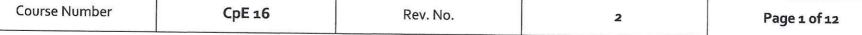


Course Syllabus for Methods of Research





EFFECTIVE DATE	REV. NO.	REVISION TYPE	CHANGE DESCRIPTION	PAGE AFFECTED	ORIGINATOR
January 20, 2025	2	Partial	Revised updating the course number, course outcomes, pre-requisite courses, course contents, and references	ALL	Melecio A. Cordero, Jr.
February 12, 2024	1	Partial	Revised updating the course alignment to program outcomes, teaching and learning activities, learning materials and assessment tasks	ALL	Jeannalen P. Lunod
January 31, 2022	Ø	New	Newly established in accordance to the Quality Management System Requirements	ALL	Melecio A. Cordero, Jr.
		The talliant was any and the same of the s			
			ELECTRONICALLY		
			RELEASED		

Author:

Reviewer:

Verifier:

Validator:

Final Approver:

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Document Control Indicator

MARICEL G. DAYADAY
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Vide President for Academic
Affairs

Note President for Academic
Affairs



Date: 2025 - 01 . 02

Date:

2025-01.07

Date:

2025-01.14

Date:

2025.01-16

Date: 2025-01.10



	···	U	INIVERSITY OF SOUTHERN MINDANAO			
Course Number	CpE 16	Course Title	Methods of Research	Rev. No.	2	Page 2 of 12

	INSTITUTIONAL POLICIES
Vision	Quality and relevant education for its clientele to be globally competitive, culture sensitive and morally responsive human resources for sustainable development.
Mission	Help accelerate socio-economic development ^{M2} , promote harmony among the diverse cultures ^{M2} and improve quality of life ^{M3} through instruction, research, extension and resource generation in Southern Philippines.
Core Values	G-Goodness, R-Responsiveness, E-Excellence, A-Assertion of Right and T-Truth
USM Quality Policy Statement	The University of Southern Mindanao, as a premier university, is committed to provide quality instruction, research development and extension services and resource generation that exceed stakeholders' expectations through the management of continual improvement efforts on the following initiatives. 1. Establish key result areas and performance indicators across all mandated functions; 2. Implement quality educational programs; 3. Guarantee competent educational service providers; 4. Spearhead need-based research outputs for commercialization, publication, patenting, and develop technologies for food security, climate change mitigation and improvement in the quality of life; 5. Facilitate transfer of technologies generated from research to the community for sustainable development; 6. Strengthen relationship with stakeholders; 7. Sustain good governance and culture, sensitivity; and 8. Comply with customer, regulatory and statutory requirements.
Goals of the College	The USM College of Engineering and Computing aims to provide quality education on the various fields of engineering and related technologies; meet the community's trained manpower in engineering and information technology in various technical and managerial capacities; and conduct researches and extension activities geared towards the amelioration of technological, environmental and human resource problems in the region and the country at large
Department Objectives	The program aims to prepare the students for professional career who will effectively and efficiently meet the scientific, technological and various needs of business, industries and communities in the global economy. Aside from their professional knowledge and skills, the graduates must also possess strong foundation in the physical and basic engineering sciences as well as in human relations to enable them to meet the challenges being brought about by the rapid technological developments.

		PROGRAM INFORMATION			No. of the last of
Degree Program	BS Computer Engineering	CHED CMO Reference	87 S2017	BOR Approval	BOR Res. 118 s. 2018







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			COURSE DETAILS	¥	
Course Title	Methods of Research				
Course Number	CpE 16		Curriculum Component		
Credit (Unit)	2-0-2	LECTURE(Unit-Hours)			
	EngMath o5 -Engineering	EECT ONE (OTHE-110013)	2-2	LABORATORY(Unit-Hours)	0-0
Prerequisites	Data Analysis GE 01 - Understanding the self CpE 09 - Logic Circuits and Design	Co-requisites	None	Year Level/Semester Offered	3 rd Year - Second Semester
Course Description	This course introduces students t data analysis, and interpretation. world problems. Emphasis is place end of the course, students will be	ed on ethical considerations, or	ritical thinking and desired the	 essential topics such as research desig ant literature, and apply appropriate lls to evaluate and communicate rese	gn, data collection techniques, methodologies to address real- arch findings effectively. By the
Faculty in charge		- propared to design and condi	oct their own research projects.		
Consultation Hours			Contact Information		

In 3-5 ye	PROGRAM EDUCATIONAL OBJECTIVES (PEO) ars, the BSCpE graduates of USM shall:		MISSION	ı
	Provide leadership in the field of computer engineering in various development programs both public and private	М1	M2	Мз
PEO 2	Equip with technical, conceptual and human resource skills	✓		
PEO 3	Pursue entrepreneurial activities	/		1
PEO 4	Able to adapt to diverse culture	1		1
EO ₅	Pursue advanced studies in emerging related fields		✓	
PEO 6	Be a creative, innovative and responsible computer engineer adhering, but not limited to, professional, moral and legal standards		1	1
	, moral and legal standards	✓	✓	1





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	PROGRAM OUTCOMES (PO)	T				10	10
Up	on graduation, the University of Southern Mindanao students must be able to:	PE01	PEO2	PEO ₃	PE04	PEO ₅	>E0(
a)	understand at least one specialized field of Computer Engineering practice				\Box		
b)	communicate effectively	1	~			1	V
c)	function on multidisciplinary teams		1			1	
d)	apply professional and ethical responsibility			1	1		
e)	apply knowledge of contemporary issues	1	1			1	
f)	design and conduct experiments, as well as to analyze and interpret data		1				✓
g)	apply knowledge of mathematics and arisms are also arisms	1	1		\Box	-	-
	apply knowledge of mathematics and science to solve engineering problems	1	1	1	\vdash	-+	_
h)	design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and sidentify, formulate and the social system.	1	1			\dashv	-
i)	identity, formulate, and solve engineering problems						
j)	recognize the need for, and an ability to engage in life-long learning		1				
k)	use techniques, skills, and modern engineering tools necessary for engineering practice					1	
1)	apply knowledge of engineering and management principles as a mount of the last of the las		1				
<u></u>	apply knowledge of engineering and management principles as a member and leader in a team, to manage projects and in multidisciplinary environments	1		1	1	,	/
m)	identify the impact of engineering solutions in a global, economic, environmental, and societal context	1	1				V
		V	V			1 "	**

	COURSE OUTCOMES (CO)	POa	POb	Poc	POd	POe	POf	POg	Poh	POi	Poj	Pok	POI	- mO
Jpon p	essing this course, the students must be able to: Course Alignment to Program Outcomes													- Caller
CO1	Show understanding on underlying concepts, principles, and ethical considerations in research				Е						E			
CO ₂	Equip students with the ability to formulate clear and focused research questions, design appropriate methodologies, and collect reliable data to address specific academic or practical problems.					Е				Е				





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Enable students to utilize qualitative and quantitative tools for analyzing data and interpreting findings in a structured and CO3 meaningful way. E * Level (follow the legend used in the most relevant PSG/CMO)

[E] = Enabling. This enables the student to attain the Program Outcome (PO)

[D] = Demonstrative. This demonstrates the student's attainment of the Program Outcome (PO)

			COURSE LEARNING	G PLAN				
Intended Learning Outcomes (ILO) By the end of the learning experience*, students must be able to:	Aligned to CO:	Time Frame (Week)	Course Content (Topics)		earning Activities FLA) Learning Activities	Learning Materials	Assessment Tasks (AT)	Suggested Readings
 1.1 restate the classroom and university policies 1.2 recall the overview of the course and the grading system 		1	 Classroom and University Policies Course Overview and Grading System 	Orientation	The second secon	 USM Code Student Manual Course Syllabus 		[8] [9] pp. 12-13
 2.1 define research and enumerate its values and characteristics 2.2 identify the types of research sources of problems 2.3 able to identify and understand the research problem 	CO1	2	Basic Concepts of Research Definition of Research Characteristics of Research Values of Research Types of Research Research Process Research problem Sources of problems Characteristics of a good problem	LectureInteractiveDiscussion	ReadingGroupExercises	Textbook (E-book)Lecture slides	QuizAssignment	[4] pp. 60-72 [10] pp 1- 7
3.1 define plagiarism3.2 able to devise a research title3.3 identify the parts of the	CO ₁	3	 Definition of Plagiarism Plagiarism Detection Tools Devising a title of the research 	LectureInteractiveDiscussion	ReadingGroupExercises	Textbook (E-book)Lecture	Assignment	[4] pp. 2-21





[[]I] = Introductory. This introduces the student to the Program Outcome (PO).



Test can, contains	Course Number		CpE 16	Course Title		Method	s of Research			Rev	No.	2	Page 6 of 12
conceptual f	rstand and theoretical and rameworks			report or investigation Parts of the research Statement of the pro Theoretical and Con Frameworks	n report oblem				slides				
	of reviews by Ls ify the sources of literature review	CO1	4	Reviewing the Literature O Purpose of the Revie O Meaning of Literatur O Types of Related Lite Studies O Sources of Materials Review	re erature and	Lecture Interactive Discussion	ReadingGroupExercises	•	Textbook (E-book) Lecture slides		uiz ssignn		[3] pp. 39-56 [11] pp 1 - 5
5.1 describe and different met 5.2 able to descri qualitative met 5.3 able to descri quantitative r	hods of research be the different ethods be the different	CO1	5	Methods and Procedures O Qualitative Methods 1. Historical Methods 2. Ethnographic Me 3. Phenomenologic 4. Content Analysis O Quantitative Methods 1. Case Studies 2. Surveys 3. Developmental State 4. Assessment or Even Method 5. Comparative Studies 6. Correlational Studies 7. Follow up Studies 8. Trend and Project 9. Ex Post Facto Res	ethod al Method Method d of Research tudies valuation dies dies dies tion Studies	Lecture Interactive Discussion	 Reading Group Exercises 	•	Textbook (E-book) Lecture slides	• Qu • As	Jiz signm	ent [[1] pp. 38-56 [12] [13]







Course Number		CpE 16	Course Title		Metho	ds of Research		Rev. No.	2	Page 7 of 12
6.1 identify and understand the			10. Participatory Res 11. Documentary Re	esearch	Lecture	Don't live				
different experimental methods of research 7.1 Understand the concepts of	CO1, CO2	6	 Classification of E True Experiments Quasi Experiments Non-experiments 	Experiments stal Research	Interactive Discussion	ReadingGroupExercises	Textbook (E-book)Lecture slides	QuizAssign		[3] pp. 35-36 [4] p. 26
sampling design 7.2 Identify and apply the sampling techniques in determining the sample size	CO2, CO3	7	Sampling Design Population Sampling Purpose of Sampling Sampling Techniques Types of Sampling Size of the Sample		Lecture Interactive Discussion	ReadingGroupExercises	Textbook (E-book)Lecture slides	QuizAssign	ment	[2] pp. 70 - 81 [3] pp.228- 266 [15]
8.1 Identify the kinds of data and its sources 8.2 Identify and understand the criteria of research tools	CO2, CO3	8	Sources Of Data and Research Kinds of Data in terms General Criteria for Research Research Research Seneral Criteria for Research Research	s of Sources esearch Tool	Lecture Interactive Discussion	ReadingGroupExercises	/F. I I.	Quiz Assignr	ment :	[1] pp. 108 - 113 [3] pp. 22-35, 73-75 [4] pp. 186- 214 [5] pp. 18-36
All ILOs covered in Midterm		9			MIDTERM	EXAMINATION	<u> </u>			
10.1 identify and describe the different tools for research	CO ₂ , CO ₃	10	Tools for Research Technique o Used in in generating of		Lecture Interactive	ReadingGroup	• Textbook (E-book)	Quiz Assignn		1] pp. 113 -







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techniques			 Questionnaires Research Interview Observation Method Measurement or Objective Method Other Measuring Techniques 	Discussion		Exercises		Lecture slides			[4] pp. 263- 295
 11.1 identify the describe variables for correlational studies 11.2 formulate hypothesis and assumptions 	CO2, CO3	11	Variables Classification of Variables Variables in Correlational Studies Formulating Hypothesis Characteristics of hypothesis Classification of hypothesis Sources of hypothesis Hypothesis and Assumptions	LectureInteractiveDiscussion	•	Reading Group Exercises	•	Textbook (E-book) Lecture slides	•	Quiz Assignment	[1] pp. 127- 128 [4] pp. 89- 105 [5] pp. 12-17
12.1 describe the descriptive and inferential statistics 12.2 understand and use measures of central tendencies	CO2, CO3	12	Statistical Tools for Data analysis O Kinds of Statistics 1. Descriptive 2. Inferential O Descriptive Statistics O Measures of Central Tendencies O Weighted Mean	LectureInteractiveDiscussion	•	Reading Group Exercises	•	Textbook (E-book) Lecture slides	•	Quiz Assignment	[2] pp. 103- 108 [4] pp. 89- 105
13.1 Describe and use different measures of dispersion	CO ₂ , CO ₃	13	- Development	LectureInteractive Discussion		Reading Group Exercises	•	Textbook (E-book) Lecture slides	•	Quiz Assignment	[2] pp. 111- 114 [4] pp. 89- 105







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14.1 describe and use	T										
parametric tests for the analysis of differences	CO2, CO3	14	Types of Inferential Statistics o Parametric Test 1. Analysis of Differences	LectureInteractive Discussion		Reading Group Exercises	•	Textbook (E-book) Lecture slides	•	Quiz Assignment	[1] pp. 157- 158 [4] pp. 111- 141 [5] pp. 3-8
15.1 Describe and use different analysis of relationships	CO ₂ , CO ₃	15	Continuation of Parametric tests 2. Analysis of Relationships a. Coefficient of Variance b. Proportion Overlap	LectureInteractiveDiscussion	•	Reading Group Exercises	•	Textbook (E-book) Lecture slides	•	Quiz Assignment	[1] pp 165 - 175 [4] pp. 111- 141 [5] pp. 3-8
16.1 Describe and use non- parametric tests: Chi-square test	CO ₂ , CO ₃	16	Non-parametric Tests O Analysis of Differences 1. Chi-square test	LectureInteractiveDiscussion	0	Reading Group Exercises	•	Textbook (E-book) Lecture slides	•	Quiz Assignment	[1] pp 178 [4] pp. 111- 141 [6] pp. 3-8 [14]
17.1 Describe and use Friedman's ANOVA and z-test	CO ₂ , CO ₃	17	2 Friedmanda Amelinia CV	LectureInteractiveDiscussion	•	Reading Group Exercises	•	Textbook (E-book) Lecture slides	•		[1] pp 183 - 185 [4] pp. 186- 210 [5] pp. 219- 241 [6] pp. 18-36 [14]
All ILOs covered in the Course		18		FINALE	:VA	MINATION					

^{*} any interaction, course, program, or other experience in which learning takes place (https://www.edglossary.org/learning-experience/).





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Textbook/References

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- [3] Calmorin, L. (2010). Research and Statistics with Computer, National Book Store, Mandaluyong City, Metro Manila
- [4] Calmorin, L. and Calmorin, M. Research Methods and Research Writing, 2nd Edition
- [5] Cresswell, J. W. (2013). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications, INC. ISBN:1452226091, 9781452226095
- [6] Fraenkel, J. and Wallen, N. (2013) How to Design and Evaluate Research in Education 8th Edition
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[11] https://thesisbook.readthedocs.io/en/latest/Chapter%20II.html Retrieved on January 10, 2025

[12] https://www.omniconvert.com/blog/qualitative-research-definition-methodology-limitation-examples/ Retrieved on January 5, 2025

[13] https://libguides.uta.edu/quantitative_and_qualitative_research/quant Retrieved on December 27, 2024

[14] https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/parametric-and-non-parametric-data/ retrieved on December 28, 2024

[15] https://www.qualtrics.com/en-au/experience-management/research/sampling-methods/ Retrieved on January 5, 2025

Life-long Learning Opportunity

The skills and knowledge gained in the Methods of Research course empower learners to become critical thinkers and effective problem-solvers throughout their lives. By understanding how to design, conduct, and evaluate research, students can adapt to new challenges, make informed decisions, and contribute meaningfully to their personal, professional, and community endeavors. These abilities support a commitment to continuous learning and innovation in an ever-evolving world.

	Course Evaluation					
Course Outcomes (CO)	Assessment Task Addressing CO	Weight (%)	Satisfactory Rating	Target Standard		
CO1 Show understanding on underlying concepts, principles, and	Exam	40	75	ranget Standard		
ethical considerations in research	Quiz	30		60% of the class obtained satisfactor		
/	Assignment	20	7 /3	rating		







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	Attendance	10			
CO ₃ Equip students with the ability to formulate clear and focused	Exam	40			
research questions, design appropriate methodologies, and	Quiz	30		6-04-6-1	
collect reliable data to address specific academic or practical	Assignment	20	75	60% of the class obtained satisfactory rating	
problems.	Attendance	10			
CO ₄ Enable students to utilize qualitative and quantitative tools for	Exam	40			
analyzing data and interpreting findings in a structured and	Quiz	30		60% of the class obtained satisfactory	
meaningful way.	Assignment	20	75	rating	
meaning or way.	Attendance	10			

Grading System

MIDTERM/FINAL TERM GRADE

Exam - 40%
Quizzes - 30%
Project/Assignments - 20%
Attendance - 10%

FINAL GRADE = 50% Midterm + 50% Final term

PASSING GRADE: 75

Classroom Policies

CLASS POLICIES

- Attendance is counted from the first regular class meeting.
- Student must wear proper uniform while attending classes.
- Cheating is strictly prohibited. Any form of dishonesty shall be dealt with accordingly. Honesty is called for at all times.
- Base-40 grading policy should be observed.
- Cellphones must be put into silent mode so as not to distract the class







		UN	NIVERSITY OF SOUTHERN MINDANAO			100
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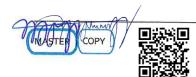
POLICY ON DISHONEST ACADEMIC PRACTICE

The University of Southern Mindanao does not tolerate dishonest academic practice. There are many forms of dishonesty in academic practice. Some are intentional, but some occur unintentionally due to lack of knowledge and understanding of what is meant by them. In all cases, dishonest academic practice is a serious matter, because it undermines the respect and trust which people view as academic endeavor and achievement.

Among others, dishonest practice includes:

- Plagiarism. Plagiarism is using others' ideas and words without clearly acknowledging the source of that information. To avoid plagiarism, you must give credit whenever you use, another person's idea, opinion, or theory; any facts, statistics, graph, drawings any pieces of information that are not common knowledge; quotations of another person's actual spoken or written words; or paraphrase of another person's spoken or written words (https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism).
- Collusion. The submission of work done in whole or in part with another person or persons but submitted as if it had been completed by the named author alone (or joint authors if a group item of work).
- Ghost writing. The use of another person (with or without any form of payment) to prepare all or part of an item of work submitted by the group for assessment.
- Fabrication of data. The presentation of data, which are not obtained through experimentation or research.

Plagiarism can be avoided by familiarizing yourself with the material referred to in Point 1. Plagiarism can be readily detected, and the penalties are severe. It is your responsibility to ensure that you know how to avoid it.





Kabacan, Cotabato Philippines

MONITORING OF DELIVERY OF INSTRUCTION

Course Title		Methods of Research	Semester/Academic Year	
Course Number	CpE 16	Faculty in charge	Room Number	Day/Time

Time Frame	Topics	CO Addressed	Target week/date	Delivery monitoring (Actual date)	Remarks
Week 1	Class Orientation				
Week 2	Basic Concepts of Research	CO ₁			
Week 3	Cont.: Basic Concepts of Research	CO1			
Week 4	Reviewing the Literature	CO1			
Week 5	Methods and Procedures: Qualitative Method of Research Quantitative Method of Research 	CO1	i i		
Week 6	Cont.: Methods and Procedures • Experimental Method of Research	CO1, CO2			
Week 7	Sampling Design	CO2, CO3			
Week 8	Sources Of Data and Research Tools	CO2, CO3			
Week 9	MIDTERM EXAMINATION				
Week 10	Tools for Research Techniques	CO ₂ , CO ₃			
Week 11	Variables	CO ₂ , CO ₃			
Week 12	Statistical Tools for Data analysis	CO2, CO3			



Kabacan, Cotabato Philippines

MONITORING OF DELIVERY OF INSTRUCTION

Week 13	Measures of Dispersion	CO2, CO3	
Week 14	Types of Inferential Statistics • Parametric Test	CO2, CO3	
Week 15	Continuation of Parametric tests	CO ₂ , CO ₃	
Week 16	Non-parametric Tests	CO2, CO3	
Week 17	Continuation of Non-parametric tests	CO2, CO3	
Week 18	FINAL EXAM		