

GOA INSTITUTE OF MANAGEMENT

Sanquelim Campus, Poriem, Sattari, Goa

Course: Econometric Applications for Healthcare Management Program: HCM Term: VI No of Sessions: 24 Academic Year: 2024-2025 Course Instructor(s): Prof. Swarna Parameswaran No of Credits : 3 email: swarna@gim.ac.in

1. ABOUT THE COURSE:

a. Brief Description:

With healthcare management becoming significantly data-driven, it becomes essential for management graduates to develop robust business strategies, develop insights, and create value. Econometric applications provide organisations with potent tools to unlock the power of data and aid in effective decision-making. This course aims to introduce econometric techniques to healthcare management students as an evidence-based decision-making tool, purely from an application point of view. By the end of the course, students will develop an adequate understanding of contemporary econometric methods and will be equipped to provide solutions to real-world problems using them.

b. Teaching Learning Method: Lectures, hands-on practical application exercises using datasets (R exercises)

S.No.	Course Learning Outcomes (CLOs)*	Bloom's learning level	PLOs mapped / Independent CLO**
1.	Students will acquire knowledge of different econometric methods and datasets.	Level 3: Apply	PLO A2. Graduating students use data-driven approach to present a solution to a management problem.
2.	Students will apply econometric methods to examine business problems in healthcare.	Level 3: Apply	PLO A1. Graduating students will be able to use an integrative approach to analyse healthcare business solutions.
3.	Students will employ software skills to undertake econometric analysis for HCM problems.	Level 3: Apply	PLO C2. Graduating students will be able to identify latest technology relevant in healthcare management.
4.	Students will analyse business outcomes in healthcare from econometric analysis.	Level 4: Analyse	PLO A2. Graduating students use data-driven approach to present a solution to a management problem.

2. PROGRAMME LEARNING OUTCOMES (PLO) AND COURSE LEARNING OUTCOMES (CLO)

5.	Students will interpret results from econometric analysis and recommend solutions to business problems	Level 5: Evaluate	PLO A2. Graduating students use data-driven approach to present a solution to a management problem
6.	Students will be able to select appropriate techniques to evaluate business scenario	Level 5: Evaluate	PLO A1. Graduating students will be able to use an integrative approach to analyze healthcare business solutions

* Minimum 6 CLOs for a course with more than 2 credits and minimum 4 CLOs for a course less than 2 credits

****** This should be as per the Curriculum map of the academic year in which the course is being conducted. All PLOs mapped to the course should be included. Please state the PLO in full.

For CLOs that are course specific and not linked to any PLO, please state 'Independent.'

4. SYLLABUS

- a. Synchronous (topics and sub-topics to be covered in class) -
- 1. Introduction to Econometrics- different data types and datasets
- 2. Linear Regression Models- Simple and multiple linear regressions, choice of functional forms, dummy variables, and interaction effects
- 3. Limited Dependent Variable Models- Linear Probability, logit, probit, multinomial logit, count data, and duration models
- 4. Time-series and forecasting- AR, MA, ARMA models
- 5. Panel Data Analysis- Fixed, and random effects models, difference-in-difference method.
 - b. Asynchronous (topics and subtopics for self-study through provided learning resources and MOOCs) –

Learning applications of econometric techniques through research papers/cases.

S. No.	Evaluation method	Weight	When	CLOs to evaluated*	be
1.	Class Participation	15%	Continuous		
2.	Assignment 1	25%	After session 10	CLO 1- CLO 4	
3.	Assignment 2	25%	Session 24	CLO 1- CLO 5	
4.	End-term Examination	35%	End of 24 sessions	All	

5. EVALUATION COMPONENTS:

* All CLOs to be evaluated, at least once in Mid-term or End-term. Level 1 and 2 CLOs should be evaluated only in Mid-term.

6. TEXTBOOKS AND LEARNING MATERIALS

- a. TEXTBOOKS
 - i. Basic Econometrics by Damodar Gujarati, Dawn Porter, and Sangeetha Gunasekar, 5th Edition, Tata McGraw Hill, 2017

- b. REFERENCE BOOKS
 - i. J.M. Wooldridge, Introductory Econometrics: A Modern Approach
- c. ADDITIONAL RESOURCES (JOURNALS, WEBSITE, VIDEO LINKS ETC.)
 - i. Research papers will be provided for the illustration of applications.
 - ii.
- d. TECHNOLOGY AND SOFTWARE
 - i. R
 - ii.
- e. MOOC courses
 - i.
 - ii.

7. SESSION PLAN

SESSION NO	ΤΟΡΙϹ	Faculty	Readings (Case, chapter, article etc.)	CLO directly covered	Mode (Online / Offline / Hybrid)
1-2	Introduction to	Dr. Swarna	Basic	CLO 1	Offline
	econometrics, types of	Parameswaran	Econometrics by		
2.5	Ginerale and Adultinale	Du Guana			11 de et al
3-5	Simple and Multiple	Dr. Swarna			Hybrid
	Linear Regression	Parameswaran	Econometrics by	CLO 3, CLO 4	
	wodels and their		Gujarati et al.		
	applications- OLS				
	estimation, hypothesis				
	testing, and goodness				
67	Choice of functional		Pacia		Offling
0-7	forms and testing	Dr. Swarna Daramoswaran	Economotrics by	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Onne
	model restrictions and	Falameswalan	Econometrics by		
	application to		Gujarati et al.		
	healthcare problems				
8-9	Econometric	Dr Swarna	Basic		Offline
0.0	applications in the case	Parameswaran	Econometrics by		onnic
	of hinary independent	I arameswaran	Guiarati et al.		
	variables and		Gujarati et al.		
	interactions between				
	variables				
10-11	Violation of regression	Dr. Swarna	Basic	CLO 1. CLO 2.	Hybrid
	model assumptions-	Parameswaran	Econometrics by	CLO 3, CLO 4	
	multicollinearity and		, Gujarati et al.		
	heteroscedasticity		-		
12-13	Econometric	Dr. Swarna	Basic	CLO 1, CLO 2,	Offline
	applications of linear	Parameswaran	Econometrics by	CLO 3, CLO 4,	
	probability, logit, and		Gujarati et al.	CLO 5	
	probit models in HCM				
14-15	Econometric	Dr. Swarna	Basic .	CLO 1, CLO 2,	<mark>Offline</mark>
	applications of	Parameswaran	Econometrics by	CLO 3, CLO 4,	
	multinomial logit		Gujarati et al.	CLO 5	
	models, count data,				
	and duration				
	regressions in HCM				
16-20	Introduction to time-	Dr. Swarna	Basic	CLO 1, CLO 2,	Offline

SESSION NO	ΤΟΡΙϹ	Faculty	Readings (Case, chapter, article etc.)	CLO directly covered	Mode (Online / Offline / Hybrid)
	series and forecasting techniques- AR, MA, ARMA models	Parameswaran	Econometrics by Gujarati et al.	CLO 3, CLO 4, CLO 5	
21-23	Panel data applications- fixed, and random effects models, and difference-in-difference applications	Dr. Swarna Parameswaran	Basic Econometrics by Gujarati et al.	CLO 1, CLO 2, CLO 3, CLO 4, CLO 5	Offline
24	Assignment feedback and review	Dr. Swarna Parameswaran		CLO 5, CLO 6	Offline

8. Other -