

Republic of the Philippines

BATANGAS STATE UNIVERISTY
The National Engineering University
Alangilan, Batangas City

COLLEGE OF INFORMATICS AND COMPUTING SCIENCES MASTER OF SCIENCE IN COMPUTER SCIENCE

COURSE INFORMATION SYLLABUS (CIS)

VISION		premier national university that develops leaders in the global knowledge economy.									41					
MISSION										A university committed to producing leaders by providing a 21st century learning environment through innovations in education, multidisciplinary research, and community and industry partnerships in order to nurture the spirit of nationhood						
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		he national economy, and					oie deve	elopme	nt.							
Course Title		eries Data Analysis and F	orecasti	ng for Bi	ısiness	and			Course	Code		MSD	S 511			
Course Category	Finance	onal Course							Prerequis	ito(c)						
Semester/year		Semester							Credit H			3				
Semester/year	secona i	semesier							Credit I	lours		J				
								Ref	erence CM	Ю		CM	O No.	07, s. 2	010	
Course Instructor																
									Date Prep	ared		ı				
									Revision			0				
Period of Study	AY 2023	3-2024							Revision	Date						
Course Rationale	This cou	urse provides a compreher	sive ove	erview of	time-s	eries d	ata ana	lysis a	nd forecas	ting te	chniq	ues, wi	th a foo	cus on		
and Description	applicat	ions in business and finan	ce. Stud	lents will	learn l	now to	analyz	e and n	nodel time	-series	data,	under	stand k	ey cond	epts	
	in time-s	series econometrics, and d	levelop i	forecastii	ng mod	els to 1	nake ir	forme	d business	and fi	nancia	al decis	sions.			
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		n Exam: 30%														
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	IGA	Institutional Graduate Attributes (IGA) Statements
		Knowledge Competence
	20111	Demonstrate a mastery of the fundamental knowledge and skills required for functioning effectively as a professional in the discipline, and an ability to integrate and apply them effectively to practice in the workplace.
	IGA2	Creativity and Innovation Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve
	-a.	problems.
	IGA3	Critical and Systems Thinking Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.
Institutional Creducts		Communication Communicate effectively (both orally and in writing) with a wide range of audiences, across a range of professional and personal contexts, in English and Pilipino.
Graduate Attributes (IGA)	IGA5	Lifelong Learning Identify own learning needs for professional or personal development; demonstrate an eagerness to take up opportunities for learning new things as well as the ability to learn effectively on their own.
	IGA6	Leadership, teamwork, and Interpersonal Skills Function effectively both as a leader and as a member of a team; motivate and lead a team to work towards goal;
	IGA7	work collaboratively with other team members; as well as connect and interact socially and effectively with diverse culture. Global Outlook
		Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.
	IGA8	Social and National Responsibility
		Demonstrate an awareness of their social and national responsibility; engage in activities that contribute to the betterment of the society; and behave ethically and responsibly in social, professional and work environments.
	SO	Student Outcomes (SO) Statements
	SO1	Ability to apply information technology principles and practices.
	SO2	Ability to apply suitable software engineering principles and practices to develop and maintain stable, secure, scalable, and maintainable software.
	SO3	Ability to produce effective solutions to complex information technology problems.
Student Outcomes (SO)	SO4	Ability to recommend appropriate information technology solutions based on organizational needs and an evaluation of alternatives.
	SO5	Ability to identify and discuss professional, individual, organizational, societal, and regulatory implications of information systems and technology
	SO6	Ability to select technologies, policies, and procedures to assure the confidentiality, integrity, and availability of information and IT systems.
	OPYO	ODIO SERIE
	CDIO	CDIO Skills
	CDIOI	Disciplinary Knowledge & Reasoning Knowledge of underlying mathematics and sciences, core engineering fundamental knowledge, advanced engineering fundamental knowledge, methods and tools
	CDIO2	Personal and Professional Skills & Attributes
CDIO Framework Skills		Analytical reasoning and problem solving; experimentation, investigation and knowledge discovery; system thinking; attitudes, thoughts and learning; ethics, equity and other responsibilities
	CDIO3	Interpersonal Skills: Teamwork & Communication
		Teamwork, communications, communication in a foreign language
	CDIO4	Conceiving, Designing, Implementing & Operating Systems
		External, societal and environmental context, enterprise and business context, conceiving, systems engineering and management, designing, implementing, operating
	SDG	SDG Skills
1	SDG1	Envisioning

		Establish a link between long-term goals and and immediate actions, and motivate people to take action by harnessing their deep aspirations.								
	SDG2	ritical Thinking and Reflection								
Sustainable		Examine economic, environmental, social and cultural structures in the context of sustainable development, and challenges people to examine and question the underlying assumptions that influence their world views by having them reflect on unsustainable practices.								
Development Goals Skills	SDG3	Systemic Thinking								
Gouls Simis		Recognise that the whole is more than the sum of its parts, and it is a better way to understand and manage complex situations.								
	SDG4	Building Partnerships								
		Promote dialogue and negotiation, learning to work together, so as to strengthen ownership of and commitment to sustainable action through education and learning.								
	SDG5	Participation in Decision Making								
		Empower oneself and others through involvement in joint analysis, planning and control of local decisions.								

COURSE POLICIES

A. GRADING SYSTEM

The grading system adopted by this course is as follows:

Excellent	1.00	98	-	100
Superior	1.25	94	-	97
Very Good	1.50	90	-	93
Good	1.75	88	-	89
Meritorious	2.00	85	-	87
Very Satisfactory	2.25	83	-	84
Satisfactory	2.50	80	-	82
Fairly Satisfactory	2.75	78	-	79
Passing	3.00	75	-	77
Failure	5.00	Ве	low 7	0
Incomplete		INO	C	

*Students who got a computed grade of 70-74 will be given an appropriate remedial activity in which the final grade should be either passing (3.0) or failure (5.0).

B. CLASS POLICY

Prompt and regular attendance of students is required. Total unexcused absences shall not exceed ten (10) percent of the maximum number of hours required per course per semester (or per summer term). A semester has 18 weeks.

MISSED EXAMINATIONS

Students who failed to take the exam during the schedule date can be given a special exam provided he/she has valid reason. If it is health reason, he/she should provide the faculty with the medical certificate signed by the attending Physician. Other reasons shall be assessed first by the faculty to determine its validity.

ACADEMIC DISHONESTY

Academic dishonesty includes acts such as cheating during examinations or plagiarism in connection with any academic work. Such acts are considered major offenses and will be dealt with according to the University's Student Norms of Conduct.

DROPPING

Dropping must be made official by accomplishing a dropping form and submitting it at the Registrar's Office before the midterm examination. Students who officially drop out of class shall be marked "Dropped" whether he took the preliminary examination or not and irrespective of their preliminary grades.

A student who unofficially drops out of class shall be given a mark of "5.0" by the instructor.

C. OTHER COURSE POLICIES AND REQUIREMENTS

Teaching, Learning, and Assessment (TLA) Activities

Ch.	Topics / Reading List	Wks	Topic Outcomes	ILO	so	Delivery Method
	Orientation & Introduction	1	Presentation of Syllabus, Class Rules			Lecture / discussion
1	Introduction to Time-Series Data	2	Overview of time-series data Components of time-series: trend, seasonality, and noise Time-series data visualization techniques	1	1,5	Lecture / discussion
2	Time-Series Descriptive Analysis	3,4	Measures of central tendency and dispersion			Lecture / discussion

			Autocorrelation and partial autocorrelation functions, Box-Jenkins methodology for time- series analysis	2	1,5	
3	Regresssion Models, Times series decomposition	5,6	Introduction, Least Squares Estimation, statistical inference, Prediction, Variable selection, regression models, Classical decomposition,X11, SEATS, STL	3	1,4	Lecture / discussion
4	Time-Series Modeling - ARIMA Models	7,8	Autoregressive (AR) models Moving average (MA) models Integrated (I) models Introduction to ARIMA models	3	1, 3,4	Lecture / discussion /Lab Activity
	Assessment no.1: Midterm Examination	9			1	Online Examination
5	Advanced Time-Series Models	10	Seasonal ARIMA (SARIMA) models Exponential smoothing methods Introduction to state-space models	4	1,3,4	Lecture / discussion /Lab Activity
6	Model Selection and Diagnostic Checks	11,12	Model identification, estimation, and testing Diagnostic checks for time-series models Model selection criteria (AIC, BIC)	5	6	Discussion/ Simulation Demo and Lab Assessment
7	Forecasting Techniques	13	Point forecasts and interval forecasts Evaluation metrics for forecasting accuracy Forecasting with exogenous variables	5	5	Lecture / discussion
8	Financial Time-Series Analysis	14, 15	Time-series analysis in financial markets Volatility modeling (ARCH, GARCH models) Event studies and abnormal returns	6	5	Lecture / discussion /Lab Activity
9	Industry Applications and Case Studies	16	Application of time-series analysis in business and finance Case studies and real-world applications Emerging trends and challenges in time-series forecasting	6	5	Lecture / discussion
	Assessment no.2: Final Examination	17			1,5,6	Online Examination
	Submission of Research Project	18				

Ass	sessment Schedule								V	Veek N	lo.							
	Distribution	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
ent d	Problem Sets	X		X		X				X		X		X				
Sin bo	Midterm Examination							X										
Sses	Final Examination																X	
As	Final Project															X		

Ą	ΠOα			STUDENT	OUTCOMES	(SO): Mapp	ing of Assess	sment Tasks (A	T)		
-	iLOs	SO1	SO5	SO6				C		P	A

				_		-		
	ILO1	. X		X		X	X	X
T	· ILO2	2	X				X	
ΙĚ	E ILO	3 x				X		
SO	≥ ILO	1	X					X
Ö	ILO:	5						
	ILO	5						

	II Oa	INSTITUTIONAL GRADUATE ATTRIBUTES (IGA): Mapping of Assessment Tasks (AT)									
ing	ILOs	IGA1	IGA2	IGA3							
apping	ILO1	X									
Ϋ́	ILO2	X									
J.A	ILO3		X								
)-IG	ILO4		X	X							
	ILO5										
-	ILO6										

۲	II Oa	CDIO SKILLS				SDG Skills						
	ILOs	CDIO1	CDO2	CDIO4		SDG1	SDG2	SDG3		SDG4	SDG5	
pi ig	ILO1	X				X	X	X		X	X	
al [ap	ILO2	X				X	X	X		X	X	
	ILO3		X			X	X	X		X	X	
	ILO4		X	X		X	X	X		X	X	
0	ILO5											
=	ILO6											

rrepared by.		Reviewed by.	Approved by.
		DR. MARICEL GRACE Z. FERNANDO	DR. PRINCESS MARIE B. MELO
	Faculty	Department/Program Chairperson	College Dean/ Head, Academic Affairs
Date:		Date:	Date:

Remarks:

- 1 The syllabus is to be distributed to the students in the first week of the semester.
- 2 Any changes to the syllabus shall be communicated (in writing) to the Program Chair and the approved revised version must be
- 3 The course instructor may set a more stringent similarity percentage (minimum 20%) for their respective courses pertaining to student's