisal techniques – undiscounted measures and their limitations
12. Project appraisal techniques – discounted measures
13. Network techniques – PERT and CPM for project management
14. Case study analysis of an agricultural project
15. Financial risk and risk management strategies
16. Crop insurance schemes, financial instruments and methods
17. E-banking, kisan credit cards and corebanking.

Course outcomes

At the end of the course students will be able to

CO1: Understand the principles of agricultural finance lending

CO2: Understand the procedure to repay the loan.

CO3: Know the way to monitor agricultural project.

CO4: Understand project appraisal techniques.

CO5: Understand the e-banking and credit card

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CO – PSO – PO Mapping

	PSO1	**PSO2**	**PSO3**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P10**
CO1	X		X	X									X
CO2		X	X	X									X
CO3		X			X				X				X
CO4	X								X				X
CO5			X				X		X				X