Dept. of Economics & Social Sciences
Diary No. 483
Dated 22/5/25
HISAR

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR
(Established by State Legislature Act 17 of 1995)
'A+' Grade, NAAC Accredited State Govt. University

Acad./AC-III/BOS&R-17/2025/ 2688
Dated: 21/5/2025

To

The Controller of Examinations
GJUS&T, Hisar.

Sub: Approval of the scheme of examinations and syllabi of Integrated B.Sc. (Hons./Hons. with Research) - M.Sc. Economics (5th & 6th semester) under NEP-2020 for the batch 2023-24 onwards alongwith the list of pools of VOC and SEC courses w.e.f. academic session 2023-24 onwards, 2024-25 onwards and 2025-26 onwards being run in University Teaching Department.

Sir,

I am directed to inform you that the Vice-Chancellor, on the recommendations of Dean, Faculty of Humanities and Social Sciences on dated 12.05.2025, is pleased to approve the scheme of examinations and syllabi of Integrated B.Sc. (Hons./Hons. with Research) - M.Sc. Economics (5th & 6th semester) under NEP-2020 for the batch 2023-24 onwards alongwith the list of pools of VOC and SEC courses w.e.f. academic session 2023-24 onwards, 2024-25 onwards and 2025-26 onwards being run in University Teaching Department, under Section 11(5) of the University Act, 1995 in anticipation of approval of the Academic Council.

A copy of the scheme of examinations and syllabi of above said programme is enclosed herewith.

You are therefore, requested to take further necessary action, accordingly.

Yours faithfully,

DA: As above

Assistant Registrar (Academic)
for Registrar

Endst. No. Acad./AC-III/BOS&R-17/2025/ 2689-92 Dated: 21/5/25

A copy of above is forwarded to the following for information and necessary action:-

1. Dean, Faculty of Humanities and Social Sciences, GJUST, Hisar.
2. Chairperson, Department of Economics, GJUST, Hisar. He is requested to arrange to upload the above said scheme of examination and syllabi of above said programme on the website of the University.
3. OSD to Vice-Chancellor (for kind information of the Vice-Chancellor), GJUST, Hisar.
4. Secretary to office of Registrar (for kind information of the Registrar), GJUST, Hisar.

Assistant Registrar (Academic)

SEMESTER – V & VI
Syllabus
(Page 1 to 34)
with suggested changes.

Department of Economics

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

(Established by State Legislature Act 17 of 1995)

'A+' Grade, NAAC Accredited

Scheme of Examination for Integrated Five Years Programme
[UG Four Years Programme (Single Major from First Semester) + PG One Year Programme]
Name of the Programme: Integrated B.Sc. (Hons/Hons with Research)-M.Sc. Economics
According to National Education Policy-2020
For the batch 2023-24 Onwards

THIRD YEAR (SEMESTER-V)

Type of Course	Course Code	Paper Nomenclature	Credits	Internal Marks	External Marks	Total Marks
Discipline Specific Courses (Core)	24ECO0501T	Indian Economy-I	04	30	70	100
	24ECO0502T	Introductory Public Economics	04	30	70	100
Discipline Specific Courses (Elective)	24ECO0503T(i) OR 24ECO0503T(ii)	Intermediate Labour Economics OR Issues in Development Economics	04	30	70	100
	24ECO0504T(i) OR 24ECO0504T (ii) OR 24ECO0504T (iii)	Agriculture Production Economics OR Industrial Strategies OR Econometrics-II	04	30	70	100
Minor Course/ Vocational Course	(Theory)	To be opted from the pool of MIC (VOC)	02	15	35	50
	(Practical)		02	15	35	50
Skill Enhancement Course	24ECO0501I	Internship	04	-----	-----	-----
Total			24	150	350	500

Chairperson
Department of Economics
GJUS&T, HISAR

Department of Economics

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

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'A' Grade, NAAC Accredited

Scheme of Examination for Integrated Five Years Programme
[UG Four Years Programme (Single Major from First Semester) + PG One Year Programme)
Name of the Programme: Integrated B.Sc. (Hons/Hons with Research)-M.Sc. Economics
According to National Education Policy-2020
For the batch 2023-24 Onwards

THIRD YEAR (SEMESTER-VI)

Type of Course	Course Code	Paper Nomenclature	Credits	Internal Marks	External Marks	Total Marks
Discipline Specific Courses (Core)	24ECO0601T	Indian Economy-II	04	30	70	100
	24ECO0602T	Economics of Money and Banking	04	30	70	100
Discipline Specific Courses (Elective)	24ECO0603T(i) OR 24ECO0603T(ii)	Dynamics of Labour Market OR Economics of Social Sector	04	30	70	100
	24ECO0604T(i) OR 24ECO0604T (ii) OR 24ECO0604T (iii)	Agriculture for Sustainable Livelihood OR Corporate Finance OR Advanced Econometrics	04	30	70	100
Minor Course/ Vocational Course	(Theory)	To be opted from the pool of the MIC (Voc)	02	15	35	50
	(Practical)		02	15	35	50
Skill Enhancement Course	SEC5@ 2 Credits	To be opted from the pool of SEC	02	----	----	----
Total			22	150	350	500

Chairperson
Department of Economics
GJU S&T, Hisar

Department of Economics

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

(Established by State Legislature Act 17 of 1995)

'A+' Grade, NAAC Accredited

Department Courses offered for the respective pools of the University

w.e.f. 2023-24 & 2024-25 & 2025-26 Onwards

THIRD YEAR (SEMESTER-V)						
Department Courses offered for the pools (MIN/MDC/SEC, & VAC)						
Type of Course	**Course Code**	**Paper Nomenclature**	**Credits**	**Internal Marks**	**External Marks**	**Total Marks**
Minor Course/ Vocational Course	24VOC0504T (i) 24VOC0504P (i)	Econometrics Application in Social Sciences-I OR Quantitative Techniques in Social Sciences-I OR Financial Modelling Using Excel	02	15	35	50
	24VOC0504T (ii) 24VOC0504P(ii)		02	15	35	50
	24VOC0504T (iii) 24VOC0504P(iii)					
Internship	Internship	Internship	04	-------	------	------

THIRD YEAR (SEMESTER-VI)						
Department Courses offered for the pools (MIN/MDC/SEC, & VAC)						
Type of Course	**Course Code**	**Paper Nomenclature**	**Credits**	**Internal Marks**	**External Marks**	**Total Marks**
Minor Course/ Vocational Course	24VOC0604T (i) 24VOC0604P (i)	Econometrics Application in Social Sciences-II OR Quantitative Techniques in Social Sciences-II OR Statistics Using SPSS	02	15	35	50
	24VOC0604T (ii) 24VOC0604P (ii)		02	15	35	50
	24VOC0604T (iii) 24VOC0604P (iii)					
Skill Enhancement Course	24SEC0611P	Econometrics Applications	02	15	35	50

Note: Four Credits internship, earned by a student during summer internship after 2nd Sem or 4th Sem, will be taken into account in 5th Sem of a student who pursue 3 Years UG Programme without taking Exit option

SEMESTER V

Indian Economy-I

DSC-A11 (Core)

Course Code: 24ECO0501T

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objective: This course aims to analyse India's economic evolution by examining key reforms, policy frameworks, and sectoral strategies in agriculture, industry, and services, with a special focus on the post-liberalization period. Students will develop the ability to critically assess growth trajectories and evaluate the effectiveness of development policies.

Unit-I

History of Development and Planning: Major features of the economy since independence; growth and development under Planning-goals, constraints, institutions and policy framework; an assessment of performance, Performance of Indian economy after 1991—sustainability and regional contrasts; structural change, savings and investment. Structure transformation and attendant issues.

Unit-II

Major Economic Reforms in Indian Economy: Liberalization, Privatization and Globalization, Fiscal reforms, financial sector reforms, trade reforms.

Unit-III

Agriculture and rural development strategies: Technology and Institutions, Land relations and land reforms, Rural credit, Modern farm inputs and marketing- price policy and subsidies, Commercialization and diversification, Rural development programmes including poverty alleviation programmes, development of economic and social infrastructure, New rural employment Guarantee scheme.

Unit-IV

Industry as Strategy of development: Industrial policy reforms, Reservation policy relating to small-scale industries, Knowledge-intensive industries in India, Service sector, Competition policy, Sources of Industrial Finances, Bank, Share market, insurance companies, pension funds, non-banking sources, foreign direct investment, public sector reforms, Privatization and disinvestment

Course Outcomes: At the end of the course, the students would be able to
CO1. Comprehend the Evolution and Structural Transformation of the Indian Economy
CO2. Evaluate the Impact of Economic Reforms and Policy Measures
CO3. Analyze Sector-Specific Growth Strategies and Policy Frameworks

Suggested Readings List

1. Dhirendra Nath Konar, *Contemporary Issues of Indian Economy*, Akansha Publishing House, Delhi.
2. Uma Kapila, *Indian Economy (25th Edition): 2024-25*, Academic Foundation.
3. Reserve Bank of India, *Handbook of Statistics on Indian Economy 2022-23*.
4. Government of India, Ministry of Finance, *Economic Survey 2023-24*.
5. Government of India, Ministry of Finance, *Union Budget 2024-25*.
6. Government of India, Ministry of Commerce and Industry, *Foreign Trade Policy 2023*.
7. Government of India, Department for Promotion of Industry and Internal Trade, *FDI Fact Sheets*.
8. Timothy Besley, *Contemporary Issues in Development Economics*, Palgrave Macmillan.
9. Kaushik Basu, *The Oxford Companion to Economics in India*, Oxford University Press, New Delhi.
10. S. Mahendra Dev, *Inclusive Growth in India*, Oxford University Press, New Delhi.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

DSC-A12 (Core)

Introductory Public Economics

Course Code: 24ECO0502T

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objective: To introduce key principles of public economics, including the role of government, public goods, efficient and equitable taxation, and Indian public finance, in addressing market failures and economic efficiency.

Unit-I

Introduction to public Economics: Definition and scope of public economics. Role of Government in the economy. Public Goods: definition, models of efficient allocation, pure and impure public goods, free riding

Unit-II

Theory of Taxation; Direct and indirect taxes: Types and reforms, Indian tax system, GST, Dead weight loss, effect of Taxation Theories of taxation – ability and benefit principles of taxation, taxation capacity, tax incidence and shifting, characteristics of good tax system; non tax revenue, tax evasion and the black economy, taxation and monopoly.

Unit-III

Indian Public Finances, Tax System: structure and reforms, Expenditures, Budget, deficits and public debt

Unit-IV

Fiscal federalism in India-NITI Ayog, Finance Commissions, Centrally Sponsored Schemes (CSS).

Course Outcomes: At the end of the course, the students would be able to
CO1. Understand the foundational concepts of public economics and the rationale for government intervention.
CO2. Analyse the characteristics of public goods and their implications for resource allocation.
CO3. Evaluate taxation principles and Indian public finance policies in the context of economic development.

Suggested Readings List

1. J. Hindriks and G. Myles, *Intermediate Public Economics*, 2nd Edition, MIT Press, 2013.
2. Harvey S. Rosen and Ted Gayer, *Public Finance*, 10th Edition, McGraw-Hill Education, 2014.
3. Joseph E. Stiglitz and Jay K. Rosengard, *Economics of the Public Sector*, 4th Edition, W.W. Norton & Company, 2015.
4. Jonathan Gruber, *Public Finance and Public Policy*, 7th Edition, Worth Publishers, 2022.
5. David N. Hyman, *Public Finance: A Contemporary Application of Theory to Policy*, 12th Edition, Cengage Learning, 2020.
6. Kaushik Basu and A. Maertens (eds.), *The New Oxford Companion to Economics in India*, Oxford University Press, 2012.
7. M.M. Sury, *Government Budgeting in India*, 1990.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

Chairperson
Department of Economics

DSC-A13 (First Option)

Intermediate Labour Economics

Course Code: 24ECO0503T (i)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objectives: To develop an understanding of labour economics by examining labour supply and demand, wage determination, labour mobility, industrial relations, and the role of labour in economic development.

Unit-I

Labour – Its Characteristics; Role of Labour in Economic Development, Mobility and productivity of labour. Supply of Labour: Static Labour-Leisure Choice, Effects of Social Programs and Income Taxes, The Life-Cycle Model, Investments in Human Capital, Collective Models of Household Labour Supply, Occupational Choice;

Unit-II

Demand of Labour: Static Cost, Profit and Labour Demand Functions, Elasticity of Derived Demand: the Hicks-Marshall Rules, Adjustment Costs and Dynamic Labour Demand; Equilibrium in Labour Market: Compensating Differences, Efficiency Wages, Segmented Labour Markets, Migration.

Unit-III

Classical, Neo-classical and Bargaining Theories of Wage Determination; Concepts of Minimum Wage, Living Wage and Fair Wage in Theory and Practice; Discrimination in Labour Markets; Productivity and Wage Relationship; Analysis of Rigidity in Labour Markets; National Wage Policy; Wages and Wage Boards in India; Bonus System and Profit Sharing.

Unit-IV

Theories of Origin and Growth of Labour Movement - Growth, Pattern and Structure of Labour Unions in India, Achievements and Failures of Labour Unions; Industrial Relations -Industrial Disputes and industrial Peace; Causes of industrial Disputes and their Settlement and Prevention Mechanism.

Course Outcomes: At the end of the course, the students would be able to

CO1. Analyse labour market dynamics, including labour supply, demand, and mobility, in the context of economic development.

CO2. Evaluate theories of wage determination, wage policies, and labour market discrimination.

CO3. Assess the role of labour unions, industrial relations, and dispute resolution mechanisms in shaping labour markets.

Suggested Readings List

1. Campbell R. McConnell, Stanley L. Brue, and David A. Macpherson, *Contemporary Labor Economics*, 12th Edition, McGraw-Hill Education, 2019.
2. George J. Borjas, *Labor Economics*, 9th Edition, McGraw-Hill Education, 2024.
3. Pierre Cahuc and André Zylberberg, *Labor Economics*, MIT Press, 2004.
4. Ronald G. Ehrenberg and Robert S. Smith, *Modern Labor Economics: Theory and Public Policy*, 15th Edition, Routledge, 2023.
5. Orley Ashenfelter and Kevin Hallock, *Labor Economics*, 7th Edition, Barnes & Noble Education, 2022.
6. Christopher A. Pissarides, *Equilibrium Unemployment Theory*, 2nd Edition, MIT Press, 2000.
7. CORE Econ, *The Economy 2.0*, 2023.
8. Benjamin Powell, *Out of Poverty*, 2nd Edition, Cambridge University Press, 2021.
9. Brianna L. Alderman and Roger D. Blair, *Monopsony in Labor Markets*, Cambridge University Press, 2022.
10. David Griffith, *The Cultural Value of Work*, Cambridge University Press, 2020.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

Chairperson
Department of Economics
CJUS&T, HISAR

DSC-A13 (Second Option)
Issues in Development Economics

Course Code: 24ECO0503T (ii)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objective: The course aims to examine the impact of technology, capital, gender dynamics, population trends, and international trade on economic development through classical theories and global institutional frameworks.

Unit-I

Technology and Development: Capital Accumulation, Technological Progress, Classical Thinkers: Smith, Ricardo, Marx, Balanced growth, Harod-Domar and Low-level equilibrium trap.

Unit-II

Gender and Development: Gender, The Household, Power and Empowerment, 'Feminization and Flexibility, Caste, Class, Patriarchy, Gender and Planning- Gender and Micro finance, Women, Work and the Labour Market.
Population and Development: Trends and patterns of world population growth, Fertility and Nuptiality, Mobility and Mortality, Migration, Urbanization, Divergent views on population & development, Population and Health, Population and Aging.

Unit-III

Labor and Development: Unemployment and underemployment, Income distribution, income inequality and poverty Models, Globalization and labour market in India- Mobility: migration and turnover.

Unit-IV

International trade and Development: Role of international institutions like IMF, World Bank, WTO and WIPO in international trade and development.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain the influence of technological progress, demographic trends, and labor dynamics on economic development.
CO2. Assess gender disparities, income inequality, and labor market challenges in the context of development.
CO3. Critically evaluate the role of international trade and global institutions in shaping economic development policies.

Suggested Readings List

1. Y. Hayami and Y. Godo, *Development Economics: From the Poverty to the Wealth of Nations*, 3rd Edition, Oxford University Press, 2005.
2. K. Basu, *Analytical Development Economics: The Less Developed Economy Revisited*, MIT Press, 1997.
3. Debraj Ray, *Development Economics*, Oxford University Press, 1998.
4. Naila Kabeer, *Reversed Realities: Gender Hierarchies in Development Thought*, Verso, 1994.
5. Francine D. Blau, Marianne A. Ferber, and Anne E. Winkler, *The Economics of Women, Men, and Work*, 7th Edition, Oxford University Press, 2014.
6. Diane Elson (ed.), *Male Bias in the Development Process*, 2nd Edition, Manchester University Press, 1995.
7. Nancy Birdsall, Allen C. Kelley, and Steven W. Sinding (eds.), *Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World*, Oxford University Press, 2001.
8. David E. Bloom, David Canning, and Jaypee Sevilla, *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*, RAND Corporation, 2003.
9. Robert Cassen, *Population and Development: Old Debates, New Conclusions*, Transaction Publishers, 1994.
10. Ronald G. Ehrenberg and Robert S. Smith, *Modern Labor Economics: Theory and Public Policy*, 13th Edition, Routledge, 2021.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

DSC-A14 (First Option)

Agriculture Production Economics

Course Code: 24ECO0504T (i)

Maximum Marks: 100 **(Total Credits: 04)**
Internal Assessment: 30 **(Theory)**
External Assessment: 70 **Time Allowed: 3 Hours**

Course Objective: To explore agricultural production economics by analysing production functions, factor relationships, cost structures, technology adoption, efficiency measurement, and risk management for enhanced productivity and sustainability.

Unit- I

Nature, scope and significance of agricultural production economics- Agricultural Production processes, character and dimensions - spatial, temporal - Centrality of production functions, assumptions of production functions, commonly used forms - Properties, limitations, specification, estimation and interpretation of commonly used production functions.

Factors of production, classification, interdependence, and factor substitution - Determination of optimal levels of production and factor application - Optimal factor combination and least cost combination of production - Theory of product choice; selection of optimal product combination.

Unit-II

Factors of production, classification, interdependence, and factor substitution - Determination of optimal levels of production and factor application - Optimal factor combination and least cost combination of production - Theory of product choice; selection of optimal product combination

Unit-III

Cost functions and cost curves, components, and cost minimization - Duality theory - cost and production functions and its applications - Derivation of firm's input demand and output supply functions - Economies and diseconomies of scale.

Unit-IV

Technology in agricultural production, nature and effects and measurement - Measuring efficiency in agricultural production; technical, allocative and economic efficiencies - Yield gap analysis concepts-types and measurement - Nature and sources of risk, modelling and coping strategies.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain the principles of agricultural production economics, factor interdependence, and optimal production choices.
CO2. Analyse cost functions, economies of scale, and firm-level production decisions.
CO3. Critically evaluate technological advancements, efficiency measures, and risk management strategies in agricultural production.

Suggested Readings List

* Andrew Barkley and Paul W. Barkley, *Principles of Agricultural Economics*, 4th Edition, Routledge, 2024.
1. Oral Capps Jr., John Penson, Parr Rosson, and Richard Woodward, *Introduction to Agricultural Economics*, Revised 7th Edition, Cognella, 2024.
2. David L. Debertin, *Agricultural Production Economics*, 2nd Edition, Amazon Createspace, 2012.
3. George W. Norton, Jeffrey Alwang, and William A. Masters, *Economics of Agricultural Development: World Food Systems and Resource Use*, 3rd Edition, Routledge, 2021.
4. William A. Masters and Amelia B. Finaret, *Food Economics: Agriculture, Nutrition, and Health*, Palgrave Macmillan, 2024.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

DSC-A14 (Second Option)

Industrial Strategies

Course Code: 24EC00504T (ii)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objective: The course aims to analyse competition principles, industrial policy, investment decisions, risk assessment, financial structures, public enterprise pricing, and social cost-benefit analysis to evaluate efficiency in industrial economics.

Unit-I

Competition and Industrial Policy: Competition policy: objectives and difficulties in design and implementation, Competition policy in practice, Policy towards research and development, Regulation of firms with market power under symmetric information, Regulation under asymmetric information, Extensions: dynamic issues and regulatory capture, Liberalisation and regulation

Unit-II

The Investment decision: Methods of investment appraisal, the investment decision in practice, An assessment of investment appraisal techniques Risk, uncertainty and decision making, Sources of finance, Company size and investment.

Unit-III

Public Enterprises –Pricing Policy of Public Enterprises; Theory of Second Best; Capacity Constraints and Peak Load Problem; Social Cost Benefit Analysis- Measuring Economic Benefits and Costs, Determining Shadow Prices, Decision Criteria, Problem of Risk and Uncertainty.

Unit-IV

Measurement of Economic Efficiency: Technical Efficiency, Pure Technical Efficiency, Scale Efficiency, Allocative and Cost Efficiency using SFA and DEA approaches (an overview).

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain competition policies, regulatory mechanisms, and their impact on industrial dynamics.
CO2. Develop analytical skills to assess investment decisions, risk factors, and financial strategies in industries.
CO3. Critically evaluate efficiency measurement techniques, social cost-benefit analysis, and pricing strategies in public enterprises.

Suggested Readings List

1. I.J. Ahluwalia, *Industrial Growth in India*, Oxford University Press, 1985.
2. R.R. Barthwal, *Industrial Economics: An Introductory Textbook*, New Age International Publishers, 2022.
3. F. Cherunilam, *Industrial Economics: Indian Perspective*, 3rd Edition, Himalaya Publishing House, 1994.
4. B. Desai, *Industrial Economy of India*, 3rd Edition, Himalaya Publishing House, 1999.
5. P.J. Devine, N. Lee, R.M. Jones, and W.J. Tyson, *An Introduction to Industrial Economics*, Routledge, 2019.
6. Government of India, *Economic Survey*, Annual Publication.
7. D. Hay and D.J. Morris, *Industrial Economics: Theory and Evidence*, Oxford University Press, 1979.
8. S.C. Kuchhal, *Industrial Economy of India*, 5th Edition, Chaitanya Publishing House, 1980.
9. Paul R. Ferguson and Glenys J. Ferguson, *Industrial Economics: Issues and Perspectives*, 2nd Edition, NYU Press, 1994.
10. William G. Shepherd and Joanna M. Shepherd, *The Economics of Industrial Organization*, 5th Edition, Waveland Press, 2003.
11. Lynne Pepall, Dan Richards, and George Norman, *Industrial Organization: Contemporary Theory and Empirical Applications*, 5th Edition, Wiley-Blackwell, 2014.
12. Stephen Martin, *Advanced Industrial Economics*, 2nd Edition, Wiley, 2001.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

DSC-A14 (Third Option)

Econometrics-II

Course Code: 24ECO0504T (iii)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objective: To explore dynamic econometric models, time-series analysis, simultaneous equation models, estimation methods, and dummy variable regressions for comprehensive economic data analysis.

Unit-I

Dynamic Models: Lags in econometrics, Distributed and autoregressive lags, Koyck model, Adaptive Expectation and Partial Adjustment appraoches for rationalization of koyck model; Granger Causality and exogeneity.

Unit-II

Simultaneous Equation Models: Introduction and Examples, Simultaneous Equation Bias and Inconsistency of OLS Estimators; The Identification Problem; Rules of Identification- Order and Rank Conditions; Methods of Estimating Simultaneous Equation System, Macro Economic Model.

Unit-III

Dummy Variables Regression Models. The Nature of Dummy Variables, ANOVA Models, ANOVA Models with two qualitative variables, ANCOVA Models, uses of Dummy variables, The Dummy variable alternative to the chow test.

Unit-IV

Dummy Variable Regression in Dependent Variable: Linear Probability Model (LPM), LOGIT, PROBIT, TOBIT Model.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain the significance of dynamic models, lag structures, and causality in econometric analysis.
CO2. Develop analytical skills to apply simultaneous equation models and estimation techniques in macroeconomic modelling.
CO3. Critically assess the application of dummy variables in regression analysis, including qualitative response models.

Suggested Readings List

1. Takeshi Amemiya, *Advanced Econometrics*, Harvard University Press, 1985.
2. Arthur S. Goldberger, *Introductory Econometrics*, Harvard University Press, 1998.
3. Damodar N. Gujarati and Dawn C. Porter, *Basic Econometrics*, 5th Edition, McGraw-Hill Education, 2008.
4. R. Carter Hill, William E. Griffiths, and Guay C. Lim, *Principles of Econometrics*, 5th Edition, Wiley, 2018.
5. John Johnston and John DiNardo, *Econometric Methods*, 4th Edition, McGraw-Hill Education, 1997.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

MIC 5 (VOC) (First Option)

Econometrics Applications in Social Sciences-I

Course Code: 24VOC0504T (i)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

Total Credits: 02
(Theory)
Time Allowed: 2 Hours

Course Objective: To introduce econometric fundamentals, including data types, statistical inference, regression model assumptions, and diagnostic techniques for addressing multicollinearity, heteroskedasticity, and autocorrelation.

Unit-I

Definition, Scope, and Importance of Econometrics, Nature of Social Science Data: Cross-sectional, Time-series, and Panel Data, Basics of Statistical Inference: Hypothesis Testing, Confidence Intervals, and p-values.

Unit-II

Assumptions of the Classical Linear Regression Model, Ordinary Least Squares (OLS) Estimation and Properties, Interpretation of Regression Coefficients, Goodness of Fit: R-Squared and Adjusted R-Squared, Hypothesis Testing in Regression: t-test and F-test, Implementation of OLS in Social Science Data (Education, Health, Demographics), Diagnostic Testing using Statistical Software, Interpretation of Regression Output. Problems of Regression; Multicollinearity: Causes, Consequences, and Solutions, Heteroskedasticity: Detection (White's Test, Breusch-Pagan Test) and Remedies, Autocorrelation: Detection (Durbin-Watson Test) and Solutions.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain econometric concepts, regression analysis, and statistical inference in the context of social science data.
CO2. Develop practical skills in implementing regression models, hypothesis testing, and identifying econometric problems.
CO3. Critically assess and interpret regression outputs using statistical software for real-world applications in social sciences.

Suggested Readings List

1. Gujarati, D.N., & Porter, D.C. (2017). *Basic Econometrics* (5th ed.). McGraw-Hill.
2. Wooldridge, J.M. (2019). *Introductory Econometrics: A Modern Approach* (7th ed.). Cengage.
3. Kennedy, P. (2008). *A Guide to Econometrics* (6th ed.). Wiley.
4. Stock, J.H., & Watson, M.W. (2020). *Introduction to Econometrics* (4th ed.). Pearson.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks.

Chairperson
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MIC 5 (VOC) (First Option)

Econometrics Applications in Social Sciences-I

Course Code: 24VOC0504P (i)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

Total Credits: 02
(Practical)

Course Objective: To introduce econometric fundamentals, including data types, statistical inference, regression model assumptions, and diagnostic techniques for addressing multicollinearity, heteroskedasticity, and autocorrelation.

Unit-I

Cross-sectional, Time-series, and Panel Data, Basics of Statistical Inference: Hypothesis Testing, Confidence Intervals, and p-values, Introduction to Statistical Software (R, Stata, or Python)

Unit-II

Assumptions of the Classical Linear Regression Model, Ordinary Least Squares (OLS) Estimation and Properties, Interpretation of Regression Coefficients, Goodness of Fit: R-Squared and Adjusted R-Squared, Hypothesis Testing in Regression: t-test and F-test, Implementation of OLS in Social Science Data (Education, Health, Demographics), Diagnostic Testing using Statistical Software, Interpretation of Regression Output. Problems of Regression; Multicollinearity: Causes, Consequences, and Solutions, Heteroskedasticity: Detection (White's Test, Breusch-Pagan Test) and Remedies, Autocorrelation: Detection (Durbin-Watson Test) and Solutions, Practical with Statistical Software (R, Stata, or Python)

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain econometric concepts, regression analysis, and statistical inference in the context of social science data.
CO2. Develop practical skills in implementing regression models, hypothesis testing, and identifying econometric problems.
CO3. Critically assess and interpret regression outputs using statistical software for real-world applications in social sciences.

Suggested Readings List

1. Gujarati, D.N., & Porter, D.C. (2017). *Basic Econometrics* (5th ed.). McGraw-Hill.
2. Wooldridge, J.M. (2019). *Introductory Econometrics: A Modern Approach* (7th ed.). Cengage.
3. Kennedy, P. (2008). *A Guide to Econometrics* (6th ed.). Wiley.
4. Stock, J.H., & Watson, M.W. (2020). *Introduction to Econometrics* (4th ed.). Pearson.

Important Note: The practical exam will be taken by an outside examiner.

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MIC 5 (VOC) (Second Option)

Quantitative Techniques in Social Sciences-I

Course Code: 24VOC0504T (ii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

Total Credits: 02
(Theory)
Time Allowed: 2 Hours

Course Objectives: To understand propositional logic and argument validity, set theory, number systems, and equations, and evaluate functions with their properties and graphs.

Unit-I

Propositional Logic: Definition and examples of Propositions, Logical connectives, Compound (or complex) propositions, Tautology and contradiction; Open propositions and quantifiers; Arguments and Validity, Functions; Review of relations and functions, Real valued functions and their properties, Types of functions and inverse of a function, Polynomials, zeros of polynomials, rational functions and their graphs, Definition and basic properties of logarithmic, exponential, trigonometric functions and their graphs.

Unit-II

Correlation and regression analysis, Time series basics: plotting trends and calculating growth rates, Index numbers: construction and interpretation, Introduction to hypothesis testing (t-test, chi-square test)

Course Outcomes: At the end of the course, the students would be able to

CO1. Apply logical reasoning and propositional logic to mathematical problem-solving.

CO2. Elaborate set operations, number systems, and solving equations.

CO3. Critically assess and interpret various functions, their properties, and applications in mathematical modelling.

Suggested Readings List

1. Kenneth J. Arrow et al. (eds.), *Mathematical Methods in the Social Sciences, 1959: Proceedings*, Stanford University Press, 1960.
2. Shobha Bagai, Amber Habib, and Geetha Venkataraman, *Mathematics for Social Scientists: Learning Essential Foundational Skills*, Routledge, 2023.
3. R. Ecob and D.J. Bartholomew, *Mathematical Methods in Social Sciences*, Journal of the Royal Statistical Society Series A (General), 1982.
4. Lancelot Hogben, *Mathematics for the Million*, W.W. Norton & Company, 1968.
5. Jonathan Kropko, *Mathematics for Social Scientists*, SAGE Publications, 2016.

Important Note: The practical exam will be taken by an outside examiner.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks.

MIC 5 (VOC) (Second Option)

Quantitative Techniques in Social Sciences-I

Course Code: 24VOC0504P (ii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

Total Credits: 02
(Practical)
Time Allowed: 2 Hours

Course Objectives: To understand propositional logic and argument validity, set theory, number systems, and equations, and evaluate functions with their properties and graphs.

Unit-I

Data Handling and Descriptive Statistics Using Excel: Introduction to Excel interface for data analysis: cells, functions, charts, tables, Data entry, cleaning, and validation in Excel, Creating frequency distributions and cross-tabulations, Measures of Central Tendency (Mean, Median, Mode), Measures of Dispersion (Range, Variance, Standard Deviation, Coefficient of Variation), Data visualization: Bar charts, histograms, pie charts, box plots.

Unit-II

Applied Quantitative Analysis with Excel: Correlation and regression analysis, Time series basics: plotting trends and calculating growth rates, Index numbers: construction and interpretation, Introduction to hypothesis testing using Excel (t-test, chi-square test), Using Data Analysis tool pack for statistical analysis.

Course Outcomes: At the end of the course, the students would be able to

CO1. Apply logical reasoning and propositional logic to mathematical problem-solving.

CO2. Elaborate set operations, number systems, and solving equations.

CO3. Critically assess and interpret various functions, their properties, and applications in mathematical modelling.

Suggested Readings List

1. Kenneth J. Arrow et al. (eds.), *Mathematical Methods in the Social Sciences, 1959: Proceedings*, Stanford University Press, 1960.
2. Shobha Bagai, Amber Habib, and Geetha Venkataraman, *Mathematics for Social Scientists: Learning Essential Foundational Skills*, Routledge, 2023.
3. R. Ecob and D.J. Bartholomew, *Mathematical Methods in Social Sciences*, Journal of the Royal Statistical Society Series A (General), 1982.
4. Lancelot Hogben, *Mathematics for the Million*, W.W. Norton & Company, 1968.
5. Jonathan Kropko, *Mathematics for Social Scientists*, SAGE Publications, 2016.

Important Note: The practical exam will be taken by an outside examiner.

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MIC 5 (VOC) (Third Option)

Financial Modelling using Excel

Course Code: 24VOC0504T (iii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 02)
(Theory)
Time Allowed: 2 Hours

Course Objective: This course aims to provide understanding about financial modelling fundamentals, Excel functions, and best practices, analyse financial statements, forecasting, and valuation, and evaluate advanced techniques like scenario analysis, project finance, and automation with Macros and VBA.

Unit-I

Overview of Financial Modelling: Purpose and Applications, Introduction to Excel for Financial Analysis, Cell Referencing (Relative, Absolute, and Mixed), Data Validation and Conditional Formatting, Pivot Tables and Data Tables, Essential Excel Functions for Financial Modelling; Mathematical & Statistical Functions (SUM, AVERAGE, COUNTIF, etc.), Logical Functions (IF, AND, OR, IFERROR), Lookup Functions (VLOOKUP, HLOOKUP, INDEX-MATCH), Best Practices in Financial Modelling (Model Structure, Transparency, and Accuracy)

Unit-II

Understanding Financial Statements (Income Statement, Balance Sheet, Cash Flow Statement), Linking Financial Statements: Building an Integrated 3-Statement Model, Forecasting Techniques: Revenue Forecasting, Cost and Expense Forecasting, Working Capital and Capital Expenditures, Circular References and Iterative Calculations in Excel, Sensitivity and Scenario Analysis Using Excel Data Tables, Time Value of Money; Net Present Value (NPV) and Internal Rate of Return (IRR), Loan Amortization Schedules, Discounted Cash Flow (DCF) Modelling, Estimating Free Cash Flows, Weighted Average Cost of Capital (WACC) Calculation, Terminal Value and Enterprise Valuation, Relative Valuation (Comparable Company Analysis, Precedent Transactions), Project Finance Modelling, Capital Budgeting Techniques, Debt and Equity Financing Considerations

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply Excel-based financial modeling techniques for analyzing financial data and building integrated financial models.
CO2. Assess financial statements, perform valuation techniques, and conduct scenario analysis.
CO3. Critically evaluate and implement advanced financial modeling methods, including stress testing, portfolio optimization, and financial forecasting.

Suggested Readings List

1. Benninga, S. (2014). *Financial Modeling* (4th ed.). MIT Press.
2. Holden, C. (2019). *Excel Modeling in Corporate Finance* (6th ed.). Pearson.
3. Sengupta, C. (2010). *Financial Analysis and Modeling Using Excel and VBA* (2nd ed.). Wiley.
4. Day, A. (2018). *Mastering Financial Modelling in Microsoft Excel* (3rd ed.). Pearson.
5. Simon Benninga & Tal Mofkadi (2017). *Principles of Finance with Excel* (3rd ed.). Oxford University Press.

Important Note: The practical exam will be taken by an outside examiner.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks.

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MIC 5 (VOC) (Third Option)

Financial Modelling using Excel

Course Code: 24VOC0504P (iii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 02)
(Practical)
Time Allowed: 2 Hours

Course Objective: This course aims to provide understanding about financial modelling fundamentals, Excel functions, and best practices, analyse financial statements, forecasting, and valuation, and evaluate advanced techniques like scenario analysis, project finance, and automation with Macros and VBA.

Unit-I

Overview of Financial Modelling: Purpose and Applications, Introduction to Excel for Financial Analysis, Cell Referencing (Relative, Absolute, and Mixed), Data Validation and Conditional Formatting, Pivot Tables and Data Tables, Essential Excel Functions for Financial Modelling; Mathematical & Statistical Functions (SUM, AVERAGE, COUNTIF, etc.), Logical Functions (IF, AND, OR, IFERROR), Lookup Functions (VLOOKUP, HLOOKUP, INDEX-MATCH), Best Practices in Financial Modelling (Model Structure, Transparency, and Accuracy)

Unit-II

Understanding Financial Statements (Income Statement, Balance Sheet, Cash Flow Statement), Linking Financial Statements: Building an Integrated 3-Statement Model, Forecasting Techniques: Revenue Forecasting, Cost and Expense Forecasting, Working Capital and Capital Expenditures, Circular References and Iterative Calculations in Excel, Sensitivity and Scenario Analysis Using Excel Data Tables, Time Value of Money; Net Present Value (NPV) and Internal Rate of Return (IRR), Loan Amortization Schedules, Discounted Cash Flow (DCF) Modelling, Estimating Free Cash Flows, Weighted Average Cost of Capital (WACC) Calculation, Terminal Value and Enterprise Valuation, Relative Valuation (Comparable Company Analysis, Precedent Transactions), Project Finance Modelling, Capital Budgeting Techniques, Debt and Equity Financing Considerations

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply Excel-based financial modeling techniques for analyzing financial data and building integrated financial models.
CO2. Assess financial statements, perform valuation techniques, and conduct scenario analysis.
CO3. Critically evaluate and implement advanced financial modeling methods, including stress testing, portfolio optimization, and financial forecasting.

Suggested Readings List

1. Benninga, S. (2014). *Financial Modeling* (4th ed.). MIT Press.
2. Holden, C. (2019). *Excel Modeling in Corporate Finance* (6th ed.). Pearson.
3. Sengupta, C. (2010). *Financial Analysis and Modeling Using Excel and VBA* (2nd ed.). Wiley.
4. Day, A. (2018). *Mastering Financial Modelling in Microsoft Excel* (3rd ed.). Pearson.
5. Simon Benninga & Tal Mofkadi (2017). *Principles of Finance with Excel* (3rd ed.). Oxford University Press.

Important Note: The practical exam will be taken by an outside examiner.

Course Code: 24ECO0501I

Internship @ 4 CREDITS

Semester-VI

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DSC-A15

Indian Economy-II

Course Code: 24ECO0601T

Maximum Marks: 100 **(Total Credits: 04)**
Internal Assessment: 30 **(Theory)**
External Assessment: 70 **Time Allowed: 3 Hours**

Course Objectives: To examine India's foreign trade, balance of payments, and exchange rate policies while analyzing its financial sector, monetary policies, inflation trends, and the demographic and social factors influencing population dynamics.

Unit-I

Balance of payment: Salient features of India's Foreign Trade, Composition, Direction and Organization of Foreign Trade, Recent changes in Foreign Trade, Balance of Payment, Tariff Policy, India and WTO requirements, Bilateral Trade Agreements and their implications. Capital Account Dynamics: FDI, FPI etc. Foreign exchange market and Exchange rate management in India.

Unit-II

Money and Banking: Financial sector reforms, Organization of India's money market, Changing role of RBI, Commercial Banks Development Finance Institutions, Foreign Banks and Non-banking financial institutions, Indian capital market and SEBI, Development in Global financial markets and its relationship with Indian financial sector Commodity market in India-spot and future market, role of FMC.

Unit-III

Inflation: Definition, Trends, Estimates, Consequences and remedies (control), Wholesale price index: components and trends Consumer price index: components and trends.

Unit-IV

Demography of India: Population structure (age, sex), Population growth trends in India, factors influencing fertility and mortality rates, population policies, and impact of social factors like case and religion on demographics, analysis of census data related to India regional variations, Indices at global level like Happiness Index, Hunger Index.

Course Outcomes: At the end of the course, the students would be able to

CO1. Explain India's foreign trade structure, balance of payments, and the implications of trade agreements and exchange rate policies.

CO2. Develop analytical skills to assess financial sector reforms, banking structures, and the role of monetary policy in economic stability.

CO3. Critically evaluate inflation trends, demographic shifts, and their economic and social implications, using global indices for comparative analysis.

Suggested Readings List

1. Uma Kapila (Ed.), *Indian Economy Since Independence: A Comprehensive and Critical Analysis of India's Economy, 1947-2023*, 34th Edition, Academic Foundation, 2023.
2. Reserve Bank of India, *Handbook of Statistics on Indian Economy*, Latest Edition.
3. Government of India, Ministry of Finance, *Economic Survey*, Latest Edition.
4. Government of India, Ministry of Finance, *Union Budget*, Latest Edition.
5. Government of India, Ministry of Commerce and Industry, *Foreign Trade Policy*, Latest Edition.
6. Government of India, Department for Promotion of Industry and Internal Trade, *SIA Newsletters* and *FDI Factsheets*, Various Issues.
7. Timothy Besley, *Contemporary Issues in Development Economics*, Palgrave Macmillan.
8. Kaushik Basu and Annemie Maertens (Eds.), *The New Oxford Companion to Economics in India*, Oxford University Press, 2012.
9. S. Mahendra Dev, *Inclusive Growth in India*, Oxford University Press, New Delhi.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

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DSC-A16

Economics of Money and Banking

Course Code: 24ECO0602T

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objectives: To understand the evolution, functions, and measures of money, analyse banking systems, financial markets, and monetary policies, and evaluate the impact of digital payments, financial innovations, banking reforms, and global financial crises.

Unit-I

Meaning, Evolution, and Functions of Money, Types of Money: Commodity Money, Fiat Money, Digital Currency, Money Supply and Measures (M1, M2, M3, M4), Theories of Money: Quantity Theory (Fisher and Cambridge Versions), Demand for Money: Keynesian, Classical, and Post-Keynesian Theories

Unit-II

Structure of the Banking System: Commercial Banks, Cooperative Banks, Development Banks, Functions of Commercial Banks: Credit Creation, Investment, and Financial Services, Banking Regulations: Basel Norms and RBI Guidelines, Non-Banking Financial Companies (NBFCs) and Their Role Financial Markets: Money Market and Capital Market

Unit-III

Role and Functions of a Central Bank (With Special Reference to RBI), Instruments of Monetary Policy: CRR, SLR, Repo, Reverse Repo, Open Market Operations, Inflation and Monetary Policy: Inflation Targeting Framework, Transmission Mechanism of Monetary Policy, Impact of Monetary Policy on Growth and Stability

Unit-IV

Digital Payments and FinTech Innovations: UPI, Cryptocurrency, CBDCs, Financial Inclusion and Banking Reforms in India, Global Financial Crises and Their Impact on Banking Systems, Role of International Financial Institutions: IMF, World Bank, BIS Challenges in Banking: NPAs, Banking Frauds, and Cybersecurity

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain the role of money, its theoretical foundations, and its influence on economic stability.
CO2. Develop analytical skills to assess the banking system, financial regulations, and monetary policy frameworks.
CO3. Critically evaluate emerging financial technologies, banking challenges, and the role of global financial institutions in shaping monetary policies.

Suggested Readings List

1. Frederic S. Mishkin, *The Economics of Money, Banking, and Financial Markets*, 13th Edition, Pearson, 2022.
2. R. S. Sayers, *Modern Banking*, 7th Edition, Oxford University Press, 1979.
3. R. R. Paul, *Monetary Economics*, Kalyani Publishers, 2020.
4. Frank J. Fabozzi and Franco Modigliani, *Capital Markets: Institutions and Instruments*, 5th Edition, Pearson, 2018.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

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DSC-A17 (First Option)
Dynamics of Labour Market

Course Code: 24ECO0603T (i)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objectives: To understand labour market evolution, dynamics, and policies, analyse labour demand-supply theories and market structures, and evaluate the impact of human capital, education, and wage differentials on labour outcomes.

Unit-I

Evolution and Growth of Labour Economics, Overview of Labour Market: The actors in the Labour Market; Need of Labour Market Theories, Dynamics of Labour Market.

Labour Market Dynamics in India: Employment, Unemployment and Labour Force Dynamics, Structural Changes in the Economy and Employment, Wage Patterns and Inequality, Increasing Informalization of Employment: Challenge of Social Security, Employment Strategies, Policies and Programmes

Unit-II

Labour Demand: Neoclassical Model of Labour Demand: Employment Decision in Short-run and Long-run, Elasticity of Demand for Labour and its Applications. Neoclassical Model of Labour Supply; Household Production Model of Labour Supply; Hours of Work Decision.

Unit-III

Labour Market Equilibrium (Competitive market): Equilibrium in a single Competitive Market, Competitive Equilibrium across Labour Markets; The Cobweb Model. Labour Market Equilibrium (Non-competitive market): Outcomes of Non-competitive Labour Markets: Monopsony, and Monopoly,

Unit-IV

Human Capital and Labour Market: Education in the Labour Market: The Schooling Model, Education and Earning, Estimating the Rate of Return to Schooling, The Wage Structure and Wage Differentials: Wage Structure; Compensating Wage Differential and Job Amenities.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain labour market theories, employment trends, and the challenges of informalization and social security.
CO2. Assess labour demand, supply models, and equilibrium conditions in competitive and non-competitive markets.
CO3. Critically evaluate the impact of education, human capital investment, and wage structures on labour market dynamics.

Suggested Readings List

1. Butler, A.D., *Labor Economics and Institutions*, American Publishing Company, 1972.
2. George, J.B., *Labour Economics*, McGraw Hill, 1996.
3. Marshall, F.R., Briggs, V.M., & King, A.G., *Labor Economics*, Richard D. Irwin Inc., 1984.
4. McConnell, C.R., Brue, S.L., & Macpherson, D.A., *Contemporary Labor Economics*, 12th Edition, McGraw Hill, 2019.
5. Burton, F.J., Benham, L.K., Vaughn III, W.W., & Hanagan, R.J. (Eds.), *Readings in Labor Market Analysis*, Holt, Rinehart and Winston, Inc., 1971.
6. Rees, A., *The Economics of Work and Pay*, 4th Edition, Harper and Row, 1986.
7. Sen, A.K., *Employment, Technology and Development*, Oxford University Press, 1975.
8. Solow, R.M., *The Labor Market as a Social Institution*, Basil Blackwell, 1990.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

DSC-A17 (Second Option)

Economics of Social Sector

Course Code: 24ECO0603T (ii)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objectives: To understand the economics of education, human capital theory, and its role in growth, educational planning and financing, and evaluate health economics, healthcare markets, and related public policies.

Unit-I

Economics of Education: Concept and scope of Economics of Education; Education as consumption and investment goods; Human capital-concept and components of human capital; Education and economic growth; Cost of education-Expenditure on education, private costs and social cost, direct and indirect cost; Benefits of education-Direct and indirect benefits, private and social benefits; Cost-Benefit analysis in education.

Unit-II

Educational Planning and Financing: Approaches to educational planning- Production function models; Manpower Requirement Approach, Input-Output model, Gender based Approach; Educational planning in developing countries with special reference to India, Role of financing in educational development, educational financing in India- equity and efficiency effects of financing education in India.

Unit-III

Health Economics: Concepts, definition and components, Measures of health status; Economic Evaluation of Health care; Health care markets, Demand for Health care, Supply side considerations, Market for health insurance.

Unit-IV

Public Policy on Health and Development Dimensions: Public policy in health care delivery- role of state; Health dimension of development –Poverty and Malnutrition; Inequalities in health – Class and gender perspectives, Health care in India: Post Reform Scenario.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain the role of education as an economic investment and assess the costs and benefits of education.
CO2. Examine educational planning models, financing mechanisms, and their impact on economic development.
CO3. Critically evaluate healthcare policies, health inequalities, and the relationship between health, poverty, and development.

Suggested Readings List

1. Berman, P. (Ed.), *Health Sector Reform in Developing Countries: Making Health Development Sustainable*, Harvard University Press, 1995.
2. Blaug, M., *Introduction to Economics of Education*, Penguin, 1972.
3. Cohen, E., & Gaske, T., *Economics of Education*, Pergamon Press, 1989.
4. Henderson, J. W., *Health Economics and Policy*, 8th Edition, Cengage Learning, 2022.
5. Klarman, H.E., *The Economics of Health*, Columbia University Press, 1965.
6. McMahon, W.W., *Education and Development: Measuring the Social Benefits*, Oxford University Press, 1999.
7. Psacharopoulos, G. (Ed.), *Economics of Education: Research and Studies*, Pergamon Press, 1987.
8. Tilak, J.B.G., *Education for Development in Asia*, Sage Publications, 1994.
9. Vaizey, J., *Economics of Education*, Faber and Faber, 1962.
10. Woodhall, M., *Cost-Benefit Analysis in Educational Planning*, UNESCO, 1992.
11. World Bank, *World Development Report 1993: Investing in Health*, Oxford University Press, 1993.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

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DSC-A18 (First Option)

Agriculture for Sustainable Livelihood

Course Code: 24ECO0604T (i)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objectives: To understand agricultural livelihood options, business models, and smart farming technologies, sustainable practices and climate strategies, and evaluate horticulture, policies, and government programs for farm productivity and sustainability.

Unit-I

Livelihood options in Agriculture, existing business models and the structure of start-up solutions in agriculture and life skills. Integrating technological advancements in the farming sector, IoT applications in farming sector including crop planning, management, post-harvest and marketing. vertical farming, post-harvest food handling and product diversification.

Unit–II

Organic farming, Natural farming and Conservation Agriculture- their benefits and demerits, Climate change impact in agriculture, climate change mitigation and adaptation strategies. Role of agri-informatics in smart farming, minimising the impact of climate change and enhancing resource use efficiency.

Unit–III

Importance of horticulture in terms of economy, production, employment. Generation, environmental protection and human resource development. Scope for horticulture in India. Fruit and Vegetable zones of India.

Unit–IV

Agricultural policies that impact on farm productivity and profitability, existing policies and its impact on agriculture sector, existing government programs towards farmer's welfare and their merits and demerits. Agricultural credit Policy – Crop insurance -Policies of Natural Resources Use – Policies for sustainable Livelihoods – Virtual water and trade -Sustainable food Security Action Plan.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain modern farming technologies, startup models, and innovative agricultural practices for improving productivity.
CO2. Assess climate change impacts, adaptation strategies, and the role of agri-informatics in sustainable agriculture.
CO3. Critically evaluate agricultural policies, credit mechanisms, and sustainability initiatives for ensuring food security and farmer welfare.

Suggested Readings List

1. Gangadhar Banerjee and Srijeet Banerji, Economics of sustainable agriculture and alternate production systems, Ane Books Pvt Ltd., 2017
2. Palaniappan, S.P., & Annadurai, K. (2018). Organic Farming Theory and Practice. Scientific Publishers. ISBN 978-81-7233-537-3. p- 257.
3. B.K.Desai and Pujari, B.T. Sustainable Agriculture : A vision for future, New India Publishing Agency, New Delhi, 2007.
4. Saroja Raman, Agricultural Sustainability – Principles, Processes and Prospects, CRC Press, 2013
5. Gopal Chandra De. 1980., Fundamentals of Agronomy. Oxford and IBH Publishing Co. Ltd., Bangalore.
6. Fundamentals of Horticulture, Edmond, J.B., Sen., T.L., Andrews, F.S and Halfacre R.G, 1963. Tata McGraw Hill Publishing Co., New Delhi.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

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DSC-A18 (Second Option)

Corporate Finance

Course Code: 24ECO0604T (ii)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objectives: To understand the financial system and its role in economic development, stock exchanges, trading mechanisms, and financial instruments, and evaluate capital budgeting, cost of capital, and corporate finance decisions.

Unit-I

Structure of Financial system - Financial institutions, Financial markets, Financial instruments and Financial services. Financial system and economic development. Indicators of financial development. Cautionary view of financial system in development-reasons

Unit-II

Stock exchanges - stock exchanges in India - BSE and NSE -auction trading and screen-based trading system - BOLT-Stock indices in India and abroad - BSE Sensitive index and Nifty indices; Dow Jones, NASDAQ, FTSE, Nikkei-kerb trading – stock split- derivatives-option trading-stock futures - exchange traded funds (ETF) - Credit ratings - credit rating institutions in India – CRISIL, ICRA and CARE.

Unit-III

Capital Budgeting: What is capital budgeting, need for capital budgeting, different steps in capital budgeting, Capital budgeting appraisal methods – payback method, accounting rate of return method, net present value method, interest rate of return method, benefit cost ratio method. Capital rationing, alternative methods of financing investments

Unit-IV

Cost of capital: Cost of debt capital, cost of share capital, cost of equity capital, cost of retained earnings; Capital structure and dividend policy decisions.

Course Outcomes: At the end of the course, the students would be able to
CO1. Explain the role of financial institutions, markets, and instruments in the economic development process.
CO2. Assess stock market operations, credit ratings, and financial instruments used for investment decisions.
CO3. Critically evaluate capital budgeting methods, cost of capital components, and financial strategies for corporate decision-making.

Suggested Readings List

1. M.Y. Khan and P.K. Jain, *Financial Management: Text, Problems and Cases*, 8th Edition, Tata McGraw Hill, 2018.
2. I.M. Pandey, *Financial Management*, 11th Edition, Vikas Publishing House, 2018.
3. Aswath Damodaran, *Corporate Finance: Theory and Practice*, 2nd Edition, John Wiley & Sons, 2001.
4. James C. Van Horne, *Fundamentals of Financial Management*, 13th Edition, PHI Learning, 2014.
5. Eugene F. Brigham and Michael C. Ehrhardt, *Financial Management: Theory and Practice*, 14th Edition, Cengage Learning, 2015.
6. Prasanna Chandra, *Financial Management: Theory and Practice*, 9th Edition, Tata McGraw Hill, 2017.
7. R.K. Srivastava and Anil Mishra, *Financial Management*, Oxford University Press, 2012.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

DSC-A18 (Third Option)

Advanced Econometrics

Course Code: 24ECO0604T (iii)

Maximum Marks: 100
Internal Assessment: 30
External Assessment: 70

(Total Credits: 04)
(Theory)
Time Allowed: 3 Hours

Course Objectives: To understand econometric test procedures, model specification, and selection, regression models and their applications, and evaluate time series techniques, stationarity tests, co-integration, and forecasting methods.

Unit-I

Test Procedures and Model Selection: Tests of specification and mis-specification, measurement errors, encompassing models, and criteria for model selection.

Unit-II

Functional Forms of Regression Model: How to measure elasticity: The Log- Linear Model;comparing Linear and Log- Linear Regression Models; How to measure Growth Rate; The Semilog Model; The Lin- Log Model: When the explanatory variable is Logarithmic; Estimation of Cobb- Douglas Production function and consumption function

Unit-III

Stationary, Unit Roots; Dicky Fuller, Augmented Dicky Fuller, , Co-Integration, Difference Stationary, Trend Stationary.

Unit-IV

Forecasting Techniques: Linear, Exponential Smoothing, Moving Averages, ARIMA, VAR Modelling, Problems with VAR Modelling.

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply model selection techniques, address specification issues, and understand measurement errors in econometrics.
CO2. Develop analytical skills to estimate and compare different regression models, including log-linear and Cobb-Douglas functions.
CO3. Critically assess time series properties, unit root tests, and forecasting techniques such as ARIMA and VAR modelling.

Suggested Readings List

1. Amemiya, T. - *Advanced Econometrics*, Harvard University Press, 1985.
2. Goldberger, A.S. - *Introductory Econometrics*, Harvard University Press, 1998.
3. Gujarati, D.N. - *Basic Econometrics*, 5th Edition, McGraw-Hill Education, 2009.
4. Hill, R.C., Griffiths, W.E., and Lim, G.C. - *Principles of Econometrics*, 5th Edition, Wiley, 2018.
5. Johnston, J. and DiNardo, J. - *Econometric Methods*, 4th Edition, McGraw-Hill, 1997.

Examiner's Note: The course contents of the courses having 04 credits will be distributed among 4 units and maximum marks will be assigned 100 marks (70 external: 30 internal). The maximum time duration for attempting the paper will be 3 hours. The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus of 02 marks each. In addition to that eight more question will be set, two questions from each unit. The students shall be required to attempt any five questions in all selecting one question from each unit in addition to compulsory question No. 1. All questions shall carry equal marks.

MIC 6 (VOC) (First Option)

Econometrics Applications in Social Sciences-II

Course Code: 24VOC604T (i)

Maximum Marks: 50 (Total Credits: 02)
Internal Assessment: 15 Marks (Theory)
External Assessment: 35 Marks **Time Allowed: 2 Hours**

Course Objectives: To understand dummy variable regression, interaction terms, and categorical models, time series econometric techniques; and evaluate panel data models, model selection, and forecasting methods in social science research.

Unit-I

Dummy Variable Regression and Interaction Terms, Logit and Probit Models for Binary Outcomes, Ordered and Multinomial Logit Models, Applications in Social Sciences, Dummy Variables and Panel Data; Fixed Effects vs. Random Effects Models, Hausman Test for Model Selection, Dynamic Panel Data Models (GMM Estimation), Applications in Social Sciences (Poverty, Education, Economic Growth).

Unit-II

Stationarity and Non-Stationarity (Unit Root Tests: ADF, PP), Autoregressive and Moving Average Models (ARMA, ARIMA), Vector Autoregression (VAR) and Impulse Response Functions, Cointegration and Error Correction Models

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply logit, probit, and multinomial models for analyzing categorical data in social sciences.
CO2. Develop analytical skills to assess time series properties, estimate ARIMA and VAR models, and interpret impulse response functions.
CO3. Critically evaluate panel data techniques, dynamic models, and forecasting methods using statistical software like R or Stata.

Suggested Readings List

1. Wooldridge, J.M. (2010). *Econometric Analysis of Cross Section and Panel Data* (2nd ed.). MIT Press.
2. Enders, W. (2014). *Applied Econometric Time Series* (4th ed.). Wiley.
3. Greene, W.H. (2018). *Econometric Analysis* (8th ed.). Pearson.
4. Baltagi, B.H. (2021). *Econometric Analysis of Panel Data* (6th ed.). Springer.

Important Note: The practical exam will be taken by an outside examiner.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks.

MIC 6 (VOC) (First Option)

Econometrics Applications in Social Sciences-II

Course Code: 24VOC604P (i)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 02)
(Practical)

Course Objectives: To understand dummy variable regression, interaction terms, and categorical models, time series econometric techniques; and evaluate panel data models, model selection, and forecasting methods in social science research.

Unit-I

Dummy Variable Regression and Interaction Terms, Logit and Probit Models for Binary Outcomes, Ordered and Multinomial Logit Models, Applications in Social Sciences, Dummy Variables and Panel Data; Fixed Effects vs. Random Effects Models, Hausman Test for Model Selection, Dynamic Panel Data Models (GMM Estimation), Applications in Social Sciences (Poverty, Education, Economic Growth), Practical applications with Excel, STATA and Phython

Unit-II

Stationarity and Non-Stationarity (Unit Root Tests: ADF, PP), Autoregressive and Moving Average Models (ARMA, ARIMA), Vector Autoregression (VAR) and Impulse Response Functions, Cointegration and Error Correction Models, Practical applications with Excel, STATA and Phython

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply logit, probit, and multinomial models for analyzing categorical data in social sciences.
CO2. Develop analytical skills to assess time series properties, estimate ARIMA and VAR models, and interpret impulse response functions.
CO3. Critically evaluate panel data techniques, dynamic models, and forecasting methods using statistical software like R or Stata.

Suggested Readings List

1. Wooldridge, J.M. (2010). *Econometric Analysis of Cross Section and Panel Data* (2nd ed.). MIT Press.
2. Enders, W. (2014). *Applied Econometric Time Series* (4th ed.). Wiley.
3. Greene, W.H. (2018). *Econometric Analysis* (8th ed.). Pearson.
4. Baltagi, B.H. (2021). *Econometric Analysis of Panel Data* (6th ed.). Springer.

Important Note: The practical exam will be taken by an outside examiner.

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MIC 6 (VOC) (Second Option)

Quantitative Techniques in Social Sciences-II

Course Code: 24VOC604T (ii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 02)
(Theory)
Time Allowed: 2 Hours

Course Objectives: To understand vectors, matrices, and their operations, determinants, inverse matrices, and equation-solving methods, and evaluate limits, continuity, and differentiation with their applications in mathematical analysis.

Unit-I

Vectors and Matrices: Vectors, Types of Vectors, Vector Operations, Linear combination of vectors, Definition of a matrix, Matrix Algebra, Types of matrices, Determinant; Determinant and its properties, Adjoint and inverse of a matrix, System of linear equations, Gaussian elimination, Cramer's rule, Inverse method.

Unit-II

Limit and Continuity: Structuring of Averages (Mean, Median, Mode), Limit of a function, Fundamental theorems on limits, Methods of finding the limit of a function, Continuity of function, Discontinuity of function, Derivatives; The basics of Derivatives, Technique of Differentiation, Rules of Differentiation, and Application of simple derivatives.

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply vector and matrix operations in solving mathematical and economic problems.
CO2. Develop analytical skills to determine matrix properties, solve linear equations, and evaluate determinants.
CO3. Critically assess the concepts of limits, continuity, and differentiation, applying them to mathematical and real-world scenarios.

Suggested Readings List

1. Amemiya, T. - *Advanced Econometrics*, Harvard University Press, 1985.
2. Goldberger, A.S. - *Introductory Econometrics*, Harvard University Press, 1998.
3. Gujarati, D.N. - *Basic Econometrics*, 5th Edition, McGraw-Hill Education, 2009.
4. Hill, R.C., Griffiths, W.E., and Lim, G.C. - *Principles of Econometrics*, 5th Edition, Wiley, 2018.
5. Johnston, J. and DiNardo, J. - *Econometric Methods*, 4th Edition, McGraw-Hill, 1997.

Important Note: The practical exam will be taken by an outside examiner.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks.

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MIC 6 (VOC) (Second Option)

Quantitative Techniques in Social Sciences-II

Course Code: 24VOC604T (ii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 02)
(Theory)
Time Allowed: 2 Hours

Course Objectives: To understand vectors, matrices, and their operations, determinants, inverse matrices, and equation-solving methods, and evaluate limits, continuity, and differentiation with their applications in mathematical analysis.

Unit-I

Vectors and Matrices: Vectors, Types of Vectors, Vector Operations, Linear combination of vectors, Definition of a matrix, Matrix Algebra, Types of matrices, Determinant; Determinant and its properties, Adjoint and inverse of a matrix, System of linear equations, Gaussian elimination, Cramer's rule, Inverse method.

Unit-II

Limit and Continuity: Structuring of Averages (Mean, Median, Mode), Limit of a function, Fundamental theorems on limits, Methods of finding the limit of a function, Continuity of function, Discontinuity of function, Derivatives; The basics of Derivatives, Technique of Differentiation, Rules of Differentiation.

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply vector and matrix operations in solving mathematical and economic problems.
CO2. Develop analytical skills to determine matrix properties, solve linear equations, and evaluate determinants.
CO3. Critically assess the concepts of limits, continuity, and differentiation, applying them to mathematical and real-world scenarios.

Suggested Readings List

1. Amemiya, T. - *Advanced Econometrics*, Harvard University Press, 1985.
2. Goldberger, A.S. - *Introductory Econometrics*, Harvard University Press, 1998.
3. Gujarati, D.N. - *Basic Econometrics*, 5th Edition, McGraw-Hill Education, 2009.
4. Hill, R.C., Griffiths, W.E., and Lim, G.C. - *Principles of Econometrics*, 5th Edition, Wiley, 2018.
5. Johnston, J. and DiNardo, J. - *Econometric Methods*, 4th Edition, McGraw-Hill, 1997.

Important Note: The practical exam will be taken by an outside examiner.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks

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MIC 6 (VOC) (Second Option)

Quantitative Techniques in Social Sciences-II

Course Code: 24VOC604P (ii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 02)
(Practical)
Time Allowed: 2 Hours

Course Objectives: To understand vectors, matrices, and their operations, determinants, inverse matrices, and equation-solving methods, and evaluate limits, continuity, and differentiation with their applications in mathematical analysis.

Unit-I

Vectors and Matrices: Vectors, Types of Vectors, Vector Operations, Linear combination of vectors, Definition of a matrix, Matrix Algebra, Types of matrices, Determinant; Determinant and its properties, Adjoint and inverse of a matrix, System of linear equations, Gaussian elimination, Cramer's rule, Inverse method, Economic Applications of Matrices using Excel, Stata softwares.

Unit-II

Limit and Continuity: Structuring of Averages (Mean, Median, Mode), Limit of a function, Fundamental theorems on limits, Methods of finding the limit of a function, Continuity of function, Discontinuity of function, Derivatives; The basics of Derivatives, Technique of Differentiation, Rules of Differentiation, and Application of simple derivatives in economics using excel.

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply vector and matrix operations in solving mathematical and economic problems.
CO2. Develop analytical skills to determine matrix properties, solve linear equations, and evaluate determinants.
CO3. Critically assess the concepts of limits, continuity, and differentiation, applying them to mathematical and real-world scenarios.

Suggested Readings List

1. Amemiya, T. - *Advanced Econometrics*, Harvard University Press, 1985.
2. Goldberger, A.S. - *Introductory Econometrics*, Harvard University Press, 1998.
3. Gujarati, D.N. - *Basic Econometrics*, 5th Edition, McGraw-Hill Education, 2009.
4. Hill, R.C., Griffiths, W.E., and Lim, G.C. - *Principles of Econometrics*, 5th Edition, Wiley, 2018.
5. Johnston, J. and DiNardo, J. - *Econometric Methods*, 4th Edition, McGraw-Hill, 1997.

Important Note: The practical exam will be taken by an outside examiner.

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MIC 6 (VOC) (Third Option)

Statistics using SPSS

Course Code: 24VOC604T (iii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 04)
(Theory)
Time Allowed: 2 Hours

Course Objectives: To understand statistics and data management using IBM SPSS, descriptive and inferential methods, and evaluate regression techniques for data-driven decision-making.

Unit-I

Introduction to Statistics: Overview of statistics and its applications, Introduction to IBM SPSS software, SPSS interface: Data View and Variable View, defining variables and variable types, Data cleaning and handling missing values, **Descriptive Statistics:** Measures of central tendency (Mean, Median, Mode), Measures of dispersion (Range, Variance, Standard Deviation), Frequency distributions and cross-tabulations, Bar charts, histograms, and pie charts, Boxplots and scatterplots

Unit-II

Introduction to Inferential Statistics: Concept of population vs. sample, Sampling techniques and sampling distributions, Hypothesis formulation (Null and Alternative Hypothesis), Parametric Tests, t-Tests (Independent and Paired), One-way ANOVA, Correlation analysis (Pearson's correlation), Non-Parametric Tests, Chi-Square Test, Mann-Whitney U Test, Kruskal-Wallis Test, Regression Analysis: Simple linear regression, Multiple regression, Interpreting SPSS output for regression models,

Course Outcomes: At the end of the course, the students would be able to
CO1. Navigate SPSS, manage datasets, and generate descriptive statistics and visualizations.
CO2. Develop analytical skills to apply hypothesis testing, parametric, and non-parametric tests using SPSS.
CO3. Critically assess regression models, interpret SPSS outputs, and report statistical findings effectively.

Suggested Readings List

1. Pallant, J. (2020). *SPSS Survival Manual.* McGraw-Hill Education.
2. Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics.* Sage Publications.Ecob, R., & Bartholomew,
3. D. J. (1982). Mathematical Methods in Social Sciences. *Journal of the Royal Statistical Society Series a (General), 145*(4), 509.
4. Landau, S., & Everitt, B.S. (2004). *A Handbook of Statistical Analyses Using SPSS.* Chapman & Hall/CRC.
5. Tabachnick, B.G., & Fidell, L.S. (2018). *Using Multivariate Statistics.* Pearson

Important Note: The practical exam will be taken by an outside examiner.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks.

MIC 6 (VOC) (Third Option)

Statistics using SPSS

Course Code: 24VOC604P (iii)

Maximum Marks: 50
Internal Assessment: 15 Marks
External Assessment: 35 Marks

(Total Credits: 04)
(Practical)

Course Objectives: To understand statistics and data management using IBM SPSS, descriptive and inferential methods, and evaluate regression techniques for data-driven decision-making.

Unit-I

Introduction to Statistics and SPSS: Overview of statistics and its applications, Introduction to IBM SPSS software, SPSS interface: Data View and Variable View, **Data Management in SPSS:** Importing and entering data in SPSS, Defining variables and variable types, Data cleaning and handling missing values, **Descriptive Statistics Using SPSS:** Measures of central tendency (Mean, Median, Mode), Measures of dispersion (Range, Variance, Standard Deviation), Frequency distributions and cross-tabulations, **Data Visualization in SPSS:** Creating bar charts, histograms, and pie charts, Boxplots and scatterplots

Unit-II

Introduction to Inferential Statistics: Concept of population vs. sample, Sampling techniques and sampling distributions, Hypothesis formulation (Null and Alternative Hypothesis), Parametric Tests in SPSS, t-Tests (Independent and Paired), One-way ANOVA, Correlation analysis (Pearson's correlation), Non-Parametric Tests in SPSS, Chi-Square Test, Mann-Whitney U Test, Kruskal-Wallis Test, **Regression Analysis Using SPSS:** Simple linear regression, Multiple regression, Interpreting SPSS output for regression models,

Course Outcomes: At the end of the course, the students would be able to
CO1. Navigate SPSS, manage datasets, and generate descriptive statistics and visualizations.
CO2. Develop analytical skills to apply hypothesis testing, parametric, and non-parametric tests using SPSS.
CO3. Critically assess regression models, interpret SPSS outputs, and report statistical findings effectively.

Suggested Readings List

1. Pallant, J. (2020). *SPSS Survival Manual.* McGraw-Hill Education.
2. Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics.* Sage Publications.Ecob, R., & Bartholomew,
3. D. J. (1982). Mathematical Methods in Social Sciences. *Journal of the Royal Statistical Society Series a (General), 145*(4), 509.
4. Landau, S., & Everitt, B.S. (2004). *A Handbook of Statistical Analyses Using SPSS.* Chapman & Hall/CRC.
5. Tabachnick, B.G., & Fidell, L.S. (2018). *Using Multivariate Statistics.* Pearson

Important Note: The practical exam will be taken by an outside examiner.

2 Set Complete
3 Copy extra of Letter

SEC 6 (Sixth Semester)

Econometrics Applications

Course Code: 24SEC0611P

Maximum Marks: 50
Internal Assessment: 15
External Assessment: 35

(Total Credits: 02)
(Theory)
Time Allowed: 2 Hours

Course Objectives: To understand econometrics, regression analysis, and CLRM assumptions, issues like multicollinearity and autocorrelation, and evaluate statistical methods and software applications for model diagnostics and estimation.

Unit-I

Nature and Scope of Econometrics, Types of Data: Cross-Sectional, Time Series, and Panel Data, Simple and Multiple Linear Regression Models, Assumptions of Classical Linear Regression Model (CLRM), Estimation using Ordinary Least Squares (OLS), Interpretation of Regression Output and Goodness-of-Fit Measures (R^2 and Adjusted R^2).

Practical: Data Handling in R/Python/Stata, Implementing OLS Regression in R/Python, Interpretation of Regression Results

Unit-II

Multicollinearity: Causes, Consequences, and Detection, Heteroscedasticity: Causes, Consequences, and Remedial Measures, Autocorrelation: Causes, Detection (Durbin-Watson Test), and Solutions, Model Specification and Functional Form Issues, Endogeneity and Instrumental Variable Approach

Practical: Detection of Multicollinearity (VIF test) in R/Python, Performing Heteroscedasticity Tests (Breusch Pagan, White Test), Checking for Autocorrelation (Durbin-Watson Test), Model Specification Testing (Ramsey RESET Test)

Course Outcomes: At the end of the course, the students would be able to
CO1. Apply OLS regression techniques, interpret regression outputs, and assess goodness-of-fit measures.
CO2. Develop analytical skills to detect and address econometric problems such as multicollinearity, heteroscedasticity, and autocorrelation.
CO3. Critically assess model specification issues, perform diagnostic tests, and implement econometric techniques using R, Python, or Stata.

Suggested Readings List

1. Greene, W. H. (2018). *Econometric Analysis* (8th ed.). Pearson.
2. Kennedy, P. (2008). *A Guide to Econometrics* (6th ed.). Wiley-Blackwell.
3. Baum, C. F. (2006). *An Introduction to Modern Econometrics Using Stata*. Stata Press.

Important Note: The practical exam will be taken by an outside examiner.

Examiner's Note: The course contents of the courses having 02 credits will be distributed among 2 units and maximum marks will be assigned 50 marks (35 external: 15 internal). The maximum time duration for attempting the paper will be 2 hours. The examiner is required to set five questions in all. The first question will be compulsory consisting of Five short questions covering the entire syllabus of 03 marks each. In addition to that four more question will be set, two questions from each unit. The students shall be required to attempt any three questions in all selecting one question from each unit consisting of 10 marks in addition to compulsory question No. 1. All questions shall carry equal marks.

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Department of Economics
GJUS&T, HISAR