

**KURUKSHETRA UNIVERSITY, KURUKSHETRA**  
**(Established by the State Legislative Act XII of 1956)**  
**(“A+” Grade, NAAC Accredited)**

Scheme of Examination of MSc (HONS) 5-year INTEGRATED in Economics Semester 9<sup>th</sup> to Semester 10<sup>th</sup> w.e.f. Session 2024 - 25, Under Choice Based Credit System/LOCF in phased manner for the regular students of Institute of Integrated and Honors Studies, K.U. Kurukshetra

Semester	Course Code		Course Name	Credit	Teaching Hour per week	Scheme of Examination			Time
						Internal Assessment	Theory (External )	Total Marks	
9 <sup>th</sup> Sem	CC-21	IN-ECX-901	Advanced Econometrics	4	4	20	80	100	3
		IN-ECX-902	Advanced Econometrics (P)	2	2	10	40	50	3
	CC-22	IN-ECX-903	Labour Economics	4	4	20	80	100	3
		IN-ECX-904	Labour Economics-(P)	2	2	10	40	50	3
	CC-23	IN-ECX-905	Computer Applications in Economics-II	4	4	20	80	100	3
		IN-ECX-906	Computer Applications in Economics-II (P)	2	2	10	40	50	3
	DSE-6	IN-ECX-907	Information Economics	4	4	20	80	100	3
		IN-ECX-908	Information economics-(P)	2	2	10	40	50	3
	Or								
	DSE-6	IN-ECX-909	Auction theory & Economic Applications	4	4	20	80	100	3
IN-ECX-910		Auction theory & Economic Applications-(P)	2	2	10	40	50	3	
<b>Total</b>				<b>24.</b>	<b>24</b>	<b>120</b>	<b>480</b>	<b>600</b>	

10 <sup>th</sup> Sem	CC-24	IN-ECX-1001	Welfare Economics	4	4	20	80	100	3
		IN-ECX-1002	Welfare Economics-(P)	2	2	10	40	50	3
	DSE-7	IN-ECX-1003	Comparative Economics development	4	4	20	80	100	3
		IN-ECX-1004	Comparative Economics development-(P)	2	2	10	40	50	3
	Or								
	DSE-7	IN-ECX-1005	Operations Research	4	4	20	80	100	3
		IN-ECX-1006	Operations Research-(P)	2	2	10	40	50	3
	CC-25	IN-ECX-1007	Dissertation or Project	10	10	200	50	250	3 Months
	CC-26	IN-ECX-1008	Comprehensive Viva	2	2	20	30	50	3
	<b>Total</b>			<b>24</b>	<b>24</b>	<b>280</b>	<b>320</b>	<b>600</b>	

\*Workload=1 Hour of teaching/2 hours of practical work=25 marks

\*GE: Generic Elective@ 6 credits. Available in English only(As per respective Department)\*CC:

\*Core courses are fourteen @ 6 credits per semester.

\*OE- Open Elective

\*SEC: Skill Enhancement Course is four. @ 2 credits per semester, (As per respective Department)

\*DSE: Discipline Specific Elective are four @ 6 credits per semester. Available in Sem. 5 & Sem. 6

\*General elective may be other than economics.

**MASTER OF SCIENCE ECONOMICS (Honors)**  
**5-year integrated course**

**PROGRAMME OUTCOMES (POs) for MSc honors course of Economics**

- 1- To develop skills in graduate students so that they are able to acquire theoretical and practical knowledge about economics, economy, economic behavior, economic policies and economic institutions and economic problems.**
- 2- To inculcate ability in students for critical thinking, lateral thinking about economic phenomena, problems and policies so as to create professional potential in them**
- 3- To create awareness on ethical issues, good business practices, and ecology economics interface**
- 4- To development ability in youth for understanding basic economic rationality and effective communication skills**
- 5- To prepare youth for career in teaching, industry, government organizations and self-entrepreneurship**
- 6- To make students aware of natural resources, sustainable use and environment**
- 7- To provide learning experience in students that instills deep interest in economic science for the benefit of society.**

**PROGRAMME SPECIFIC OUTCOMES (PSOs) for MSc course in Economics (Honors)**

**PSO1: demonstrate the knowledge and understanding of economic science i.e. vital processes of economy, consumer and producer behavior at micro level and macro level.**

**PSO2: critically think and correlate the economics knowledge with decision-making with regard to economic planning and economic policies, understanding of conflicts, tradeoffs, and welfare implications of economic measures to improve the quality of life in person as well as of community.**

**PSO3: demonstrate an understanding of the principles, methods of economic analysis in static and dynamic terms, analysis of economic data**

**PSO4: concise and meaningful writing and reporting, effective presentation skills, and ability to work productively in a group with co-operation**

**Master of Science Economics (Honors) 5-Years Integrated  
Advanced Econometrics  
Semester-IX  
CC-21 IN-ECX-901**

**External Marks: 80**

**Internal Marks: 20**

**Total Marks: 100**

**Credits: 4**

**Time: 3hours**

**Note:**

- (i) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (ii) Question No. 1 will be compulsory and will consist of PART-A & B, comprising 15 and 9 marks respectively. All Qs of PART-A and 3 Qs out of 6 from part-B are to be attempted
- (iii) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

Content	Learning objectives
<p><b>UNIT-I</b> <b>(i-a)</b> Simple and general Linear Regression Model : Assumptions, Estimation (OLS method)</p> <p><b>(i-b)</b> Gauss –Markov theorem, functional forms of regression models</p>	<p><b>(i-a)</b> Objective is to introduce the students about the assumptions, estimation of linear regression models.</p> <p><b>(i-b)</b> Objective is to acquaint the students with the best, linear unbiased estimators of OLS and different functional forms of regression models</p>
<p><b>UNIT-2</b> <b>(ii-a)</b> Concepts and analysis of Variance approach and its application in regression Analysis; Testing the significance of Parameters in Multiple Regression Analysis</p> <p><b>(ii-b)</b> Testing the significance of Parameters in Multiple Regression Analysis</p>	<p><b>(ii-a)</b> Objective is to make students' exposure to the concept to analysis of variance and its application in regression analysis</p> <p><b>(ii-b)</b> Testing the significance of Parameters in Multiple Regression Analysis</p>

<p><b>UNIT-3</b></p> <p><b>(iii-a)</b> Nature , test ,consequences and remedial steps of problems of heteroscedasticity , autocorrelation</p> <p><b>(iii-b)</b> Nature, test , consequences and remedial steps of problems of multi- collinearity. Problems of specification errors ,Errors of Measurement.</p>	<p><b>(iii-a)</b> Explain the problems that arise when the assumptions of constant variance and independent explanatory variables of linear regression model violated and develop solutions to the problems that results from violating the assumptions</p> <p><b>(iii-b)</b> Explain the problems that arise due to presence of autocorrelation in OLS model and develop solutions for the same. It also explain about problems of model specification and measurements</p>
<p><b>UNIT-4</b></p> <p><b>(iv-a)</b> Simultaneous equation models : The simultaneous equation bias, inconsistency of OLS estimators.</p> <p><b>(iv-b)</b> The identification problem ; Rules of identification ,order and rank conditions.</p>	<p><b>(iv-a)</b> Aims at introducing the students about Simultaneous equation bias, inconsistency of OLS estimators</p> <p><b>(iv-b)</b> Aims at introducing the students about The identification problem ; Rules of identification ,order and rank conditions.</p>

### Suggested Reading List

- 1.Chow ,G.C Econometrics , Mcgraw Hill
2. Christopher ,Dougherty, Introduction to Econometrics ,Oxford University Press 2003
- 3.Gujrati,D.N Basic Econometrics Mcgraw Hill 4th ed. 2003 45(15)
4. Hansen E. Bruce Econometrics ,Uni. Of Wisconsin , [www.wisc.edu/bhansen2010](http://www.wisc.edu/bhansen2010)

5. James ,P. Lesage , Applied Econometrics Using MATLAB, Uni. Of Tokoya 1999
6. Johnston ,J ,'Econometrics Method (1922)
7. Judge ,C.G et .al. Theory and Practice of Econometrics
8. Kmenta ,Jan 'Elements of Econometrics (1971)
9. Koutsoyiannis ,Theory of Econometrics (1958)
- 10.Mandala ,G.S , Econometrics
- 11.Pollock ,Beg The Algebra of Econometrics
- 12.Wooldridge , Introductory Econometrics: A Modern Approach ,2nd ed. Thomas South Western 2003 (W)

**Master of Science Economics (Honors) 5-Years Integrated  
Advanced Econometrics (P)  
Semester-IX  
Practical Presentation (Written/Oral)  
CC-21 IN-ECX-902**

**External Marks: 40**

**Internal Marks: 10**

**Total Marks: 50**

**Credits: 2**

**Time: 3hours**

**Work practice**

(OLS estimation of parameters, Runs for Autocorrelation, Multicollinearity)  
SPSS/MATLAB/STATA

**OVERVIEW OF OUTCOMES (CC-21 IN-ECX-901 and CC-21 IN-ECX-902)**

**Advanced Econometrics**

**After the successful completion of the course, the students will be able to**

Course Objective:

<b>CC-21 IN-ECX-901 and 902.1</b>	After this course students will be able to gain the theoretical understanding of the Linear Regression and OLS with its applications.
<b>CC-21 IN-ECX-901 and 902.2</b>	Objective is to make students' exposure to the concept to analysis of variance and its application in regression analysis, Testing the significance of Parameters in Multiple Regression Analysis.
<b>CC-21 IN-ECX-901 and 902.3</b>	The students able to understand the problems that arise when linear regression model violated, due to presence of autocorrelation,

	problems of model specification and measurements.
<b>CC-21 IN-ECX-901 and 902.4</b>	After this course, the students will get the knowledge about Identification problem; Rules of identification, order and rank conditions.

**Mapping Matrix of Course Advanced Econometrics (Theory and Practical)**  
Table: CO-PO Matrix for the Course **CC-21 IN-ECX-901 and CC-21 IN-ECX-902**

<b>COURSE OUTCOMES</b>	<b>PO1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO7</b>	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO4</b>
<b>CC-21 IN-ECX-901 and 902.1</b>	3	3	1	2	1	2	1	3	2	2	1
<b>CC-21 IN-ECX-901 and 902.2</b>	3	3	2	2	1	1	2	3	2	2	1
<b>CC-21 IN-ECX-901 and 902.3</b>	3	3	1	3	2	1	2	3	2	2	2
<b>CC-21 IN-ECX-901 and 902.4</b>	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.2 5	2.2 5	1.5	1.5	1.5	3	2	2	1.25

### **Suggested Reading List**

1. Chow ,G.C Econometrics , Mcgraw Hill
2. Christopher ,Dougherty, Introduction to Econometrics ,Oxford University Press 2003
3. Gujrati,D.N Basic Econometrics Mcgraw Hill 4th ed. 2003 45(15)
4. Hansen E. Bruce Econometrics ,Uni. Of Wisconsin , [www.wisc.edu/bhansen2010](http://www.wisc.edu/bhansen2010)
5. James ,P. Lesage , Applied Econometrics Using MATLAB, Uni. Of Tokoya 1999
6. Johnston ,J ,'Econometrics Method (1922)
7. Judge ,C.G et .al. Theory and Practice of Econometrics
8. Kmenta ,Jan 'Elements of Econometrics (1971)
9. Koutsoyiannis ,Theory of Econometrics (1958)
10. Mandala ,G.S , Econometrics
11. Pollock ,Beg The Algebra of Econometrics
12. Wooldridge , Introductory Econometrics: A Modern Approach ,2nd ed. Thomas South Western 2003 (W)

**Master of Science Economics (Honors)5-year integrated**  
**Semester-X**  
**Labour Economics**  
**CC-22 IN-ECX-903**

**External marks:80**  
**Internal Marks:20**  
**Total marks:100**  
**Credits:4**  
**Time: 3 hours**

**Note:**

- (i) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (ii) Question No. 1 will be compulsory and will consist of 8 short answer type questions of 2 marks spread over the entire syllabus(2\*8=16 marks).
- (iii) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

<b>Content</b>	<b>Learning objectives</b>
<p><b>UNIT-I</b>  <b>(i-a)</b>            Labor Economics: Overview of labor economics: Definition, scope, and significance. Historical development of labor economics.</p> <p><b>(i-b)</b>            Basic concepts and terminology: Population, Participation Rates. Labor Quality and Investing in Human Capital.</p>	<p>i-a            Define labour economics and its significance, and analyze historical developments in the field.</p> <p>i-b It is meant to give a broad and in depth view of Population, Participation Rates. Labor Quality and Investing in Human Capital.</p>
<p><b>UNIT-II</b>  <b>(i-a)</b>            Theory of labor supply and demand: The Theory of Individual Labor Supply; Basic Model of The Work–Leisure Decision. The Demand for Labor; Short Run and Long Run demand for labour in Perfect and Imperfect Competitive Market</p> <p><b>(i-b)</b>            . Elasticity of labour supply and demand. Wage Determination and the Allocation of Labor: Perfectly Competitive Labour Market, Wage and Employment Determination in Monopoly in the Product Market, Monopsony.</p>	<p>i-a            Understand the theory of labor supply and demand, including factors influencing individual decisions and market outcomes.</p> <p>i-b            Evaluate wage determination mechanisms in different market structures and their impact on employment and wages</p>
<p><b>UNIT-III</b>  <b>(i-a)</b>            Alternative Pay Schemes and Labor</p>	<p>i-a            Analyze alternative pay schemes, the wage structure, and factors contributing to wage</p>

<p>Efficiency: Theory of Optimal Fringe Benefits, The Principal–Agent Problem, Efficiency Wage Payments.</p> <p><b>(i-b)</b> The Wage Structure: Perfect Competition And Homogeneous Workers And Jobs. Wage Differentials And Heterogeneous Workers And Jobs. Mobility, Migration, and Efficiency: Types, Determinates and Consequences of Migration</p>	<p>differentials.</p> <p>i-b To know Labour Mobility: Types, Determinates and Consequences of Migration</p>
<p><b>UNIT-IV</b></p> <p><b>(i-a)</b> Analysis of Labor Market Institutions and Policies: Labor unions, collective bargaining, minimum wage laws, labor regulations. The Economic Impact of Unions: The Union Wage Advantage, Efficiency And Productivity, Firm Profitability, Distribution Of Earnings, Inflation, Unemployment, And Income Shares.</p> <p><b>(i-b)</b> Government policies and interventions in the labor market in India: Employment protection, unemployment benefits, social security schemes, labor market reforms, four labour codes. Critiques and debates surrounding labor market interventions</p>	<p>i-a Assess the role of labor market institution in shaping labor market outcomes including the impact of labor unions and interventionist measures</p> <p>i-b Assess the role of government policies in shaping labor market outcomes, including the impact of labor unions and interventionist measures</p>

**LABOUR ECONOMICS-(P)**  
**CC-22 IN-ECX-904**

**External marks:40**  
**Internal marks:10**  
**Total marks:50**  
**Credits:2**  
**Time: 3hours**

***Presentation (written/oral)***

Participation Rates, The Work–Leisure Decision. The Demand for Labor; Demand for labour in Perfect and Imperfect Competitive Market, Optimal Fringe Benefits, The Principal–Agent Problem, Determinates and Consequences of Migration, Wage Differentials And Heterogeneous Workers And Jobs. Mobility, Migration, and Efficiency

## OVERVIEW OF OUTCOMES (CC-22 IN-ECX-903 and CC-22 IN-ECX-904)

### Labour economics

After the successful completion of the course, the students will be able to

Course Objective:

<b>CC-22 IN-ECX-903 and 904.1</b>	Have insight about the labor economics and its significance, Population, Participation Rates. Labour Quality and Investing in Human Capital.
<b>CC-22 IN-ECX-903 and 904.2</b>	Have further understanding of the theory of labor supply and demand, including factors influencing individual decisions, wage determination mechanisms in different market structures.
<b>CC-22 IN-ECX-903 and 904.3</b>	Have knowledge about the wage structure, and factors contributing to wage differentials, Labour Mobility: Types, Determinates and Consequences of Migration.
<b>CC-22 IN-ECX-903 and 904.4</b>	Have understanding about of labor market institutions and government policies in shaping labor market outcomes, including the impact of labor unions and interventionist measures.

### Mapping Matrix of Course Labour Economics (Theory and Practical)

Table: CO-PO Matrix for the Course **CC-22 IN-ECX-903 and CC-22 IN-ECX-904**

<b>COURSE OUTCOMES</b>	<b>PO1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO7</b>	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO4</b>
<b>CC-22 IN-ECX-903 and 904.1</b>	3	3	1	2	1	2	1	3	2	2	1
<b>CC-22 IN-ECX-903 and 904.2</b>	3	3	2	2	1	1	2	3	2	2	1
<b>CC-22 IN-ECX-903 and 904.3</b>	3	3	1	3	2	1	2	3	2	2	2
<b>CC-22 IN-ECX-903 and 904.4</b>	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.25	2.25	1.5	1.5	1.5	3	2	2	1.25

### Suggested Reading List

- Chakraborty, S. (2018), Labour Economics, Himalaya Publishing House Pvt. Ltd., India.
- McConnell, Campbell R., Brue, Stanley L., Macpherson, David A. (2013), Contemporary Labor Economics, Eleventh Edition, McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121.
- Singh, Chandra Kant (2019), Labour Economics, Deshraj & Sons, India

**Master of Science Economics (Honors)5-year integrated  
Semester-IX  
Computer Applications in Economics-II  
CC-23 IN-ECX-905**

**External marks:80  
Internal Marks:20  
Total marks:100  
Credits:4  
Time: 3 hours**

**Note:**

- (i) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (ii) Question No. 1 will be compulsory and will consist of 8 short answer type questions of 2 marks spread over the entire syllabus (2\*8=16 marks).
- (iii) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

<p><b>UNIT-1</b> <b>Data Presentation:</b> Role of computer in economic research; Application of MS word and MS Excel in presentation of data with Tables and Graphs and report writing, Ways of effective power point presentation.</p>	<p>After going through this unit, Students shall be able to</p> <ul style="list-style-type: none"> <li>• process and analyze large volumes of data quickly, build economic models, and visualize data through graphs and charts.</li> </ul>
<p><b>UNIT-2</b> <b>Data Processing</b> Major Sources of data in Economics; Preparation of database for analysis in a worksheet; Style of Referencing:APA Style, Harvard and MLA Style. Application of MS Word in referencing, Online Citation using Mendeley Desktop.</p>	<p>After going through this unit, Students shall be able to</p> <ul style="list-style-type: none"> <li>• familiarize economists with the various types of data available for research, such as government databases, international organizations, surveys, and academic journals. Understanding referencing styles such as APA, Harvard, and MLA to provide economists with guidelines on how to acknowledge and cite the sources they have used in their research.</li> </ul>
<p><b>UNIT-3</b> <b>Data Operations</b> Data Analysis: Preparation of Frequency Distribution, Calculation of Mean, Standard Deviation, Coefficient of Variation, Correlation Coefficient, Regression Coefficients, Trend Line using Method of Least Squares and Moving Averages. Demand, Supply, Production and Consumption function (only through MS Excel)</p>	<ul style="list-style-type: none"> <li>• By studying these concepts through MS Excel, economists gain practical skills in data analysis and modeling, enhancing their ability to study economic phenomena and make evidence-based decisions.</li> </ul>
<p><b>UNIT-4</b> <b>Introduction to SPSS</b></p>	<ul style="list-style-type: none"> <li>• SPSS equips economists with a valuable skill set for data analysis and enhances</li> </ul>

<p>Getting familiar with the interface; Importing data from Excel; Creating a new data file (entering survey data); Data View and Variable View, Text Output Editor, Toolbar, Menus, Dialogue Boxes, Opening and Saving Files; Preparation of Data Files: Defining Variables – Variables Labels, Value Labels, Missing Values, Variable Types, Column Format, Measurement Level; Data Entry, Inserting and Deleting Cases and Variables.</p>	<p>their ability to conduct rigorous empirical research, explore relationships between variables, and make evidence-based decisions in their economic analysis.</p>
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**Computer Applications in Economics-II -(P)**  
**CC-23 IN-ECX-906**

**External marks:40**  
**Internal marks:10**  
**Total marks:50**  
**Credits:2**  
**Time:3 hours**

a) <b>Regression Analysis:</b> Estimation of Classical Linear Regression Model by Using SPSS
b) <b>Correlation Analysis:</b> Estimation of Correlation by Using SPSS
c) Estimation of growth rates and Use of OLS method in estimation of growth rates
d) T-test, One-way ANOVA, $\chi^2$ tests

**OVERVIEW OF OUTCOMES (CC-23 IN-ECX-905 and CC-23 IN-ECX-906)**  
**Computer Applications in Economics-II**

After the successful completion of the course, the students will be able to

Course Objective:

<b>CC-23 IN-ECX-905 and 906.1</b>	After this course students will be able to gain the theoretical understanding of the computer and its applications
<b>CC-23 IN-ECX-905 and 906.2</b>	Students will be able to gain computing skills to be used in research framework.
<b>CC-23 IN-ECX-905 and 906.3</b>	On the application side, students will be able to utilize tools and techniques for analysis, presentation, and interpretation of research data.
<b>CC-23 IN-ECX-905 and 906.4</b>	After this course, the students will get the software knowledge by which they will be able to research work conveniently and efficiently.

**Mapping Matrix of Course Computer Applications in Economics-II(Theory and Practical)**

Table: CO-PO Matrix for the Course **CC-23 IN-ECX-905 and CC-23 IN-ECX-906**

CO#	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
<b>CC-23 IN-ECX-905 and 906.1</b>	3	3	1	2	1	2	1	3	2	2	1
<b>CC-23 IN-ECX-905 and 906.2</b>	3	3	2	2	1	1	2	3	2	2	1
<b>CC-23 IN-ECX-905 and 906.3</b>	3	3	1	3	2	1	2	3	2	2	2

<b>CC-23 IN- ECX- 905 and 906.4</b>	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.25	2.25	1.5	1.5	1.5	3	2	2	1.25

### **Suggested Reading List**

1. Andy Field. Discovering Statistics Using SPSS. Sage Publications
2. Bell, J. (1993) Doing your Research Project: A Guide for First-Time Researchers in Education and Social Science, Open University Press (second edition)
3. Bryman Alan (2004), Social Research Methods, (second edition) Oxford Press Chapters 1, 2, 21, 22 and 25
4. Cameron A. C. and Trivedi P. K.(2005) Microeconometrics Methods and Applications, Cambridge University Press, Chapter 3, 24, 25 and 26
5. Darren George and Paul Mallery,SPSS for Windows Step by Step: A Simple Guide. Pearson
6. Deaton, A. (1997) The analysis of Household Surveys: A Microeconomic Approach to Development Policy, published for the World Bank by John Hopkins University Press.
7. Don Ethridge (2004) Research Methodology in Applied Economics, Second Edition, Chapters 2, 3, and 4.
8. Donald Cooper, Pamela Schindler. SPSS Windows Student Version for use with Business Research Methods. Tata McGraw Hill.
9. <https://learn.microsoft.com>
10. Julie Pallant. SPSS Survival Manual. Tata Mc Graw Hill
11. Kiran Pandya, Smruti Bulsari, Sanjay Sinha. SPSS IN SIMPLE STEPS. Wiley India.
12. Kothari C.R. (2009), “Research Methodology- Methods and Techniques”, New Age International Publishers, New Delhi.
13. Norton, Peter, “Introduction to Computers”, 2nd Ed., Tata McGraw Hill.
14. Raiyani J. R. (2012), “Research Methodology- Theory and Techniques”, New Century Publications, New Delhi

15. Sheridan J Coakes; Lyndall Steed and Peta Dzidic. SPSS for Windows – Analysis without Anguish. Wiley India.
16. Uma Sekaran (2003) Research Methods for Business: A Skills Building Approach, 4th Edition, Wiley, Chapters 1, 2 and 3

**Master of Science Economics (Honors)5-year integrated**  
**Semester-IX**  
**Information Economics**  
**DSE-6 IN-ECX-907**

**External marks:80**  
**Internal Marks:20**  
**Total marks:100**  
**Credits:4**  
**Time: 3 hours**

**Note:**

- (iv) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (v) Question No. 1 will be compulsory and will consist of 8 short answer type questions of 2 marks spread over the entire syllabus (2\*8=16 marks).
- (vi) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

<p>Unit-1  Information economics-nature and scope; value of information in a non-competitive vs competitive environment; Information and management; Market information and dissemination of info; Communication channels</p>	<p>After reading this Unit students will be able to:</p> <ul style="list-style-type: none"> <li>• perceive the value, pervasive role and importance of information in today's context of development,</li> <li>• distinguish the meaning, distinctive characteristics and interrelationships of data, information and knowledge,</li> </ul>
<p>Unit-2  Nature of Information goods &amp; services; Properties; Bundling, Pricing of Info goods; Product differentiation; Network externalities; Economies of Info exchange</p>	<p>After reading this Unit students will be able to:</p> <ul style="list-style-type: none"> <li>• obtain a clear insight into the types and kind of information, and</li> <li>• discern the qualities and properties of and barriers to information.</li> </ul>
<p>Unit-3  Information in functioning of markets-signalling, screening; Info costs and market implications; Info asymmetry; Markets of second-hand goods; Adverse selection; Moral hazards; Coase Theorem</p>	<p>After reading this Unit students will be able to:</p> <ul style="list-style-type: none"> <li>• explain the concept of asymmetrical information;</li> <li>• define the problem of moral hazard resulting in the presence of asymmetric information and</li> <li>• understand principal agent problems.</li> </ul>
<p>Unit-4  Information gaps and policy lags; Role of info dissemination in planning &amp; policies; Information revolution- digital economy; Information &amp; communication technology and Economic system</p>	<p>The objectives of this module are threefold:</p> <ul style="list-style-type: none"> <li>• To identify existing and emerging technologies available to facilitate information dissemination.</li> <li>• To illustrate how information dissemination components can integrate with each other and with other components of a freeway management</li> </ul>

	system
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**Information Economics-(P)**  
**DSE-6 IN-ECX-908**

**External marks:40**  
**Internal marks:10**  
**Total marks:50**  
**Credits:2**  
**Time:3 hours**

Communication channels, Network externalities, Information asymmetry, Information gaps policy lags, Role of Info dissemination in planning
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**OVERVIEW OF OUTCOMES (DSE-6 IN-ECX-907 and DSE-6 IN-ECX-908)**  
**Information Economics-(P)**

**After the successful completion of the course, the students will be able to**

Course Objective:

<b>DSE-6 IN-ECX-907 and 908.1</b>	The Students able to perceive the value, pervasive role and importance of information in today's context of development, interrelationships of data, information and knowledge,
<b>DSE-6 IN-ECX-907 and 908.2</b>	Students will be able to gain a clear insight into the types and kind of information, and discern the qualities and properties of and barriers to information.
<b>DSE-6 IN-ECX-907 and 908.3</b>	The Students can explain the concept of asymmetrical information; problem of moral hazard resulting in the presence of asymmetric information and understand principal agent problems.
<b>DSE-6 IN-ECX-907 and 908.4</b>	After this course, the students will get to identify existing and emerging technologies available to facilitate information dissemination.

**Mapping Matrix of Course Information Economics**  
**DSE-6 IN-ECX-907 and 908**

CO#	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
<b>DSE-6 IN-ECX-907 and 908.1</b>	3	3	1	2	1	2	1	3	2	2	1
<b>DSE-6 IN-ECX-907 and 908.2</b>	3	3	2	2	1	1	2	3	2	2	1
<b>DSE-6 IN-</b>	3	3	1	3	2	1	2	3	2	2	2

<b>ECX-907 and 908.3</b>											
<b>DSE-6 IN- ECX-907 and 908.4</b>	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.25	2.25	1.5	1.5	1.5	3	2	2	1.25

### **Suggested Reading List**

1. Urs Birchler and Monika Butler, Information Economics: Rutledge Publication, London.
2. Hal. R. Varian , Carl Shapiro and J.Farril, The Economics of Information, Rabbaele Mattioli Lectures.
3. Carl Shapiro and Hal. R. Varian, Information Rules : A Strategic guide to the Network Economy, Harvard Business Review.

**Master of Science Economics (Honors)5-year integrated**  
**Semester-IX**  
**Auction theory & Economic Applications**  
**DSE-6 IN-ECX-909**

**External marks:80**  
**Internal Marks:20**  
**Total marks:100**  
**Credits:4**  
**Time: 3 hours**

**Note:**

- (i) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (ii) Question No. 1 will be compulsory and will consist of 8 short answer type questions of 2 marks spread over the entire syllabus (2\*8=16 marks).
- (iii) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

<p>Unit 1 Introduction to basic auction forms, private and common values, Auction Theory- Single Object Auctions; Multiple Object Auctions; Double Auctions; Combinatorial Auctions</p>	<p>Auction Theory is an incredibly active field with many applications. It is important for both theoretical and practical reasons. On the theoretical side, the study of auctions provides one way of approaching the question of price formation. The theoretical results in auction theory can explain the existence of certain trading institutions, and perhaps can even suggest improvements in the existing institutions. Lessons from auction theory have led to important insights in many areas within economics. On the practical side, it may be noted that auctions are of considerable empirical significance. A huge volume of economic transactions is conducted through auctions. Governments use auctions to sell treasury bills, foreign exchange, mineral rights including oil fields, and other assets such as firms to be privatised. Government contracts are typically awarded by procurement auctions, and firms buying inputs or subcontracting work often use procurement auctions. Other economic transactions, for example takeover battles, are auctions in effect if not in name. The theory of auctions is closer to applications than is most of frontier mathematical economics.</p> <p>The purpose of this course is to introduce the modern game theoretic literature on</p>
<p>Unit 2 Extension of the basic model: risk averse bidders, budget constraints, asymmetries among bidders, revenue and efficiency comparison with asymmetry, resale and efficiency</p>	
<p>Unit 3 Auctions with interdependent values: introduction, common value auctions, winner's curse, affiliation, revenue and efficiency comparisons across different auction forms.</p>	
<p>Unit 4 Collusion in auctions: bidding rings and efficient collusion. Analysis of discriminatory and uniform-price auctions, discussion of Indian treasury bills auctions.</p>	

	<p>auctions. A large part of the course will deal with theoretical models. However, we will also discuss a few real world applications of auction theory. Some basic knowledge of game theory and a willingness to deal with technical issues are the main prerequisites for this course.</p>
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**Auction theory & Economic Applications -(P)  
DSE-6 IN-ECX-910**

**External marks:40**

**Internal marks:10**

**Total marks:50**

**Credits:2**

**Time:3 hours**

<p>Auction process in Indian Stock Markets: BSE &amp; NSE, Department of Telecommunications (DoT) auctions in India, lessons from such experiences.</p>
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**OVERVIEW OF OUTCOMES (DSE-6 IN-ECX-909 and DSE-6 IN-ECX-910)**

**Auction theory & Economic Applications**

**After the successful completion of the course, the students will be able to**

Course Objective:

<b>DSE-6 IN-ECX-909 and 910.1</b>	The Students able to understand theoretical results in auction theory, explain the existence of certain trading institutions, and perhaps can even suggest improvements in the existing institutions.
<b>DSE-6 IN-ECX-909 and 910.2</b>	Students will be able to gain a clear insight into the practical that auctions are of considerable empirical significance and Governments use auctions to sell treasury bills, foreign exchange, and mineral rights including oil fields.
<b>DSE-6 IN-ECX-909 and 910.3</b>	The Students can explain to introduce the modern game theoretic literature on auctions.
<b>DSE-6 IN-ECX-909 and 910.4</b>	After this course, the students will get to identify real world applications of auction theory. Some basic knowledge of game theory and a willingness to deal with technical issues.

**Mapping Matrix of Course Auction theory & Economic Applications**

DSE-6 IN-ECX-909 and 910

CO#	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
<b>DSE-6 IN-ECX-909 and 910.1</b>	3	3	1	2	1	2	1	3	2	2	1
<b>DSE-6</b>	3	3	2	2	1	1	2	3	2	2	1

<b>IN-ECX-909 and 910.2</b>											
<b>DSE-6 IN-ECX-909 and 910.3</b>	3	3	1	3	2	1	2	3	2	2	2
<b>DSE-6 IN-ECX-909 and 910.4</b>	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.25	2.25	1.5	1.5	1.5	3	2	2	1.25

### Suggested Reading List

1. Understanding Auctions: Asuncion Mochon and Yago Saez.
2. Auction Theory- Vijay Krishna.
3. Auctions- Theory and Practice- Paul Klemperer.
4. An Introduction to Auction Theory- Flavio M. Menezes and Paulo K Monteiro.
5. Vijay Krishna (2010) "Auction Theory" (2nd edition) Academic Press, New York, USA.
6. Paul Milgrom (2004) "Putting auction theory to work" Cambridge University Press, Cambridge, U.K.
7. Paul Klemperer (2000) ed. "The economic theory of auctions" vol. I and II, Edward Elgar, Cheltenham, U.K.

All journal articles will be referred to from time to time during the lectures.

**Master of Science Economics (Honors)5-year integrated  
Semester-X  
Welfare Economics**

**CC-24-IN-ECX-1001**

**External marks:80**

**Internal Marks:20**

**Total marks:100**

**Credits:4**

**Time: 3 hours**

**Note:**

- (vii) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (viii) Question No. 1 will be compulsory and will consist of 8 short answer type questions of 2 marks spread over the entire syllabus (2\*8=16 marks).
- (ix) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

<p><b>Unit-1</b> <b>Introduction to Welfare Economics</b></p> <p>Scope and Purpose of Welfare Economics; Positive or normative science; Assumption of Uniform Income; Utility Function of Individuals; Marginal Productivity Theory of Income Distribution; Elasticity of Factor Substitution; Technological Progress and Income Distribution; Value judgements and welfare economics; Benthamite Approach to Aggregate Welfare.</p>	<p>Unit 1 equips students with a solid understanding of the fundamental concepts and theories in welfare economics, providing a robust foundation for further exploration and analysis in subsequent units.</p>
<p><b>Unit-2</b> <b>Marshallian Welfare Economics:</b> Consumer's Surplus - Measurement, Difficulties involved and Criticism.</p> <p><b>Hicks's Surpluses:</b> Concept of Consumer's Surplus; Principle of Compensating Variation; Consumer's Surplus and Tax-Bounty Analysis.</p>	<p>Unit 2 provides students with a comprehensive understanding of consumer welfare measurement, its challenges, and alternative approaches in welfare analysis. Through critical examination and application, students develop the analytical skills necessary for evaluating policies and understanding their impact on consumer welfare.</p>
<p><b>Unit-3</b> <b>Optimum Resource Allocation and Welfare Maximization</b></p> <p>Pareto optimality – Optimum exchange conditions, The production optimum, The consumption optimum, Concept of contract curve; Pareto optimality and perfect competition; First and Second Fundamental Theorems of Welfare Economics.</p>	<p>Unit 3 provides students with a framework for understanding how optimal resource allocation contributes to welfare maximization in both exchange and production contexts. Through theoretical analysis and real-world examples, students develop the skills necessary for evaluating policy interventions and their impact on societal welfare.</p>

<p><b>Unit-4</b> <b>Social Welfare</b> The Scitovsky double criterion; Samuelson's utility possibility curve; Choice Functions and Revealed Preference; Social Choice; Social Welfare Function; Arrow's Impossibility Theorem.</p>	<p>Unit 4 provides students with a comprehensive understanding of social welfare and the challenges involved in making collective decisions that reflect societal preferences and values. By critically examining decision-making criteria and social choice mechanisms, students develop the analytical skills necessary for evaluating policy alternatives and their implications for societal welfare.</p>

**Welfare Economics - (P)**

**CC-24-IN-ECX-1002**

**External marks:40**

**Internal marks:10**

**Total marks:50**

**Credits:2**

**Time:3 hours**

<p>Utility Function of Individuals, Technological Progress and Income Distribution, Principle of Compensating Variation, Pareto optimality and perfect competition, Choice Functions and Revealed Preference</p>
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**OVERVIEW OF OUTCOMES (CC-24-IN-ECX-1001 and CC-24- IN-ECX-1002)**

**Welfare Economics**

**After the successful completion of the course, the students will be able to**

Course Objective:

<p><b>CC-24-IN-ECX-1001 and 1002.1</b></p>	<p>After this course students will be able to gain a solid understanding of the fundamental concepts and theories in welfare economics.</p>
<p><b>CC-24-IN-ECX-1001 and 1002.2</b></p>	<p>Students will be able to understanding of consumer welfare measurement, its challenges, and alternative approaches in welfare analysis.</p>
<p><b>CC-24-IN-ECX-1001 and 1002.3</b></p>	<p>Students will be able to understand how optimal resource allocation contributes to welfare maximization in both exchange and production contexts.</p>
<p><b>CC-24-IN-ECX-1001 and 1002.4</b></p>	<p>Students will be able to comprehensive understanding of social welfare and the challenges involved in making collective decisions that reflect societal preferences and values.</p>

### Mapping Matrix of Course Welfare Economics (Theory and Practical)

Table: CO-PO Matrix for the Course CC-24-IN-ECX-1001 and CC-24- IN-ECX-1002

CO#	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CC-24-IN-ECX-1001 and 1002.1	3	3	1	2	1	2	1	3	2	2	1
CC-24-IN-ECX-1001 and 1002.2	3	3	2	2	1	1	2	3	2	2	1
CC-24-IN-ECX-1001 and 1002.3	3	3	1	3	2	1	2	3	2	2	2
CC-24-IN-ECX-1001 and 1002.4	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.25	2.25	1.5	1.5	1.5	3	2	2	1.25

#### Suggested Reading List

- Boadway, R.W. & Neil, B. (1991). Welfare Economics. Wiley.
- Feldman, A. M. & Serrano, R. (2006). Welfare Economics and Social Choice Theory. Springer.
- Johansson, Per-Olov (1991). An Introduction to Modern Welfare Economics. Cambridge University Press.
- Henderson, J.M. and Quandt, R.E. (1958) Microeconomic Theory: A Mathematical Approach. McGraw-Hill Kogakusha, Tokyo.
- Little, I.M.D. (2002). A critique of Welfare Economics. Oxford University Press.
- Sen, Amartya (1997). Choice, Welfare and Measurement. Harvard University Press.

**Master of Science Economics (Honors) 5-Years Integrated  
Comparative Economics Development**

**Semester-X**

**DSE -7 IN-ECX-1003**

**External Marks: 80**

**Internal Marks: 20**

**Total Marks: 100**

**Credits: 4**

**Time: 3 hours**

**Note:**

- (i) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (ii) Question No. 1 will be compulsory and will consist of 8 short answer type questions of 2 marks spread over the entire syllabus (2\*8=16 marks).
- (iii) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

<b>Content</b>	<b>Learning objectives</b>
<p><b>UNIT-I</b> <b>Britain and USA:</b> British economy, and trends, USA economy, Role of US in world economic co-operation, Indo-US economic co-operation.</p>	<p>Unit I: (i). To analyze the historical evolution and contemporary trends of the British and USA economies, focusing on key indicators such as GDP growth, unemployment rates, inflation, and trade balances, in order to understand the factors driving their economic development. (ii). To evaluate the role of the United States in global economic cooperation, with a specific focus on its impact on international trade agreements, monetary policies, and development assistance, and to assess the implications of Indo-US economic cooperation for both countries and the broader global economy.</p>
<p><b>UNIT-2</b> <b>Japan and China:</b> Economic development of Japan: Agriculture, Industry; Role of entrepreneurship; Technology, China: Agriculture and trade; Cultural Revolution, and Economic Reforms.</p>	<p>Unit II: (i). To examine the contrasting paths of economic development taken by Japan and China, with a focus on the role of agriculture, industry, entrepreneurship, and technology in shaping their economies, and to analyze the factors contributing to their respective successes and challenges. (ii). To evaluate the impact of historical events such as the Cultural Revolution in China and economic reforms in both Japan and China on their economic trajectories, and to assess the implications of their development strategies for regional and global</p>

<hr/> <p><b>UNIT-3</b>  <b>USSR and East Asian Miracles:</b> Economic development of USSR: Basic features of USSR economy, Industry &amp; trade Indo-USSR Economic co-operation, Growth Miracle of Newly Industrialized Countries: Taiwan, South Korea and Singapore. Economy of Australia.</p> <hr/> <p><b>UNIT-4</b>  <b>Role of state in economic development (regulatory and developmental role):</b> Britain,, USSR, and Japan, Regional Economic Integration: European Union, lessons for India</p>	<p>economic dynamics.</p> <hr/> <p>Unit III:  (i). To analyze the economic structure and key features of the USSR economy, focusing on its industrial development, trade policies, and cooperation with countries like India, and to assess the impact of Indo-USSR economic cooperation on both economies.  (ii). To examine the growth miracles of the newly industrialized countries (NICs) in East Asia, namely Taiwan, South Korea, and Singapore, by studying their economic policies, industrial strategies, trade patterns, and technological advancements, and to compare their development trajectories with that of Australia, analyzing the factors contributing to their economic success and the challenges they faced.</p> <p>Unit IV:  (i). To examine the regulatory and developmental roles of the state in economic development, drawing comparisons between the approaches taken by Britain, the USSR, and Japan, and to analyze how state intervention policies have influenced economic outcomes in these countries.  (ii). To evaluate the process of regional economic integration, with a specific focus on the European Union, by studying its historical evolution, institutional framework, trade policies, and economic implications, and to draw lessons for India regarding the potential benefits, challenges, and strategies for participating in regional economic integration initiatives.</p>
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**Suggested Reading List**

- Alec Nove (1969) An Economic History of USSR, Penguin.
- Chalmers Johnson (1982) MITI and the Japanese Miracle: The Growth of Industrial Policy 1925-1975, Stanford University Press.
- FG Walett: An Economic History of the USA.
- GC Allen (1867-1937) A Short Economic History of Modern Japan.

- JW Hall, Peter Duus: The Cambridge History of Japan.
- Marvica Dobb (1977) Soviet Economic Development since 1917, 6th Edition, Rutledge & Kegan Paul.
- R Floud, McCloskey D: The Economic History of Britain since 1700.
- Stuart Kirby: An Introduction to Economic History of China.
- W.W. Lockwood (1966) Economic Development of Japan, Expanded edition, Princeton University Press.
- WHB Court: A Concise Economic History of Britain

## **Comparative Economics Development –(P)**

**DSE-7 IN-ECX-1004**

**External Marks: 40**

**Internal Marks: 10**

**Total Marks: 50**

**Credits: 2**

**Time: 3 hours**

Economies of Britain and USA, Role of USA in world economic co-operation, Indo-US economic co-operation. Japan: Agriculture, Industry; Role of entrepreneurship; Technology, China: Agriculture and trade; Cultural Revolution, and Economic Reforms, Economic development of USSR: Growth Miracle of Newly Industrialized Countries: Taiwan, South Korea and Singapore, Role of State in economic development of Britain, USSR, and Japan, European Union: lessons for India

**Economic News Analysis:** to find recent news articles about the economies and then to summarize the articles and identify key economic indicators mentioned, such as GDP growth or unemployment rates.

**Country Comparison with Poster and Charts:** to research basic economic data and notable features of the above economies, and then create posters and charts comparing and contrasting the two or more countries' economic development paths.

**Historical Economic Timeline:** the students can create a timeline highlighting significant events in the economic development of the above economies and can include key policies, reforms, or economic milestones, along with brief explanations of their significance.

## OVERVIEW OF OUTCOMES (DSE-7 IN-ECX-1003 and DSE-7 IN-ECX-1004)

### Comparative Economics Development

After the successful completion of the course, the students will be able to

Course Objective:

<b>DSE-7-IN-ECX-1003 and 1004.1</b>	After this course students will be able to analyze the historical evolution and contemporary trends of the British and USA economies.
<b>DSE-7-IN-ECX-1003 and 1004.2</b>	Students will be able to understand to examine the contrasting paths of economic development taken by Japan and China.
<b>DSE-7-IN-ECX-1003 and 1004.3</b>	Students will be able to understand the economic structure and key features of the USSR economy and to assess the impact of Indo-USSR economic cooperation on both economies.
<b>DSE-7-IN-ECX-1003 and 1004.4</b>	Students will be able to examine the comparisons between the approaches taken by Britain, the USSR, and Japan.

### Mapping Matrix of Course

#### Comparative Economics Development

(Theory and Practical)

Table: CO-PO Matrix for the Course **DSE-7 IN-ECX-1003 and DSE-7 IN-ECX-1004**

CO#	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
<b>DSE-7-IN-ECX-1003 and 1004.1</b>	3	3	1	2	1	2	1	3	2	2	1
<b>DSE-7-IN-ECX-1003 and 1004.2</b>	3	3	2	2	1	1	2	3	2	2	1
<b>DSE-7-IN-ECX-1003 and 1004.3</b>	3	3	1	3	2	1	2	3	2	2	2
<b>DSE-7-IN-ECX-1003 and 1004.4</b>	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.25	2.25	1.5	1.5	1.5	3	2	2	1.25

### Suggested Reading List

- Alec Nove (1969) An Economic History of USSR, Penguin.

- Chalmers Johnson (1982) MITI and the Japanese Miracle: The Growth of Industrial Policy 1925-1975, Stanford University Press.
- FG Walett: An Economic History of the USA.
- GC Allen (1867-1937) A Short Economic History of Modern Japan.
- JW Hall, Peter Duus: The Cambridge History of Japan.
- Marvice Dobb (1977) Soviet Economic Development since 1917, 6th Edition, Rutledge & Kegan Paul.
- R Floud, McCloskey D: The Economic History of Britain since 1700.
- Stuart Kirby: An Introduction to Economic History of China.
- W.W. Lockwood (1966) Economic Development of Japan, Expanded edition, Princeton University Press.
- WHB Court: A Concise Economic History of Britain.

**Master of Science Economics (Honors)5-year integrated**  
**Semester-IX**  
**Operations Research**  
**DSE-7 IN-ECX-1005**

**External marks:80**  
**Internal Marks:20**  
**Total marks:100**  
**Credits:4**  
**Time: 3 hours**

**Note:**

- (iv) Nine Questions will be set in all and students will be required to attempt 5 questions.
- (v) Question No. 1 will be compulsory and will consist of 8 short answer type questions of 2 marks spread over the entire syllabus (2\*8=16 marks).
- (vi) For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (16 marks each)

<b>Content</b>	<b>Learning objectives</b>
<p><b>UNIT – I</b></p> <p><b>(i-a)</b> Introduction to Operations Research- Historical development, The nature and meaning of OR, Management applications of OR, Role of OR in Decision making.</p> <p><b>(i-b)</b> Linear programming problem- Formulation and graphical method.</p>	<p><b>(i-a)</b> To provide the students with introduction on OR and its models to aid in understanding its applicability in the various functional areas of management.</p> <p><b>(i-b)</b> Objective is to introduce the students about Linear programming problem</p>
<p><b>UNIT – 2</b></p> <p><b>(ii-a)</b> LP Problem: Simplex method- Theory and simple applications.</p> <p><b>(ii-b)</b> Transportation problem- Initial Basic Feasible Solution, North-West Corner Method (NWCM), Least-Cost Method (LCM), Vogel's Approximation Method (VAM).</p>	<p><b>(ii-a)</b> To understand the concept of linear programming models &amp; set-up simplex tables and solve LP problems using the simplex algorithm.</p> <p><b>(ii-b)</b> To derive initial feasible solution using several methods in transportation problem.</p>
<p><b>UNIT – 3</b></p> <p><b>(iii-a)</b> Concept of Uncertainty: Types of</p>	<p><b>(iii-a)</b> To understand the steps of</p>

<p>Decisions, Components of decision making, Decision models, Decision making under uncertainty, Decision making under conflict.</p> <p><b>(iii-b)</b> Concept of Utility function, Utility curve, construction of Utility curve.</p>	<p>decision making process and to make decision under various decision making environments.</p> <p><b>(iii-b)</b> Aims at making the students acquainted with the concept of utility function.</p>
<p><b>UNIT –4</b></p> <p><b>(iv-a)</b> Theory of Games - Characteristics of Game Theory, Basic definitions, Minimax (Maximin) criterion and optimal strategy, Saddle point, Optimal strategies and the value of Game;</p> <p><b>(iv-b)</b> Project management-PERT,CPM techniques</p>	<p><b>(iv-a)</b> To throw light on game models and the application of pure and mixed strategies in competitive environment.</p> <p><b>(iv-b)</b> To understand the importance of using PERT and CPM techniques for project management.</p>

**Operations Research (P)**  
**DSE-7 IN-ECX-1006**

**External marks:40**  
**Internal marks:10**  
**Total marks:50**  
**Credits:2**  
**Time:3 hours**

<p><b>Presentation (Written&amp; Oral)</b> Management applications of OR. LP Problem Construction of Utility curve. Project management-PERT,CPM techniques</p>
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**OVERVIEW OF OUTCOMES (DSE-7 IN-ECX-1005 & DSE-7 IN-ECX-1006)**

**Operations Research**

**After the successful completion of the course, the students will be able to**

Course Objective:

<b>DSE-7 IN-ECX-1005 and 1006.1</b>	Obtain insight on the origin and nature of OR and also the application of various models of OR.
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<b>DSE-7 IN-ECX-1005 and 1006.2</b>	Learn about the graphical, Simplex, Transportation problem methods of Linear programming problem
<b>DSE-7 IN-ECX-1005 and 1006.3</b>	To make decision under various decision making environments.
<b>DSE-7 IN-ECX-1005 and 1006.4</b>	To throw light on game models and the application of pure and mixed strategies in competitive environment.

**Mapping Matrix of Course Operations Research and Practical**  
Table: CO-PO Matrix for the Course, **DSE-7 IN-ECX-1005.1 and 1006**

CO#	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
<b>DSE-7 IN-ECX-1005 and 1006.1</b>	3	3	1	2	1	2	1	3	2	2	1
<b>DSE-7 IN-ECX-1005 and 1006.2</b>	3	3	2	2	1	1	2	3	2	2	1
<b>DSE-7 IN-ECX-1005 and 1006.3</b>	3	3	1	3	2	1	2	3	2	2	2
<b>DSE-7 IN-ECX-1005 and 1006.4</b>	3	3	1	2	2	2	1	3	2	2	1
<b>Average</b>	3	3	1.25	2.25	1.5	1.5	1.5	3	2	2	1.25

## Readings

- 1) Vohra N.D. Quantitative techniques in management 3rd Ed , Mc. Graw Hill Co.
- 2) G. Hadley: Linear Programming. Narosa, Reprint, 2002.
- 3) G. Hadley: Linear Algebra, Narosa, Reprint, 2002.
- 4) Hamdy A. Taha: Operations Research-An Introduction, Prentice Hall, 9th Edition, 2010.

- 5) Ravindran, D. T. Phillips and James J. Solberg: Operations Research- Principles and Practice, John Wiley & Sons, 2005.
- 6) F.S. Hillier. G.J. Lieberman: Introduction to Operations Research- Concepts and Cases, 9th Edition, Tata Mc-Graw Hill, 2010.
- 7) Sharma J.K. Operations research: theory and applications, MacMillan India Ltd.
- 8) Gupta P.K, Hira D.S., Operations Research, S. Chand Publishers.

**Master of Science Economics (Honors) 5-Years Integrated  
Dissertation  
Semester-X  
CC-25-IN-ECX-1007**

**External Marks: 200  
Internal Marks: 50  
Total Marks: 250  
Credit: 10  
Time: 3hours**

**Sampling**

Sampling and Sampling Designs; Data Collection: Observational Methods, Survey Research, Questionnaire Construction- Content, Types, Format, Sequence, Pitfalls and their removal

**Data Analysis**

The Strategy of Testing Hypotheses- Parametric and Non-Parametric Tests; Linear Regression with Multiple Variables; Communicating Research Results- Structure, Presentation, Bibliography, Foot Notes and Annexure Data analysis using MS Excel, SPSS and E views.

**Reading List**

- Research Methods in Social Sciences, by Chava Frankfort-Nachmias, David Nachmias and Jack De Waard,
- Research Methods in Social Sciences, by Chava Frankfort-Nachmias, David Nachmias and Jack DeWaard Chs. 5,6,7
- Research Methods for Graduate Business and Social Science Students by John Adams,
- Hafiz T.A. Khan, Robert Raeside and David White Ch.4
- Research Methods in Social Sciences, by Chava Frankfort-Nachmias, David Nachmias and Jack DeWaard, Ch. 19
- Business Research Methods by Zikmund, Babin, Carr, Griffin Ch. 25
- Basic Econometrics by D. Gujarati
- A Guide to Research Methodology- An Overview of Research Problems, Tasks and Methods by Shyama Prasad Mukherjee ch.9

**Master of Science Economics (Honors) 5-Years Integrated**

**Comprehensive Viva  
Semester-X  
CC-26 IN-ECX-1008**

**External Marks: 40  
Internal Marks: 10  
Total Marks: 50  
Credit: 2  
Time: 3hours**

**The External Examiner will conduct the Comprehensive Viva.**