REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF THE SOUTHERN MINDANAO
KABACAN, COTABATO

College of Science and Mathematics

BACHELOR OF SCIENCE IN APPLIED MATHEMATICS

LEVEL I
OCTOBER 26 - 30, 2026



AREA V
Research

AREA V – RESEARCH

Parameter A – PRIORITIES and RELEVANCE

S.1 SYSTEM-INPUTS AND PROCESSES: RESEARCH AGENDA

USM RESEARCH DEVELOPMENT AND EXTENSION AGENDA 2022-2031

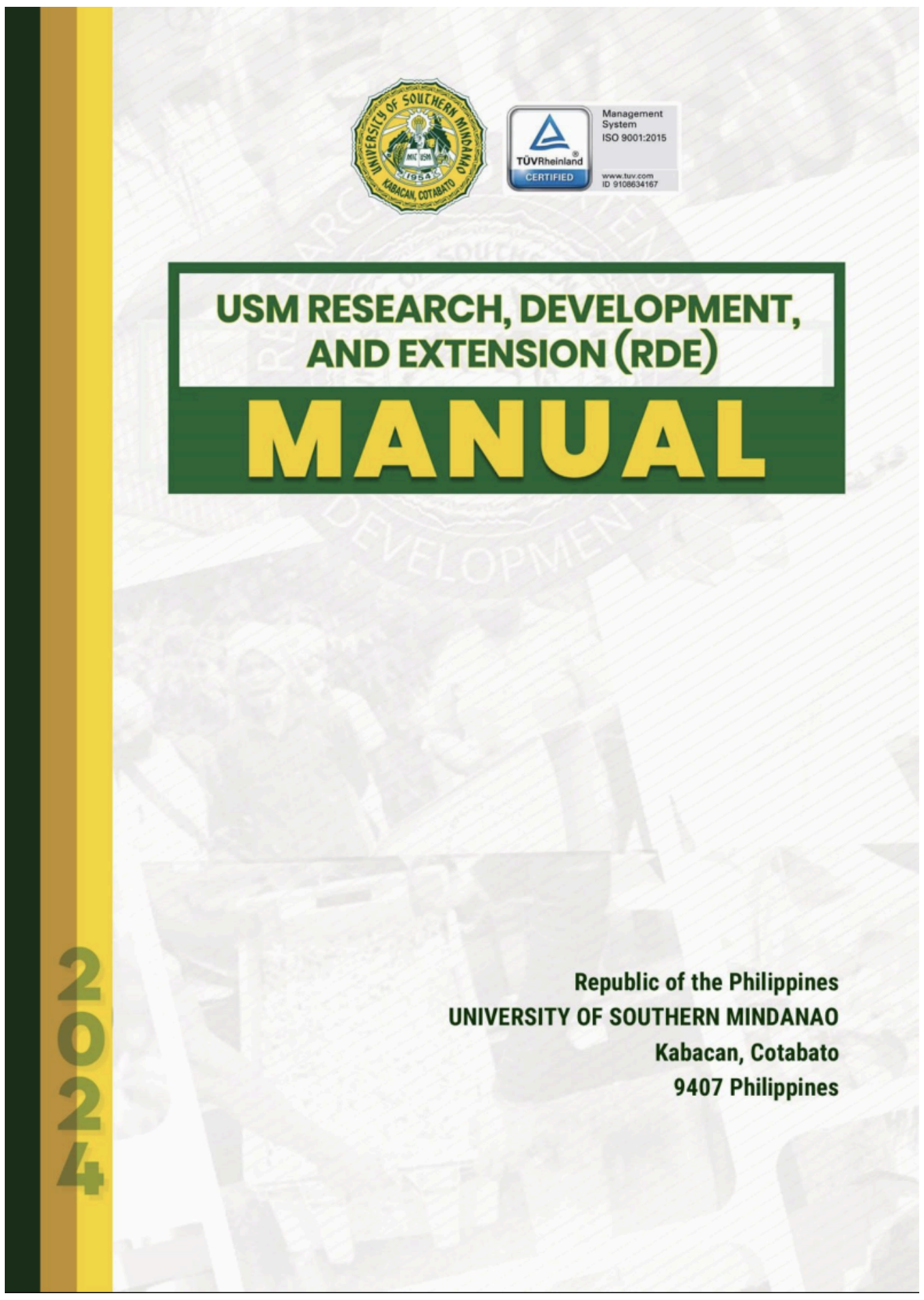
S.1 Research Agenda 2022-2031.pdf

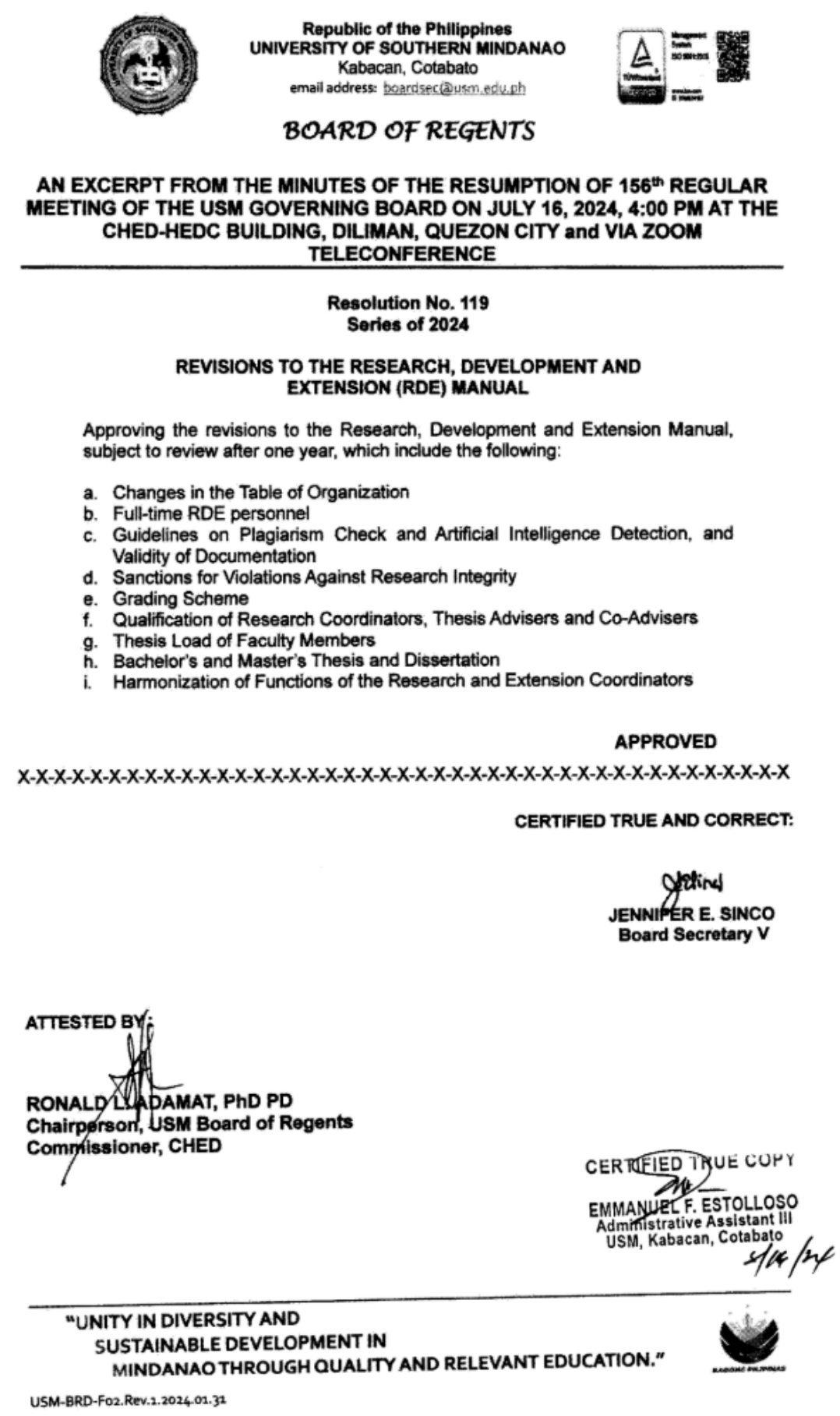
University of Southern Mindanao Research, Development and Extension (RDE) Agenda (2022-2031)

	RDE Themes	RDE Priority Areas
1	Quality Learning, Skills Development, and Literacy	Innovative teaching strategies; development and evaluation of functional education materials and modality; development of strategies/approaches for increased learning interest, motivation and engagement; school management; knowledge management; special education; remedial education; alternative learning system; assessment; soft skills; practical skills; adult education; language literacy; numerical literacy; data literacy; computer literacy; international studies; tracer studies
2	Social Development, and Strong Institutions	Gender and development (GAD); peace initiatives; community development; human security; justice; public policy and legislations; social rehabilitation; governance; organizational studies; behavioral studies; social institutions; ethics and public accountability; programs/project assessment; community needs assessment and interventions; partnerships and linkages
3	Preservation of Culture	Multicultural studies; educational materials for IPs; indigenous knowledge systems and practices; development of materials for cultural knowledge and promotion; arts; language and literature studies
4	Environmental Protection, Conservation, and Risk Reduction	Environment rehabilitation studies; biodiversity; climate change adaptation; risk, hazard and mitigation; biosafety; natural resources conservation and management; bioremediation; flood control; waste management; ecological preservation and care; environmental impact assessment
5	Food Security and Poverty Reduction	Agricultural and fisheries research; biotechnology; innovations; quality food product development; technology development; halal food production; sustainable production; responsible consumption; organic agriculture; food testing; smart agriculture; precision farming; livelihood programs; subsidy impact assessment; capacity building; capability building; farm machineries; post-harvest facilities; vertical farming; indigenous food
6	Good Health and Well-being	Nutrition; sports; physical education; resilience; psycho-social health; medical and medicinal studies; sanitation; functional foods; food and water quality and safety; mental and emotional health; therapy; coping mechanism; preventive measures; emerging diseases; health management; alternative medicine
7	Innovations in Science, Engineering, and Technology	Innovations; product and technology development; energy; materials science; nanotechnologies; robotics; artificial intelligence; internet of things; Science, Engineering, Communication, and Technologies (SECT) 4.0; biotechnology and OMIC technologies; inventions and discoveries; basic research; information technologies; electronics; drug discovery; mathematics; emerging technologies; fabrication; transport system; waste management; infrastructure; water systems; simulation studies; industrial and allied technology
8	Sustainable Entrepreneurship and Management	Entrepreneurship; economics; micro and macro scale business; product development; marketing; commercialization; networking; franchising; financial management; business feasibility studies; risk and opportunities; value adding; value chain analysis; organizational management; quality service assessment; human resource management; production management

S.2 SYSTEM-INPUTS AND PROCESSES: RESEARCH MANUAL

The institution has an approved Research Manual [USM RDE Manual 2024.pdf]





Republic of the Philippines
UNIVERSITY OF SOUTHERN MINDANAO
Kabacan, Cotabato
email address: boardsec@usm.edu.ph

BOARD OF REGENTS

AN EXCERPT FROM THE MINUTES OF THE RESUMPTION OF 156th REGULAR MEETING OF THE USM GOVERNING BOARD ON JULY 16, 2024, 4:00 PM AT THE CHED-HEDC BUILDING, DILIMAN, QUEZON CITY and VIA ZOOM TELECONFERENCE

Resolution No. 119
Series of 2024

REVISIONS TO THE RESEARCH, DEVELOPMENT AND EXTENSION (RDE) MANUAL

Approving the revisions to the Research, Development and Extension Manual, subject to review after one year, which include the following:

a. Changes in the Table of Organization
b. Full-time RDE personnel
c. Guidelines on Plagiarism Check and Artificial Intelligence Detection, and Validity of Documentation
d. Sanctions for Violations Against Research Integrity
e. Grading Scheme
f. Qualification of Research Coordinators, Thesis Advisers and Co-Advisers
g. Thesis Load of Faculty Members
h. Bachelor's and Master's Thesis and Dissertation
i. Harmonization of Functions of the Research and Extension Coordinators

APPROVED

X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X

CERTIFIED TRUE AND CORRECT:

JENNIFER E. SINCO
Board Secretary V

ATTESTED BY:

RONALD L. ADAMAT, PhD PD
Chairperson, USM Board of Regents
Commissioner, CHED

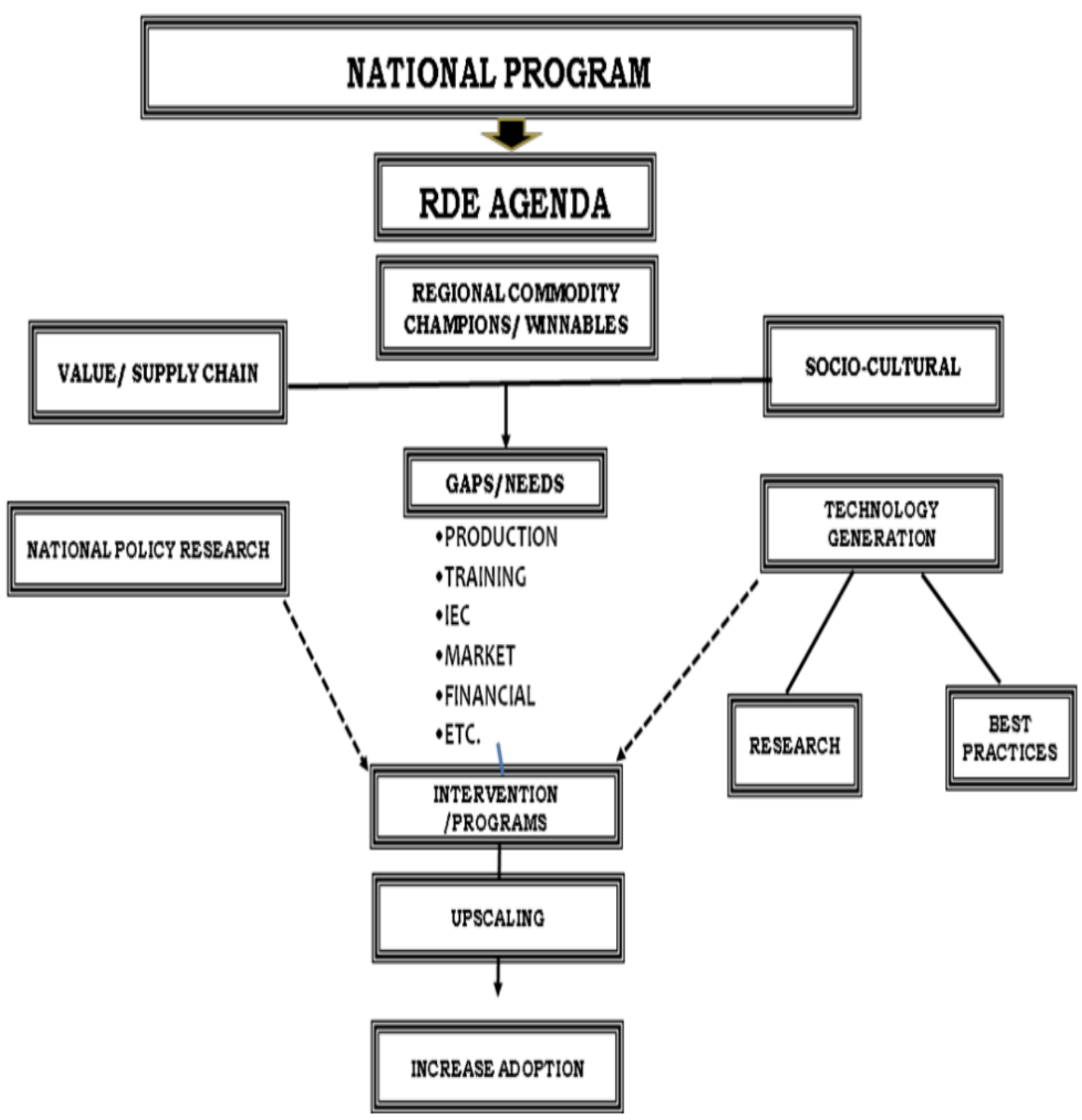
CERTIFIED TRUE COPY
EMMANUEL F. ESTOLLOSO
Administrative Assistant III
USM, Kabacan, Cotabato
7/16/24

"UNITY IN DIVERSITY AND SUSTAINABLE DEVELOPMENT IN MINDANAO THROUGH QUALITY AND RELEVANT EDUCATION."

USM-BRD-F02.Rev.1.2024.01.31

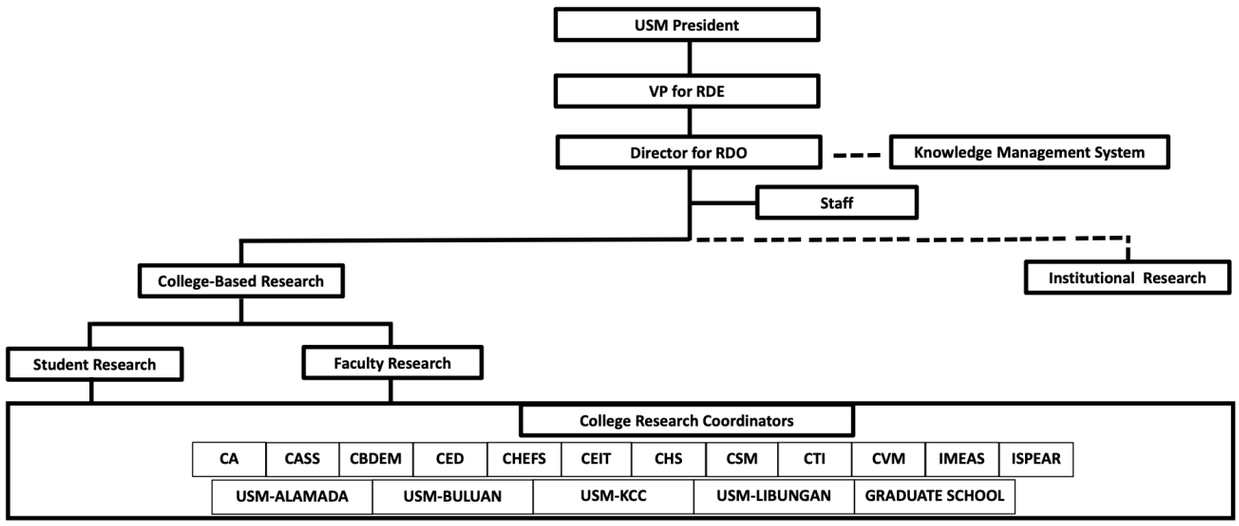
 Present the approved organizational structure of the Research Program

The Research, Development and Extension Agenda Framework



USM RESEARCH TABLE OF ORGANIZATION

USM Research Table of Organization.pdf



2. IMPLEMENTATION

☐ The Institution's Research Program/Agenda for the program under survey.

Agenda Thrusts	Specific Gov't Agenda Parallel to the Program	Objectives	Specific Research Projects/Activities	Researcher/s	Specialization	Timeframe	Research Cost	Funding Source
1. Quality Learning, Skills Development, and Literacy	Numerical literacy; data literacy; assessment; innovative teaching strategies	literacy; assessment; innovative teaching strategiesApply mathematical and statistical methods to assess students' mathematical performance and identify factors associated with learning outcomes.	Statistical Tool Selector(Stat Select): A Mobile App for Faculty, Students and Researchers	Anna Jean S. Garcia, Honey Vincent Valle, Daryl Mae Mamon, Leonard Paleta, Jupiter Pilongco, Roel Valenton, Jeaneth Licaros, Jonald Pimentel, Philip Benjamin, Rowel Madio, Leorence Tandog, & Debbie Marie Verzosa	Statistics	1 year	270,000	RDE Budget for College
2. Innovations in Science, Engineering, and Technology	Mathematics; artificial intelligence; basic research; information	Advance mathematical theory and computational methods and	Generalized E-torsion Graph; Forcing Subsets for	Leonard M. Paleta, Jupiter G.	Algebra and Graph Theory	1 year	107,000.00	Research and Development Office

	technologies; simulation studies; emerging technologies	develop models or algorithms for relevant scientific and institutional problems.	perfect Roman dominating sets in graphs; Convex Graph induced by a Function and a Finite Set	Pilongo, Philip Lester P. Benjamin	(Pure Math)			(Fund 01)
3. Quality Learning, Skills Development, and Literacy	Improving the quality and relevance of higher education; aligning mathematics curricula with students' academic needs, workplace competencies, and future career opportunities; and strengthening graduate employability.	To determine the extent to which USM's mathematics programs align with students' present academic needs and future professional requirements; identify gaps between curricular content and students' perceived needs; and recommend improvements to strengthen the relevance and effectiveness of mathematics education.	Analysis of the Alignment Between USM's Mathematics Programs and the Students' Present Academic or Future Professional Needs	Debbie Marie Verzosa and Philip Lester Benjamin	Mathematics Education; Curriculum Evaluation; Educational Assessment	! year	150,000.00	RDE Fund 101

- Describe the congruence of the institutional research agenda with regional and national priorities especially with concerned government agencies.

Congruence of the Institutional Agenda with National or Regional Priorities

The Institutional research agenda is in consonance with regional and national priorities such as CHED's National Higher Education Research Agenda (2009-2018), NEDA's Ambisyon Natin 2040, and DOST's Harmonized Research and Development Agenda (2017-2022).

	National Research Agenda	**Institutional (USM) Agenda:**
National Higher Education Research Agenda (2009-2018)	Education and education management	Quality learning, skills development, and literacy Social development and strong institutions Sustainable entrepreneurship and management
	Food safety and security	Food security and poverty Good Health and well-being
	Enhancing indigenous renewable energy source in the	Innovations in Science, Technology, and Engineering

	domestic energy mix	
	Development of vaccines and diagnostic kits using indigenous materials	Good Health and well-being Innovations in Science, Technology, and Engineering
	Disaster risk management	Environmental protection, conservation, and risk reduction
	Pollution control	Environmental protection, conservation, and risk reduction
	Climate change specifically on the issue of global warming	Social development and strong institutions Environmental protection, conservation, and risk reduction Innovations in Science, Technology, and Engineering
	Future ASEAN	Quality learning, skills development, and literacy Social development and strong institutions Preservation of culture Environmental protection, conservation, and risk reduction Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering Sustainable entrepreneurship and management
	Peace process and conflict resolution	Social development and strong institutions Preservation of culture Food security and poverty Good Health and well-being Sustainable entrepreneurship and management
Ambisyon Natin 2040	Matatag (family is together; time with friends; work-life balance; volunteering)	Quality learning, skills development, and literacy Social development and strong institutions Preservation of culture Environmental protection, conservation, and risk reduction Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering

		Sustainable entrepreneurship and management
	Maginhawa (free from hunger and poverty; secure home ownership; good transport	Quality learning, skills development, and literacy Social development and strong
	facilities; travel and vacation)	institutions Preservation of culture Environmental protection, conservation, and risk reduction Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering Sustainable entrepreneurship and management
	Panatag (enough resources for daily needs; peace and security; long and healthy life; comfortable retirement)	Quality learning, skills development, and literacy Social development and strong institutions Preservation of culture Environmental protection, conservation, and risk reduction Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering Sustainable entrepreneurship and management
Harmonized Research and Development Agenda (2017-2022)	National Integrated Basic Research Agenda	Quality learning, skills development, and literacy Social development and strong institutions Preservation of culture Environmental protection, conservation, and risk reduction Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering Sustainable entrepreneurship and management
	Health	Quality learning, skills development, and literacy Social development and strong institutions Environmental protection, conservation, and risk reduction

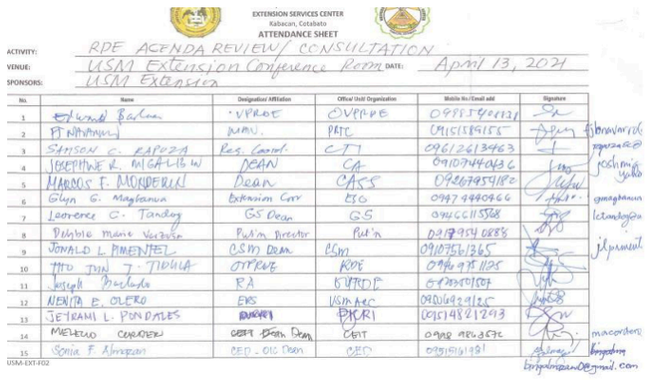
		Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering
	Agriculture, Aquatic and Natural Resources	Environmental protection, conservation, and risk reduction Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering Sustainable entrepreneurship and management
	Industry, Energy and Emerging Technology	Innovations in Science, Technology, and Engineering
	Disaster Risk Reduction and Climate Change Adaptation (DRR CCA)	Environmental protection, conservation, and risk reduction

 Describe the stakeholders' participation in the formulation of the Research Agenda.

Stakeholders' participation in the formulation of the Research Agenda

Stakeholders' meeting and proper documentation in formulation of the university research agenda. I.2 Stakeholders Participation in the Research Agenda





EXTENSION SERVICES CENTER
Kabacan, Cotabato
ATTENDANCE SHEET

ACTIVITY: RDE AGENDA REVIEW/ CONSULTATION
VENUE: USM Extension Conference Room DATE: April 13, 2021
SPONSORS: USM Extension

No.	Name	Designation/ Affiliation	Office/ Unit/ Organization	Mobile No./Email add	Signature
1	Edmund Bautista	VPRDE	OVPRDE	09981901131	
2	PJ Nimmayenz	MMU	PATC	09151189155	
3	SAMSON C. RAPOZA	Res. Coord.	CIT	09612613963	
4	JOSEPHINE R. INGALUG	DEAN	CA	09107444936	
5	MARIOS F. MONDEJAR	Dean	CASS	09267954182	
6	Glyn G. Magbanua	Extension Cor	ETC	09479490966	
7	Laorence C. Tandog	GS Dean	GS	09466115508	
8	Pumble marie Verdeflor	Pub'n Director	Pub'n	09179540885	
9	DONALD L. PIMENTEL	CSM Dean	CSM	09107361365	
10	MTO JUN T. TIDULA	OVPRDE	RDE	09469181125	
11	Joseph Bautista	RA	OVPRDE	09451001504	
12	NENITA E. OLERO	EXS	USM AEC	09206929125	
13	JETRAMIL L. PONDALES	RESEARCH	PHCRI	09151482 12413	
14	MELENIO CORDERO	OEPF Extn Dean	OEPF	09481961376	
15	Sonia F. Almazan	OED - OIC Dean	OED	09151161981	

USM-EXT-F02

 Research Projects/Activities of the Program under Survey

Research Project/Activity	Nature of Alignment to the Institutional Research Agenda
1. Generalized E-torsion Graph: Forcing Subsets for perfect Roman dominating sets in graphs; Convex Graph induced by a function and a finite set	Quality Learning, Skills Development, and Literacy; Social Development and Strong Institutions

2. USM LIFER Project: USM & Ligawasan Marsh Fish & Meat-Based Enhanced Ready-to-Eat (RTE) Products	Quality learning, skills development, and literacy Social development and strong institutions preservation of culture Environmental protection, conservation, and risk reduction Food security and poverty Good Health and well-being Innovations in Science, Technology, and Engineering Sustainable entrepreneurship and management
3. Statistical Tool Selector(Stat Select): A Mobile App for Faculty, Students and Researchers	Innovations in Science, Technology, and Engineering; Quality Learning, Skills Development, and Literacy
4. Analysis of the Alignment Between USM's Mathematics Program and the Students' Present Academic or Future Professional Needs	Quality Learning, Skills Development, and Literacy; Social Development and Strong Institutions
5. Study: Educational Innovations in Rural and Remote Communities: A Multi-Dimensional Approach	Quality Learning, Skills Development, and Literacy; Social Development and Strong Institutions

3. OUTCOMES

- Show evidences that priority researches are identified, conducted and the results are published.

`The University of Southern Mindanao (USM) identifies its research priorities through the **USM Research, Development and Extension Agenda 2022–2031**. The agenda provides the institutional framework for identifying and conducting research that addresses university priorities and relevant national research and development concerns. The University also promotes the dissemination of research findings through scholarly publications and other research dissemination activities. Its Research Publication Services Office supports the publication of research outputs through university journals and other scholarly publications. The University's official research website provides information on its research directions, funded projects, and publication activities.

Evidences:S.1 Research Agenda 2022-2031.pdf Summary of Faculty Publication(Updated)I.2 Stakeholders Participation in the Research AgendaUSM Local fund (2015-onwards).xlsx

4. BEST PRACTICES

- Cite as many best practices as you can on Parameter A (Priorities and Relevance).

- The University implements the USM Research, Development and Extension Agenda 2022–2031, which provides a long-term framework for setting research priorities and guiding the development of research projects.
- The University involves stakeholders, including research coordinators and researchers, in the formulation of its research agenda. Stakeholder meetings and documented participation help ensure that research priorities reflect institutional directions and relevant research needs.

- Research projects are examined in relation to the thematic areas identified in the institutional research agenda. This practice promotes the relevance of research activities and helps establish their contribution to the University's research priorities.
- The University's research agenda is aligned with relevant national research and development priorities. This alignment provides a basis for identifying research topics that respond to broader concerns, including education, health, agriculture, environmental protection, disaster risk reduction, and technological innovation.
- Researchers are encouraged to publish their research findings in academic journals and disseminate results through conferences, symposia, and other scholarly activities. This practice helps extend the contribution of university research beyond the conduct of individual studies.

PARAMETER B – FUNDING and OTHER RESOURCES

1. SYSTEM-INPUTS AND PROCESSES

- Present the institution's approved budget for Research Development

S.1 Institution's Approved Budget for Research Development

2025 Budget Allocation.pdf

	Uploaded PPMP in https://dr	2024	2025
OVPRDE	Yes	518,189	632,541
RDO	Yes	647,573	790,476
USMARDC (overhead)	Yes	612,849	748,090
RPSO	Yes	392,568	479,198
IPTTBDO	Yes	213,600	260,736
Counterpart to SOX		280,000	320,000
R&D Display Center	Yes	117,770	143,759
Wildlife Center		133,473	162,927
RDE Personnel Devt Asst	Yes	117,770	143,759
In-house Review	Yes	706,622	862,556
Incentives (Publications and IP Assets)	Yes	866,233	1,057,389
USMARDC Support	Yes	1,028,085	1,254,958
Projects (RDO and ESO)		3,662,407	4,470,610
		9,297,139	11,327,000
		GAD	566,350.00

2025 (revised)	
590,000	
790,000	
748,090	
370,000	Overhead
260,736	2,758,826
320,000	
143,759	
162,927	
180,066	
800,000	
1,150,000	
1,254,958	
4,475,259	0.6186351154
11,245,795	
81,205.11	Production of Tissue Cultu

2026-2027 Budget Allocation.pdf

	ACTUAL in PPMP (2026)	2027
OVPRDE	590,000.00	500,000.00
RDO	790,000.00	790,000.00
USMARDC (overhead)	748,090.00	594,901.89
RPSO	370,000.00	294,234.36
IPTTBDO	260,736.00	240,000.00
Counterpart to SOX	320,000.00	254,472.96
R&D Display Center	190,784.62	0.00
Wildlife Center	162,927.00	162,927.00
SERDAC	156,000.00	
RDE Personnel Devt Asst	200,743.70	143,193.25
In-house Review	800,000.00	500,000.00
Incentives (Publications and IP Assets)	1,150,000.00	914,512.21
PICRI	1,280,000.00	1,017,891.85
USMARDC Support	1,254,958.00	997,977.83
Projects (RDO, USMARDC, ESO, PICRI)	4,466,760.62	3,720,253.96
	12,741,000	10,132,000
	0.00	10,497,030.17

- Present the Research Fund allocation per College.

  USM Local fund (2015-onwards).xlsx

  Budget Allocation.pdf

2. IMPLEMENTATION

- ☐ Actual expenditures for research of the Academic Unit in the last 3-5 years

  Actual expenditure for research of the Department of Mathematics and Statistics for the last 3 years. (Budget Allocation.pdf)

Expenditure Item	CY 2023	CY 2024	CY 2025
1. Researcher's Incentives			
2. Supplies and Materials			
3. Travel and Fuel			
4. Capability Building			
5. Acquisition of Equipment			
6. Repair of Facilities			
7. Communication/Dissemination			
8. Others			
TOTAL	**270,000.00**	**1,594,296.00**	**107,000.00**

- Linkages established with Research agencies/institutions

Agency or Institution	Address	Level (int'l, nat'l, reg'l, local)	Nature of Assistance
DOST	Taguig City	National	Research and development funding, technical assistance, and support for science and technology initiatives
CHED	Quezon City	National	Higher education research support and possible funding under

			applicable research programs
DA	Quezon City	National	Agricultural research, technology development, and support for research projects
DA-BAR	Quezon City	National	Financial support and technical assistance for agricultural research and development
PhilRice	Nueva Ecija	National	Financial assistance
DA-ATI	Koronadal City	Local	Agricultural knowledge dissemination, training, and research-related capability development
DOST-PCAARRD	Laguna	National	Research grants, technical support, and agricultural, aquatic, and natural resources R&D collaboration
BPI-NSIC	Manila	National	Plant and seed research, varietal evaluation, and collaboration related to seed development
CIRAD	France	International	International agricultural research and scientific collaboration
BPS-DTI	Makati City	National	Collaboration related to product standards, testing, and quality assurance
PRIA	Philippines	National	Industry collaboration in rubber research, technology development, and knowledge exchange
IRA		International	International collaboration related to the rubber industry and its development
IRRDB		International	International collaboration in rubber research and development

- Research Facilities, Equipment, ICT and Other Resources

Facility/ Resource/ Equipment	**Location**	**Area or Capacity (whichever is applicable)**	**Research Offered**

1. Central Analytical Laboratory	USMARC	1, 788.75 m^2	1. Food products/Feeds (crude protein, crude fiber, crude fat, moisture, ash) content analysis 2. Soil Analysis A. A. Chemical Test ● routine analysis (Organic matter/carbon, Extractable Phosphorous, Exchangeable Potassium, pH); Lime requirement; Total nitrogen, Exchangeable Ca(AAS),Exchangeable Mg (AAS), Exchangeable Na, Exchangeable Al, Exchangeable potassium, Macronutrients (Zn, Cu, Fe, Mn) Carbon Exchange Capacity) B. Physical Test (Moisture content, texture, particle density, water holding capacity, field capacity) 3. Plant Tissues (Sample preparation, dry ashing, total nitrogen, total phosphorous, total potassium, dry matter [oven drying] , Calcium [AAS], Micronutrients [Zn, Cu, Fe, Mn] 4. Fruits (Total titratable acidity, total soluble solids, pH, starch, reducing sugar) 5. Water analysis (pH, Calcium,[AAS], Magnesium [AAS], Sodium, potassium, Micronutrients [Zn,Cu, Fe, Mn], alkalinity, Acidity, Lead) 6. Fertilizer/Organic Fertilizer, other than guano (Total nitrogen, total potassium, total phosphorous. 7. Phytochemicals (Tannin, saponia, flavonoids, antraquince, alkaloids)
2. Genetic & Molecular Biology Laboratory	USMARC	58.30m^2	1. Purity analysis of inbred lines 2. Fingerprinting/Diversity analysis 3. ELISA virus indexing in Banana and Abaca (4 viruses)
3. Seed Laboratory a. Seed Processing and Cold Storage b. Commercial Seed Storage c. Germplasm Cold Storage	.	1,152 m^2 172.8m^2 59.052m^2	1. USM High Yielding Open-pollinated Varieties of Corn (USM Var 1, USM Var 2, USM Var 3, USM Var 5, USM Var 6, USM Var 8, USM Var 9, USM Var 10, USM Var 12, USM Var 14, USM Var 16 & USM Var 18)
4. Isozyme Laboratory	USMARC	58.30m^2	
5. Animal Research Laboratory	USMARC	58.30m^2	1. Training skills on artificial insemination in goats and sheep 2. Training skills on laboratory processing, storage an evaluation on semen in goats and sheep 3. Semen diagnostic/evaluation 4. Semen banking 5. Training on: (Module 1. Small ruminants multiplier and commercial

			forms & module 2. Production and management of goat and sheep)
6. Philippine Industrial Crop Research Institute (PICRI)	USM		Conduct Researches on industrial crop such as rubber, oil palm, spices and the like.
7. Philippine Rubber Testing Center (PRTC)	USM		Rubber quality testing center
8. Experimental area	USMARC	20 hectares	Site for agricultural experiments
9. Fruit orchard	USMARC	30 hectares	Site for research on fruits
10. High value crops and Processing Center	USM		Development and testing of food products
11. Graduate School Library/ University Learning Resource Center (ULRC)	USM		Reading materials such as books, thesis and journals.
12. Research software	USM/Remote access		The university purchased licenses for Turnitin software (for plagiarism checks), and is finalizing the purchase of SPSS (to be managed by research coordinators) and Grammarly (for English editing).

- Research Personnel and other Support Services

  RDE Personnel.pdf

Name	POSITION	Office	Educational Attainment	Number of years in RDE
Debbie Marie B. Verzosa	Vice President	Office of the VP for Research, Development and Extension	PhD Education	20
Jurhamid C. Imlan	Center Director	USMARDC	PhD Halal science	
Glyn Gabano-Magbanua	Director	ESO	PhD in Education	9
Janice M. Bangoy	Senior Science Research Specialist	Organic Agriculture	MS Crop Protection-Ongoing	
Jessie Elarde	Senior Science Research Specialist	Crops Research	MS Plant Breeding-Ongoing	
Jasmin A. Pecho	Science Research Specialist II	USMARDC	MS Crop Protection-Ongoing	7
Sheena B. Lucena	Science Research Specialist II	USMARDC/CACAO PROCESSING	MS Plant Breeding-Ongoing	
Rezin Cabantug	Science Research Specialist II	PICRI		
Marry Grace S. Balbuena	Educational Program Specialist II	USMARDC/ Biotechnology Center	MS Plant Breeding-Ongoing	8
Kharlo J. Subrio	Educational Program Specialist II	IPTTBDO	BS Electronics Engineering	8
Leizil Gray T. Oria	Educational Program Specialist I	RDO		
John Aldrin Sanama	Educational Program Specialist I	VPREO		
Jalaloden B. Marohom	Unit Head	Intellectual Property, Technology Transfer, and Business Development Of	Doctor of Business Administration	11
Ellen Joy M. Farala	Unit Head	ESO-Strategic Partnership and Governance Cluster	PhD in Education Candidate	8
Cherie Cano-Mangaoang	Unit Head	ESO-Sustainable Community Development	PhD in Biology	5
Anamarie B. Uyangurin	Unit Head	ESO- Monitoring and Impact Assessment Unit	MaEd	4
Jan Clyden B. Tenorio	Unit Head	PPU		
Ritchel O. Torres	Training Specialist II	ESO- Knowledge Management Cluster	MS Animal Science-Ongoing	2
Danilyn A. Flores	Training Services Specialist	IPTTBDO	MS in Information Technology	
Cyrelle M. Besana	IP Protection Services Specialist	IPTTBDO	MS Zoology	7
Marc Macbeth M. Toledo	IP Protection Services Specialist	IPTTBDO	MS	
Zygote He Sorupia	IP Management Section Head	IPTTBDO	MS Chemical Engineering	
Romiel John P. Basan	Center Head/Marketing Services S…	USM Satelite SERDAC/IPTTBDO	PhD in Agricultural Economics	14
Bernadith T. Borja	Center Head	Philippine Industrial Crops Research Institute	MS Plant Pathology	8
Maribelle T. Piamonte	Center Head	Food Processing and Innovation Center	MS Food Science and Technology	7
Florence Roy P. Salvaña	Center Head	Wildlife Research and Rescue Center	PhD in Botany	11
Ruben L. Tagare, Jr.	Center Head	Center for Human Kinetics and Wellness Studies	PhD in Education Major in Physical Education and Sports	8
Khrist June L. Callano	Center Head	High Value Crops Processing Center	PhD Horticulture	15
Jay Ar P. Esparcia	Center Head	i-SMART	MS Computer Science	1
Cristopher A. Benito	Center Head	USM Center for Flood/Landslide Preparedness and Mitigation	MS Math and MS Civil Engineering	2
Frans Bert D. Gomez	Center Head	Multicultural IP Center for Research, Education and Development (MIPCRED)	PhD in Sociology	11
Lydia C. Pascual	Center Head	Health Innovations	PhD	
Maricel G. Dayaday	Business Development Services S…	IPTTBDO	Doctor of Technology Education	8
Peny Lane E. Vallejos	University Research Associate I	USMARDC/Biotech	BS Agriculture major in Plant Breeding and Genetics	
Dheliafe A. Bayam	University Research Associate I	USMARDC/Animal and Halal	BS Agriculture major in Animal Science	
Abegail B. Sauyen	University Research Associate I	USM Satelite SERDAC	PhD in Rural Development - Ongoing	
Aivie Mae Aluidin	Administrative Aide VI	ESO - Sustainable Community Development Cluster	BS in Nursing	
Alleona Jasper G. Senarillos	Administrative Aide VI	IPTTBDO	BS in Management Accounting	
Darwin Semilla	Administrative Aide VI	GEOGRAPHIC INFORMATION SUPPORT SYSTEM (GISS)	BACHELOR OF SCIENCE IN AGRICULTURE MAJOR IN	2
Earvin Jason T. Dapun	Administrative Aide VI	Food Processing and Innovation Center	BS Business Administration major in Makerting Management	
Francis Juaquin L. Ramos	Administrative Aide VI	Philippine Industrial Crops Research Institute	BS Information Systems	
Jennifer D. Alivar	Administrative Aide VI	i-SMART / USM Center for Flood/Landslide Preparedness and Mitigation	MA Teaching Industrial Arts	
Jessa Mae M. Cascaro	Administrative Aide VI	USMARDC/Biotech	BS Business Administration major in Makerting Management	
Mae Angelic M. Canales	Administrative Aide VI	PPU	BS Management Accounting	
Medelyn Barro	Administrative Aide VI	ESO-SPGC	BTE	
Monaliza Abas	Administrative Aide VI	USMARDC	BS in Management Accounting	
Racel C. Moadas	Administrative Aide VI	Health Innovations	BEED	
Revin A. Casten	Administrative Aide VI			
Rochelle C. Paduyos	Administrative Aide VI			
Sharita M. Sulaiman	Administrative Aide VI	MIPCRED/CHKWS	BEED	

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Name	POSITION	Office	Educational Attainment	Number of years in RDE
Vincent Philip D. Torres	Administrative Aide VI	USMARDC/Animal and Halal	BS Veterinary Technology	
Roy C. Ricabar	Center Head	Animal and Halal Center	MS in Animal Science	8

- Income derived from research-related outputs and activities

Category	Title of Technology/Invention/ Innovation	Amount Generated
Patents/Utility Model	● Formulation for Blue Ternate Liquid Soap and the Process Thereof ● Method of Treating Robusta Coffee Berries for Good Quality Coffee ● Product of Processing Kulitis-Vanilla (KuliVa) Ice Cream ● Nematode Picking Tool ● Method for Antibiotic Residual Detection in Chevon ● Bat Box for Artificial Roosting Shelter of Insect Bats ● Sweet Cured Halal Chevon and Process Thereof ● Chili Corned Halal Chevon and the Process Thereof ● Garlic-Enhanced Halal Chevon Jerky and the Process Thereof ● Electronic Oil Level Indicator ● Improved Abacus ● Method for Enhancement of Tissue Culture Propagation Protocol using Male Bud/Floral Apex of Banana	Pre-commercialization stage

	● Propagation of Rubber Rootstocks via Micro cuttings ● A Combined Trophy and Paper Weight with Pen Holder	
Licenses	● USM Foods Chevon Tapa label ● USM Foods Chevon Tocino label ● USM Foods Chevon Carne Norte label ● USM Foods label ● Journal of Agricultural Research, Development, Extension and Technology label	Pre-commercialization stage
Copyrights	● Milenyong Asyano (2020) ● Instructional Materials on How to Operate the 3 in 1 Charging, Welding, Starting Aid “CWS” Machine (2020) ● 3 in 1 “CWS” Machine Operating Manual (2020) ● Development and Evaluation of 3 in 1 “CWS” machine (2020) ● Illustration On Optimization Of Hydraulic Pressures In Pipe Network Using H-Raphson Computer Program (2020) ● Network Profile for Pipe Network Using mycode.m (Computer Program) (2020) ● Pressure Optimization for Pipe Network Using h_optimization.m (Computer Program) (2020) ● USM Library Information System (Computer Program) (2020) ● Automated System for Organizational Election (Computer Program) (2020) ● ECE Reviewer Android App (Computer Program) (2020) ● Faces of Diversity, Nurtures of Life’s Bounty (Book) (2020) ● Computer Program Nodal Outflows using wds_outflow3.m (2020) ● Manual on Macro-Propagation Technique: An Alternative Way of Producing Quality Planting Materials of Lakatan ● Duriologue (A Catalog of Durian Durio Zibethinus Murr.) Germplasm in the Philippines (2019) ● University Research Handbook (2019) ● SHS Preferred Tracks and Readiness of Secondary Schools for Implementation in North Cotabato (2017) ● Completion Rate and Correlates of LET Performance of Science Major Graduates in CED-USM (2017)	Pre-commercialization stage
Other Commercialized research Outputs		

3. OUTCOMES

 Present/Show evidences that the research Program/Unit is adequately funded.

The University of Southern Mindanao (USM) provides financial support for research through institutional research funds and other available funding sources. Approved research budget allocations and documented project funding demonstrate the University’s commitment to supporting approved research projects and institutional research priorities. Supporting documents identified in the report include the 2025 Budget Allocation, 2026–2027 Budget Allocation, Research Fund Allocation per College, and USM Local Fund (2015 onwards) records.

The University's research support is reflected in the allocation of funds to colleges and research units. For the Department of Mathematics and Statistics, the reported research expenditures amounted to ₱270,000.00 in 2023, ₱1,594,296.00 in 2024, and ₱107,000.00 in 2025, totaling ₱1,971,296.00 over three years. These reported expenditures indicate financial support for the unit's research activities during the period.

Project-specific funding further illustrates this support. The *Statistical Tool Selector (Stat Select): A Mobile App for Faculty, Students and Researchers* received an allocation of ₱270,000.00 from the RDE Budget for College. The listed algebra and graph theory projects were allocated ₱107,000.00 through the Research and Development Office's Fund 01, while *Analysis of the Alignment Between USM's Mathematics Programs and the Students' Present Academic or Future Professional Needs* was allocated ₱150,000.00 from RDE Fund 101. These allocations help faculty researchers implement their proposed studies and generate research outputs.

Financial support is complemented by institutional research facilities, equipment, library resources, and research support services. Evidence also identifies access to Turnitin and planned procurement of SPSS and Grammarly. These resources support research implementation, analysis, and manuscript preparation, subject to their availability and relevance to individual projects.

Collectively, these provisions demonstrate institutional support for the research program. The adequacy of funding should be substantiated by approved project budgets, fund release and expenditure records, and accomplishment reports showing that available resources met the requirements of planned research activities.

Evidences: Funded Research.pdf2025 Budget Allocation.pdf**2026-2027 Budget Allocation.pdf**USM Local fund (2015-onwards).xlsx

4. BEST PRACTICES

- Cite as many best practices as you can on Parameter B (Funding and other Resources).

- The University regularly issues calls for research proposals, providing faculty members with opportunities to obtain institutional funding for research projects. During proposal evaluation and defense, proponents are encouraged to consider the potential publication, utilization, and practical application of their research outputs.
- The University provides financial support for faculty research through institutional research funds, enabling researchers to implement approved projects and pursue studies aligned with institutional research priorities.
- The University provides research funding through designated research offices and college-based research programs. This mechanism facilitates access to financial resources for faculty researchers and supports the implementation of research activities across academic units.
- The University provides researchers with access to available research facilities, equipment, and software necessary for conducting studies, analyzing data, and developing research outputs.
- Research proponents receive guidance during proposal conceptualization, preparation, and defense. This practice helps researchers improve the quality of their proposals, establish feasible research methodologies, and align proposed expenditures with project objectives.
- The University encourages researchers to present their findings at research conferences, symposia, and other scholarly activities. Where supported by approved

institutional mechanisms, financial assistance for registration, travel, or related presentation expenses can help researchers disseminate their findings to wider audiences.

- Research implementation and resource utilization are supported by institutional monitoring and evaluation activities. Through research reviews and project reporting, the University can assess research progress, identify resource-related concerns, and improve the allocation and utilization of available research funds.

PARAMETER C – IMPLEMENTATION, MONITORING, EVALUATION and UTILIZATION of RESEARCH RESULTS/OUTPUTS

1. SYSTEM-INPUTS AND PROCESSES

- There is an approved Intellectual Property Rights (IPR) policy stated in the University RDE Manual (2024) (page 49 to 57).

Excerpts from USM RDE Manual 2024
Intellectual Property Rights(USM RDE Manual 2024).pdf

5 INTELLECTUAL PROPERTY

5.1 Intellectual Property/ Intellectual Property Rights/ Ownership

5.1.a Copyright

1. Copyright of all works (as defined by Article IV- Section 32) shall be owned by the University unless under the following circumstances:

a. If the work is a product between the University and an external party, copyright ownership is subject to the terms provided in the agreement of both parties;

b. If the author is not a student, employee, faculty, staff or part of USM community; or

c. If the work is not funded or commissioned by the University or by third party involving the University.

2. All published works owned by the University shall bear a copyright notice composed and affixed in accordance with Philippine Copyright law. University-owned materials shall bear the notice:

© (Year of publication) University of Southern Mindanao

No other annotation, regarding a division, research center or other University unit may be used in the copyright notice.

5.1.b Patentable Technologies

1. All IPs, including new plant varieties and animal breeds referred to in this policy made or created by the University personnel or students shall be owned by the University when any of the following applies:

a. The invention developed pursuant to the University Research operations.

b. The invention was developed through research and development funded by any government funding agency, government assisted funds, or allocation of the University funds.

c. The invention developed by University faculty, researcher, student or staff with substantial use of the University resources as stipulated in Article 4- Section 31 of this IP Policy

2. Subject to the provisions of the Technology Transfer Act of 2009, if the invention is the result of collaborative efforts of the university and external party, the patent over said invention shall belong in joint ownership among the university, the inventor/s of the external party.

3. Conflicts pertaining to IP rights shall be resolved through mediation and arbitration to be facilitated by the Office of the Vice President for Research, Development and Extension. Only in the event of failure of any of such modes may such conflict be the subject of court action.

5.1.c Trade and Service Marks

The University shall own trade or service marks relating to goods or services distributed by the University. These include names and symbols used by the university in conjunction with its computer programs or university activities and events.

5.1.d Protection of Undisclosed Information/ Trade secrets

Upon the determination of the President, circumstances are such that well-defined interests of the general public will better be protected by claiming legal protection of information or technology as “trade secrets”.

5.1.e Tangible Research Property (TRP)

Research results which are in a tangible form (i.e. integrated circuit chips, computer software, biological organisms, engineering prototypes, laboratory notebooks or logbooks) which cannot be the subject of any other kind of intellectual property protection are presumptively owned by the university.

5.1.f Theses and Dissertations

1. A student shall own the copyright of his/her thesis/dissertation and associated data subject to provisions of applicable laws, the provisions of this policy as well as any agreement(s) with the university and/or external parties. However, if the research receives financial support from grants, salaries, stipends from funds administered by USM or utilizes university’s facilities and equipment, the University shall retain a degree of copyright ownership over the thesis/ dissertation.

2. As a condition of awarding a degree, the student shall grant the university a non-exclusive worldwide, royalty free license to reproduce, publish and responsibly distribute copies of said thesis/dissertation in any form, and also entails placing a declaration on thesis use and publication on the page immediately following the title page.

3. In the event a thesis/dissertation contains information on an invention that may be patentable or registrable, if the same contains confidential information, and has been subjected to confidentiality agreement, the department, institute or college may withhold public access to said thesis/dissertation and the defense proceedings and may take such other reasonable steps to protect the author, the university and/or third party's IP rights. Thus, a confidentiality statement shall also be declared, and the use, reproduction and publication of the thesis/dissertation shall be applicable when disclosure has been executed and/or after the expiration of the confidentiality agreement.

4. The “Declaration on Thesis Use and Publication” will be stated as follows:

“I hereby acknowledge and comply with the regulations set forth by the University of Southern Mindanao concerning the preservation and utilization of this thesis. I understand that University of Southern Mindanao possesses the right to retain copies of the thesis/dissertation, permit its consultation, and publish all or parts of it in accordance with the principles of academic openness and intellectual property protection. Additionally, University of Southern Mindanao is authorized to preserve and compile the thesis/dissertation through photocopying, reprinting in a reduced format, or employing other reproduction methods.

I am fully aware that should my thesis/dissertation be subject to any confidentiality agreement, this authorization statement shall only be applicable after the expiration of the confidentiality period ([state the period here, usually 1 year]).

I am fully aware that I should carry and include the University of Southern Mindanao, the College and the Department, and all individuals who contributed substantially to this thesis/dissertation, in any publication related to it.”

5.2 Incentives on IP Assets

The university shall provide incentives to author(s) and inventor(s) who generated IP assets subject to availability of funds, provided that the requirements for incentives, based on the Implementing Rules for the USM Revised Intellectual Property Policy of 2019 (BOR Resolution No. 37 Series of 2020), are submitted. These are:

Rule 7. General Rule for Ownership - Any technology that is a result or the product of the four mandated functions of the University mainly instruction, research, extension and research generation shall be owned by the University unless mentioned under circumstances listed in Article 5 of the IP Policy Section 101.

7.1 Ownership shall belong to the employee, if the incentive activity is not a part of his regular duties even if employee uses the time, facilities and materials of the employer.

7.2. Ownership shall belong to the employer, if the invention is the result of the performance of his regularly-assigned duties, unless there is an agreement, express or implied, to the contrary.

Rule 8. Who may be named as applicant in the application. - The "University of Southern Mindanao" shall be assigned as the sole "Applicant" in the IPOPHL application form which places the University as the owner of the IP. This rule shall not apply only if conditions of Rule 7.1-7.2 are exemplified.

Rule 24.1. For Patent, Utility Model, Industrial Design and Plant registry, incentive for filing shall only apply

(1) If the technology has been subject for technology pitching, before the grant of registration number provided the IP was filed. Certificate as presenter shall be attached together with the IP application number;

(2) If the technology has been featured in science and technology symposiums, conference, expo or exhibit, before the grant of registration number provided the IP was filed. Certificate for poster or oral presentation entry shall be attached together with the IP application number;

(3) If the technology has been part of the branding or any form of derivation for the realization of trademark application before the grant of registration number provided the IP was filed. IP application number for Trademark shall be attached;

(4) If the technology has identified the adapter before the grant of registration of number provided the IP was filed. Signed Memorandum of Agreement signed by the University and adapter shall be attached together with the IP application number;

(5) The technology has been applied for commercialization before the grant of registration number provided the IP was filed. Signed memorandum of agreement between the funding agency and the University shall be attached together with the IP application number.

Rule 24.2. For copyrighted works, incentive for filing shall only apply if the following supporting documents are fulfilled for each case described:

(1) If the copyrighted work refers to a book which has contributed to the scientific body of knowledge and used as textbook or reference for teaching - Course syllabi relating to the copyrighted works, or Certificate from school library stating the copyrighted work has been indexed shall be attached together with the ISBN number.

(2) If the copyrighted work of any form which has commercial value and contributed income generating funds to the University. Receipt of purchase of sold copies by institution or business establishments (i.e., bookstores, school libraries) shall be attached together with the ISBN number.

(3) If copyright work in the form of literary work, dramatization, musical composition and audio-visual works has been adopted for filmmaking or multi-media production. Certificate from the production companies stating the copyrighted work has been used in any form of its operation shall be attached together with the ISBN number.

(4) If the copyrighted work in the form of computer program has been adopted for operations and system in the University or other institution. Certificate from the office or institution that the copyrighted work has been used shall be attached together with the ISBN number.

An incentive of Php 5,000.00 shall be given to researcher/s after filing of Patent/Utility Model/Industrial Design/Trademark/Copyright/Plant Registry upon receipt of application form with assigned application number from IPOPHL. An additional incentive of Php 20,000.00 for every granted Utility Model; and Php 50,000.00 for every granted invention shall be given respectively.

Shares in royalty and other revenues shall be payable to the creator(s)/inventor(s) of the IP even after retirement, termination of their employment, contract of service, or in the case of students after their graduation; provided further, that said creator(s)/inventor(s) have not been dismissed from the university because of violation of provisions of this policy (e.g., selling or compromising university trade secrets).

5.3 Disclosure and Protection of Intellectual Property

5.3.1 IP Disclosure and Application Process

1. Before the execution of the Research Agreement, the researcher(s) shall comply for technology assessment report forms (USM IPTTBDO TA-1 and 2).

2. The researcher(s) shall promptly identify and disclose the intended IP to USM TTO by submitting the following requirements:

a. IP Disclosure Form (to be secured from the USM IPTTBDO)

b. Waiver forms (to be secured from the USM IPTTBDO)

c. If technology derived from student's thesis/ dissertations- final indexed manuscripts

d. If technology based on University funded research- signed terminal report

e. In case of personal funded research- report of the study and Waiver Form D

The IPTTBDO unit shall determine and recommend the technology for IP protection through the URDEC. IP derived from externally funded research shall be filed without prior recommendation from URDEC by virtue of signed MOA of the respective project.

The URDEC shall check for legitimacy and review proposed technology for IP filing application.

In case of external party involved such as in research grants with respect to the IP, the IPTTBDO shall notify the external party and proceed with the terms of the agreement with such party.

No public disclosure about the IP shall be made which include the disclosure of confidential information and will constitute prejudice of its full protection. If public disclosure is made, an IP application shall be filed within three (3) months from the date of such public disclosure.

Concerning biodiversity, genetic resources or materials associated with traditional knowledge, and indigenous knowledge, systems and practices, the rules on disclosure for the protection of their IPs, as stated in Section 3, Rule 12 of R. A. No. 10055, shall govern.

5.4 Technology Transfer

In pursuant to Article IX of R. A. No. 10055 and Rule 24, Chapter IX of the IRR or Joint DOSTIPO Administrative Order No. 02-2010 dated 18 August 2010, the University of Southern Mindanao IPTTBDO particularly its Intellectual Property and Technology Transfer Division is hereby created which shall carry out the following functions:

1. Manage the University Portfolio which includes providing assistance in IP drafting disclosures for IP Filing and prosecution with IPOPHL and maintenance of registered IP's;

2. Evaluate potential of IP's for deployment, extension, and commercialization which includes preparing technology assessment report, business/ marketing plans, and IP valuation reports;

3. Assist university researchers and business/other organizations seeking technology adopters;

4. Assist in preparing legal documents pertaining to IP and commercialization;

5. Negotiate between technology adopter and the author/inventor of technology for purposes of registration, licensing, joint venture or other technology transfer arrangements;

6. Review and recommend, upon consultation with the appropriate units of the constituent universities, appropriate intellectual property policies for the university;

7. Promote a culture of innovation and entrepreneurship in all USM campuses through provision of training courses and seminars on intellectual property and technology commercialization;

8. Administer and monitor implementation of the IP Policy.

The President may authorize the Vice-President for Research, Development and Extension (VPRDE), or other Designee, the authority to negotiate and execute, on behalf of the University, legal documents relating to the University's IP and the formation and operation of companies for the commercialization of University technologies.

The URDEC shall function as a review committee that will oversee the management of the IPTTBDO.

5.5 Commercialization

5.5.a Intellectual Property Commercialization

USM has the first right to commercialize any IP generated in the University. In cases where the University failed to commercialize an IP one year after it was granted, the inventor/s shall be allowed to commercialize or participate in a spin-off company subject to the provision of RA 10055 Chapter VI.

5.5.b Identification of IP's for Commercialization

1. The requirements for IP to be considered eligible for transfer or commercialization are as follows:

a. Technology Assessment Report forms (USM TTO TA- 3, and 4);

b. Cost and revenue analysis report, stating total R&D cost particularly to production of technology;

c. Acceptance of the technology/IP application or the grant of the patent and/or other IP.

2. The IPTTBDO shall determine and recommend to the University the technology for commercialization with approval from URDEC.

3. The URDEC shall check for legitimacy and review identified technology for commercialization.

To facilitate promotion, dissemination or commercialization of technologies generated, the researcher(s) shall provide the IPTTBDO relevant information/documents to prepare various marketing or promotional tools or kits, where applicable, without compromising the full protection of the IPs, such as:

a. Technical or terminal reports, consisting of manufacturing process or operations, materials and equipment requirements or specifications, quality control parameters, utilities or power requirements, product quality specifications and test procedures, and others;

b. Invention disclosure documents;

c. Design and/or diagrams or blueprints of equipment; and,

d. Plant design or layout.

In case of an external party involved such as in research grants with respect to the commercialization of the IP, the IPTTBDO shall notify the external party and proceed with the terms of the agreement with such party. Secondment shall be allowed and shall be in accordance with exiting University and provisions in RA 10055. In the case where the

University researcher would be employed by an existing company, which will pursue the commercialization of the technology/IP, the applicable provisions of R. A. No. 8439 shall prevail.

5.5.c Technology Commercialization Modes and Principles

The Guiding Principles on Intellectual Property Commercialization (stated in Chapter II of the Joint DOST-DTI-IPOPHL Administrative Order No. 001) must be observed in the transfer or commercialization of IPs through various modes.

Modes of Commercialization

1. Licensing/Other Agreement - The University, through the IPTTBDO, shall prepare a Licensing Agreement or other appropriate agreement by the following process:

a. The University, through consultative meetings/ negotiations by the IPTTBDO and the researcher(s), shall closely coordinate with prospective Technology Adopter to discuss or negotiate on the terms of the technology transfer or commercialization and compliance therewith.

b. The University, through the IPTTBDO, shall prepare a draft of the licensing agreement, or a Technical Service Contract, or any other agreement, signed by both University and prospective Technology Adaptor.

c. In case of direct negotiation for the technology commercialization agreement, the university shall submit a written request to the Secretary of DOST to obtain a written recommendation from the DOST Secretary on the agreement and to secure a Fairness Opinion Report (FOR) from an independent third-party body, submitting relevant documents, such as:

i. Proposed transaction;

ii. Valuation Report;

iii. Due Diligence Report on the parties to the transaction, and

iv. List of potential recommendees for membership in the Fairness Opinion Board (FOB)

v. Signing or Execution of the Agreement upon obtaining the written recommendation from the Secretary of the DOST and/or favorable FOR onthe transaction, the agreement may be signed or executed by the parties.

2. Spin-off - The University's researcher-employee may establish or participate in a spin-off firm to commercialize or pursue commercialization of the IP’s generated from the R&D funded by the government by complying to the provisions of the IRR of the RA 10055 Chapter VI and Chapter VII rule 16. The spin-off firm may apply for a Technology Business Incubator (TBI) arrangement based on existing TBI policies of the University.

3. Direct Sale - The University, through the IPTTBDO, shall have a Technical Service Contract, or any other agreement, and present the agreement to the prospective Technology Adaptor for review before finalization, signed by both parties to facilitate technology transfer.

5.5.d Revenue Sharing Between RDI And Researcher(s)

Under the rights of the researchers granted under R. A. No. 8439 or the "Magna Carta for Scientists, Engineers, Researchers, and other S&T Personnel in Government", the University and the researcher(s) shall have sixty percent (60%), and forty percent (40%) share, respectively, in the revenues derived from R&D projects.

Net profit shall mean gross sale minus royalty, production cost and other expenses.

a. When the University undertakes the commercialization/distribution of the technology and IP's, royalty share shall be 15% of the gross sale. Further, the researcher/s or author/s shall also have 20% share in the net profit.

b. When the University undertakes commercialization/ distribution of the technology and IP's involving external party (research grants/ collaborators/ etc.) royalty sharing shall depend on the terms of agreement with the involved party.

The researcher may claim payment for the share upon submission of the following documentary requirements:

a. Copies of applicable agreement, and report on the technology transfer agreement stating the names and share distribution of all entitled University personnel;

b. Copy of IP protection filing or Certification or Registration of the relevant technologies/IPs/IPRs, if applicable;

c. Copy of technical report in published form or project technical report, both with International Standard Book Number (ISBN) of the University's technologies without IP Protection; and

d. Copy of Official Receipt of payment for royalty made by the Technology Adopter to the University.

The apportionment/distribution of the share among the researchers shall be stipulated in the MOA/Special Order/Research Agreement. In the absence of a written agreement among the researchers, the share shall be distributed among involved researchers as follows:

a. For technologies/IPs with only one researcher, one hundred percent (100%) shall be vested on the sole researcher;

b. For technologies/IPs/IPRs with two researchers, sixty percent (60%) shall be given to the principal author/researcher and forty percent (40%) to the co-researcher; and

c. For technologies with three or more researchers, forty percent (40%) shall go to the principal author/researcher and sixty percent (60%) shall be distributed among the other researchers.

Duration of Payment. The researchers shall continue to receive their share under the following conditions:

a. Researchers who have retired or have severed their employment ties with University shall continue to receive their share within their lifetime for as long as there are royalties and revenues derived from the commercialization of the technology/IP/IPR;

b. In no case shall the researcher assign, convey, or transfer his/her right, title, or interest in and to the share in royalties.

The University's share of the Net Revenue shall be distributed as follows:

a. College/Unit (of where the author of IP is assigned, c/0 College Dean) 25%

b. Tech Transfer Office (c/o IPTTBDO) 50%

c. Innovation Fund (c/o R&D Director) 25%

5.5.e General Provisions

Basic Provision - Any issues on the IPs/IPRs generated out of Government funded R&D shall not impede the expedient transfer, roll-out or commercialization of the needed technology, as may be determined mainly by the DOST Secretary in case of national emergencies or the need to advance national and local interests.

Dispute Resolution - Any dispute relating to any provision in this Protocol or arising between the University and the researchers about any of the provisions in the Research Agreement shall be resolved amicably through the alternative dispute resolution process of the University. Separability Clause - If any provision of the Protocol is declared unconstitutional, the same shall not affect the validity and effectivity of the other provisions.

Amendments - The IPTTBD office upon recommendation to, and approval of the University President, may as it is necessary, amend, revise, and/or add to these implementing rules and regulations in order fully implement the intent of the intellectual property rights.

Effectivity - The University administration shall endeavor to make this protocol effective upon the approval of the USM Board of Regents and 30 days after its publication in the University website.

2. IMPLEMENTATION

- State policies and guidelines in the conduct of Research Activities

    - The institution has the research manual which provides guidelines and procedures for internal and administration/ operation and conduct of activities.
        - USM Code (Book 1, Chapter16, Article 76-78)
        - University Research, Development and Extension Manual 2024
        - Undergraduate Research Handbook (Revised 2019)

Article 76. Scope of Research and Extension Services

Section 1. The University Research, Development and Extension functions of the University shall address the needs of the University and the community.

Section 2. Research Program activities of the University shall be geared towards the discovery and expansion of scientific knowledge and development of technologies.

Section 3. The University Extension Services Center shall package research outputs for extension purposes and community consumptions

Section 4. The Research and Development Office and the University Extension Services Center shall respectively provide leadership in the research, development and extension related programs, projects, and activities of the University.

Article 77. Policies and Guidelines Governing Research, Development and Extension

Section 1. The overall administration and supervision of the research, development, and extension services of the University shall be vested in the Office of the Vice President for Research, Development and Extension.

Section 2. Research, Development and Extension plans, programs, or project proposals shall be in accordance with the established criteria and priorities prescribed by the University

Research, Development and Extension Committee (URDEC) and recommended by the University President for approval.

Article 78. Research and Extension Personnel

Section 1. The Research and Extension staff shall be composed of the following:

a. University officials and employees who are detailed/seconded or designated as research and extension development administrators and support services personnel; and

b. Full-time research personnel, such as: research administrators, researchers, research assistants, lab technicians or support staff, and appointive positions.

- **For Faculty Research,** the Institution has a university research manual (USM Research and Development Guidebook, 2016). It provides relevant information involving various aspects of research, including guidelines on

  writing, faculty incentives, the research agenda, research ethics, plagiarism, intellectual property, and the flow chart showing the processing of theses and institutional research.

- **For undergraduate researches,** the Institution has an Undergraduate Research Handbook (revised 2019), a style guide for the preparation of USM undergraduate thesis outline and manuscript. This manual serves as the reference as regards various guidelines, policies and procedures that govern the conduct of undergraduate thesis in the University.

  Part II of the Undergraduate Research Manual stipulates the Policies and Guidelines on the Qualification of Adviser, Thesis Advisory and Guidance Committee, Composition of the Guidance Committee, Duties of Guidance Committee Members (Thesis Adviser, Dept. Research Coordinator, Dept. Statistician, Committee Member, College Research Coordinators), Technical Editor, Incentives, Thesis Load of Faculty, Oral Defense and Conduct of the Study, Submission of Thesis, Thesis Quality and Content, Style guide and Grading Scheme)

➢ **Incentives granted to faculty researchers.**

- The Institution provides incentives to faculty researchers as stipulated in the USM Code and Research Manual.

  Excerpts from Book II, Chapter 21, Article 92, Section 7 of the USM Code

  *"A faculty member designated to undertake officially approved **research,** development and extension, or resource generation activities without honorarium, shall be entitled to the following workload-credits or quasi-teaching assignments (QTA) equivalent:*

  a. One (1) program 9 units
  b. One (1) project 6 units

c. One (1) study 3 units

Provided, that where one faculty member is designated to undertake more than one research, development and extension, or resource generation activities at the same time, in one given period, the workload- credits to be granted shall not exceed total of nine (9) units."

- College Research Coordinators are also given 3-unit load displacement.

- In addition, the Institution provides incentives to a faculty member designated as undergraduate thesis Adviser/Dept. Statistician/Dept. Research Coordinator/Technical Editor.

Excerpts from USM Undergraduate Research Handbook (2019), Part II, Policies and Guidelines:

"Faculty Load Equivalent of Thesis Advisory Committee/ College Research Coordinators"

a. For every thesis advisee, the adviser will have an equivalent academic load of 0.5 unit a maximum of six units load credit. In cases where there will be more than six-unit equivalent, the load equivalent will be considered as service credit.
b. For the research/extension panelist, he/she will have an equivalent academic load of 0.1 unit for every student with a maximum of three units load displacement. In excess of the equivalent load it will be considered as service credit.
c. For the college research coordinators, he/she will be entitled to three-unit load displace for a minimum of 100 and a maximum of 150 students.

Thesis Load of Faculty (student: adviser ratio)

a. Equal sharing of student-adviser ratio should be strictly followed. Student advisees should be equally divided among the faculty members per department. As much as possible no faculty will be given monopoly of advisement.
b. Group thesis is discouraged. This is to enhance student's persona know-how on research methodology, application, writing skills, and report preparation.
c. Adviser and advisee should be creative enough in crafting research problems that will not entail much expense.
d. Group thesis will be allowed only in exceptional cases and will be subjected first to preliminary evaluation of the University Research, Development Extension (URDE).
e. Case studies/feasibility studies are exempted from checking and recording in the Research and Development Office (RDO). Approval and recording will be up to the college level only.

Excerpts from USM Research and Development Guidebook (copyrighted 2016)

Honorarium

1. A researcher or faculty shall only be entitled to an honorarium beyond his/her normal workload.

3. For USM (under USMARC and PICRI) and College-Based Researches honorarium shall be as follows:

Program Leader - Php 3,000.00/program

Project Leader - Php 2,000.00/project Study Leader - Php 1,500.00/study

4. The honorarium shall be released on quarterly basis subject to availability of funds. It can only be released upon submission of progress report.

5. The last quarter of the honoraria or incentive for all completed USM (USMARC, PICRI, College-Based and Extension) and externally funded researches can only be released upon submission of an accomplishment/terminal report and publishable article (accepted and certified by the Editor-in-Chief) in USM R&D Journal or any refereed journal.

6. For externally funded researches, the rate of the honorarium will depend on the approved allocation of the funding institutions.

- State the Profile of the Research and Development Heads.

Head	**Name**	**Educational Attainment**	**Specialization**	**No. of Years of R & D Experience**
1. Institution' s R & D Head				
Vice Presidents for Research, Development and Extension	Dr. Debbie Marie B. Verzosa	PhD	Mathematics Education	20
Director, USMARDC	Dr. Jurhamid C. Imlan	PhD	Hala Science	
Director, Extension Services Office	Dr. Glyn G. Magbanua	PhD	Education	9
Director, Research Publication Services Office	Dr. Florence Roy P. Salvana	PhD		
Director, Phil. Industrial Crops Research Institute	Dr. Tamie C. Solpot	PhD		
2. Academic Unit's R&D Head				
College of Science and Mathematics	**Cyrelle M. Besana**	**MSc**	**Microbiology**	

3. Heads of Specialized Research Centers	Name	Educational Attainment	Specialization	No. of Years of R & D Experience
Unit Head, Intellectual Property, Technology Transfer and Business Development Office	Dr. Jalaloden B. Marohom	PhD	Business Administration	11
Unit Head, ESO-Strategic Partnership and Governance Cluster	Dr. Ellen Joy M. Farala	PhD Cand.	Education	8
Unit Head, ESO-Sustainable Community Development	Cherie Cano-Mangaoang	PhD	Biology	5
Unit Head, ESO-Monitoring and Impact Assessment Unit	Anamarie B. Uyangurin	MaEd	Applied Linguistic	4
Unit Head, PPU	Jan Clyden B. Tenorio	DVM PhD	Veterinary Medicine	
Center Head, Philippine Industrial Crops Research Institute	Bernadith T. Borja	MS	Plant Biology	8
Center Head, USM Satelite SERDAC/IPTTBDO	Romiel John P. Basan	PhD	Agricultural Economics	14
Center Head, Food Processing and Innovation Center	Maribelle T. Piamonte	MS	Food Science and Technology	7
Center Head, Wildlife Research and Rescue Center	Florence Roy P. Salvaña	PhD	Botany	11
Center Head, Center for Human Kinetics and Wellness Studies	Ruben L. Tagare, Jr.	PhD	Physical Education and Sports	8
Center Head, High Value Crops Processing Center	Khrist June L. Callano	PhD	Horticulture	15
Center Head, i-SMART	Jay Ar P. Esparcia	MS	Computer Science	
Center Head, Multicultural IP Center for Research, Education and Development (MIPCRED)	Frans Bert D. Gomez	PhD	Sociology	11

Center, Health Innovations	Lydia C. Pascual	PhD	Chemistry	
Center Head, Animal and Halal Center	Roy C. Ricabar	MS	Animal Science	8

- State the incentives granted to faculty researchers

  - Incentives Granted to Faculty Researchers

Type of Incentive	Brief Description and Basis
Financial	P50,000 for publications in International Peer Reviewed Journals (i.e., Scopus and Thompson Reuter's); BOR Resolution no. 88 s 2016
Financial	P20,000 for national publications (non-predatory); BOR Resolution 88 s2016; BOR Resolution 50 s2017
Financial	P50,000 for a patent; VPRDE Resolution 004 s2017; URDEC Resolution 004 s2017; BOR Resolution 50 s2017
Financial	P20,000 for a utility model/new plant varieties/animal breeds; URDEC Resolution 004 s2017; BOR Resolution 50 s2017
Financial	P5,000 for a research copyright, trademark and SRAs; URDEC Resolution 004 s2017; BOR Resolution 50 s2017
Financial	Quarterly honoraria for faculty project leaders ₱3,000/quarter for Program Leaders, ₱2,000/quarter for Project Leaders, and ₱1,500/quarter for Study Leaders).
Recognition	Certificate of commendation for published authors
Load Reduction	Faculty members designated to conduct approved research receive academic teaching load reductions–up to 9 units for a program, 6 units for a project, and 3 units for a study.

- State all completed research in the last 3-5 years

  - **Completed Researches in the last 3-5 years**
    USM Local fund (2015-onwards).xlsx

- State all On-going researches

  - **On-going Researches**

Year	#	Proponents	Title	Unit	Approved Budget	USM Research Agenda	SDG	DURATION	REMARKS	
2026	RESEARCH AND DEVELOPMENT OFFICE									
	Program: "Sustainable Technology Innovation and Commercialization for Community and Industry Development"					1,570,875.00				
	1	PIA AMABELLE M. FLORES	PISCES (Prototype Improvement of Smokehouse Device for Commercialization/ Enterprise, and Sustainability)	CA	71,000.00			January - December 2026	on-going	FALSE
	2	Carlito P. Basay, Jr.	Valorization through Sustainable Upcycling and Recycling of Agricultural Wastes (VaSURA): Developing Calcium Foliar Spray from Eggshell Waste	CSM	220,000.00			January - December 2026	on-going	FALSE
	3	Ronald Z. Pascual	Design, Prototype Development, and Optimization of Innovative Biomass Composting Reactor (IBCR)	CSM	36,000.00			January - December 2026	on-going	FALSE
	4	Jalaloden Marohom	COMPETE-Agri: Commercialization and Opportunities for Market Performance and Enhanced TEchnologies of AGRiculture at the University of Southern Mindanao	CBDEM	249,000.00			January - December 2026	on-going	FALSE
	5	MORENO B. JAVA JR. Jimwell B. Francisco	Development of Basketball Instructional Glove as Utility Model towards Basketball Grassroots Development Project	CHK	71,000.00			January - December 2026	on-going	FALSE
	Program: "Green Campus and Environmental Sustainability Research Program"									
	6	Gerlie E. Ticbe Karriza Jane P. Managkil Ryan Gonzaga John Aldrin I. Sanama	Charting a Course for Green USM: A 2025 Baseline Analysis of Environmental Metrics, Stakeholder Perspectives, and Roadmap to Green Metric Recognition	CED/PALMA/CEIT/ Research	213,000.00			January - December 2026	on-going	FALSE
	7	Carlito P. Basay, Jr.	Chemical Handling and Environmental Monitoring at the University of Southern Mindanao through Tracking, Reporting, Accountability, Compliance, and Knowledge (CHEM-TRACK)	CSM	71,000.00			January - December 2026	on-going	FALSE
	8	Cherrie C. Mangaoang	Biodiversity Assessment at University of Southern Mindanao	CSM	142,000.00					
	9	Joeseph S. Quisado	Subterranean Termite and Rodent Infestation in Research, Development, and Extension (RDE) Facilities of USM: Prevalence, Control Measure, and Social Perception	CA	142,000.00			January - December 2026	on-going	FALSE
	Program: "Education, Human Capital, and Social Development Research Program"									
	10	Vicente T. delos Reyes	Breaking Barriers: Gender Issues and the Coping Strategies Among Criminology Students in Higher Education	CASS	48,875.00			January - December 2026	on-going	FALSE
	11	Maricel G. Dayaday	Exploring Collaborative Learning Approaches to Improve Technopreneurship Education in a Wadhwani VLE	CEIT	36,000.00			January - December 2026	on-going	FALSE
	12	Ruben L. Tagare, Jr.	Modernizing Health and Physical Fitness and Health Assessment in Philippine Schools: Development of a Data Management System and Mobile Application	CHK	71,000.00			January - December 2026	on-going	FALSE
	13	Kharlo Subrio	Tracer study	Research	50,000.00			January - December 2026	on-going	FALSE
	14	Glyn B. Gabano-Magbanua	Emergent Linguistic Systems in Multilingual Contexts: Discourse, Identity and Linguistic Hybridity in Kabacan Tagalog	CASS	150,000.00			January - December 2026	on-going	FALSE

UNIVERSITY OF SOUTHERN MINDANAO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER					640,000.00					
Program: "Crop Genetic Improvement and Sustainable Production Technologies"										
1	Jayson S. Baltazar Jurhamid C. Imlan Tamie C. Solpot Sheena B. Lucena Marry Grace S. Balbuena	Project: Molecular and Morphological Characterization and Field Evaluation of Musa Cultivars, and In Vitro Propagation of Musa balbisiana at the University of Southern Mindanao: Assessing Genetic Diversity, Growth Performance, and Pest and Disease Incidence Study 1: Morphological Characterization Using Descriptors and Yield Performance of Musa Cultivars / SBLucena Study 2: Molecular Diversity Assessment of Musa Cultivars / MG Balbuena Study 3: Identification and Assessment of Pest and Disease Incidence in Musa Cultivars under Field Condition / JSBaltazar and TCSolpot Study 4: Evaluation of Nursery Management Strategies for Optimized Growth and Survival of Tissue-Cultured Musa balbisiana Plantlets / JC Imlan Study 5: Development of a Comprehensive Catalogue of Musa Cultivars Characterized at the University of Southern Mindanao / TCSolpot	Research/CA	213,000.00			January - December 2026	on-going		FALSE
2	JESSIE G. ELARDE	Hybridization and Improvement of High Yielding and Herbicide Resistant Corn.	Research	284,000.00			January - December 2026	on-going		FALSE
3	JESSIE G. ELARDE	PHOTOSYNTHETIC THRESHOLD OF USM VAR 5, NCH 33, AND NCH 35 AS AFFECTED BY CUTTING OFF THE STALKS AT DIFFERENT DAYS AFTER POLLINATION.	Research	107,000.00			January - December 2026	on-going		FALSE
4	Marry Grace S. Balbuena	Validation of USM-Developed F1 Hybrid Durian (Durio zibethinus Murr.) Using Molecular and Morphological Approaches, and Its Conventional Propagation to Mature, Fruit-Bearing Trees	Research	178,000.00			January - December 2026	on-going		FALSE
5	JANICE M. BANGOY Jasmin A. Pecho	Comprehensive Evaluation of Durian Clone Yields and Pest Dynamics in the USM Clonal Garden (Year 3) 1.Yield Performance Evaluation of Durian Clones in the USM Orchard – Janice M Bangoy 2. Surveillance of Insect Pests and Diseases in the USM Clonal Durian Garden- Jasmin A Pecho	Research	121,000.00			January - December 2026	on-going		FALSE
6	Jasmin A. Pecho	Organic Approaches on Enhancing Dragon Fruit Production through InnovativeTechnology	Research	107,000.00			January - December 2026	on-going		FALSE
Program: "Sustainable Food Processing, Functional Products, and Value-Added Innovation Program"										FALSE
7	SANDRA JOY P. IMLAN	OPTIMIZATION OF KAONG (Arenga pinnata) SYRUP AND VINEGAR PRODUCTION: PHYSICOCHEMICAL PROPERTIES, SHELF-LIFE, AND SENSORY ACCEPTABILITY	CA	213,000.00			January - December 2026	on-going		FALSE
8	Jurhamid C. Imlan	Crunching the Future: Halal-Compliant Squash and Cucumber Kropek for Nutrition Improvement in BARMM (BANaK: BARMM Approved Nutrition-aid Kropek)	CA	178,000.00			January - December 2026	on-going		FALSE
9	Rezin G. Cabantug	Innovative Processing and Functional Enhancement of Tropical Fruit Purres: Toward Nutrient Retention, Shelf-life Extension, and Sustainable Packaging Solutions	Research	249,000.00			January - December 2026	on-going		FALSE
PHILIPPINES INDUSTRIAL CROPS RESEARCH INSTITUTE										
Program: "Plantation Crop Productivity and Climate-Resilient Management Program"					853,000.00					
1	TAMIE C. SOLPOT Bernadith T. Borja Noe S. Mamon, Jr.	Integrated Fertilization Program for Enhancing Productivity of Rejuvenated Coffee and Cacao Trees at PICRI	CA	213,000.00			January - December 2026	on-going		FALSE
2	Jurhamid C. Imlan	ADAPTABILITY AND GROWTH PERFORMANCE OF DIFFERENT ROBUSTA and LIBERICA COFFEE CLONES IN TYPE III AGROCLIMATIC ZONE BREW "Balanced Research on Elite Coffee and Wild Citrus"	CA	142,000.00			January - December 2026	on-going		FALSE
Program: "Rubber Genetic Improvement and Sustainable Production Systems Program"										
3	JANICE M BANGOY SHEENA B LUCENA	Influence of Polybag Size, Germination Medium, and Growing Medium on Cost Efficiency, Seedling Growth, and Transportability in Rubber Nursery Production Study 1: Influence of Polybag Size and Media Type on Rubber Tree Seedling Growth and Transportability (SBLucena) Study 2: Economic Viability and Nursery Practice Optimization for Rubber Tree Seedling Production (JMBangoy)	Research	178,000.00			January - December 2026	on-going		FALSE
4	JANICE M BANGOY SHEENA B LUCENA MARRY GRACE BALBUENA JASMIN A PECHO	Program: Hybridization of Rubber for the Development of High- Yielding and Disease-Resistant Clones (YEAR 3) Project 1. Field Assessment of Growth and Adaptability of Rubber Tree Hybrids from Ortet Selection Project 2: Molecular Profiling of Rubber Seedlings from Ortet Seedling Selection Project 3: Insect Pest and Disease Resistance in Field-Established Ortet Seedlings Project 4: Field-Based Morphological Evaluation of Selected Ortet Seedlings	Research	142,000.00			January - December 2026	on-going		FALSE
5	Rezin Cabantug	Innovative Strategies to Enhance Yield Recovery, Labor Efficiency, and Sustainability in Overused and Degraded Rubber (Hevea brasilienses) Plantations	Research	178000			January - December 2026	on-going		FALSE
Library										FALSE
1	Radji Macatabon Roselyn Clemen Susan Martinez Norquez Mangindra	Pagbuo ng Ortugrapiya ng mga Wika ng Pilipinas (Ovu Manubo)	SWK	N/A			January - December 2026	on-going		FALSE

- State all Faculty researches

  - **All Faculty Researches**

    USM Local fund (2015-onwards).xlsx

  - **CSM DMS Faculty Researches funded by the University**

Research Title	Time Frame	Date of Completion	Research Cost	Funding Source	Researcher/s
1. Generalized E-torsion Graph; Forcing Subsets for perfect Roman dominating sets in graphs; Convex Graph induced by a Function and a Finite Set	1 year	December 2025	107,000.00	Research and Development Office (Fund 01)	MR. LEONARD M. PALETA MR. JUPITER G. PILONGO MR. PHILIP LESTER P. BENJAMIN
2. Statistical Tool Selector(Stat Select): A Mobile App	1 year	December 2023	270,000.00	Research and Development Office - College Based	Anna Jean S. Garcia, Honey Vincent Valle, Daryl Mae Mamon,

for Faculty, Students and Researchers					Leonard Paleta, Jupiter Pilongco, Roel Valenton, Jeaneth Licaros, Jonald Pimentel, Philip Benjamin, Rowel Madio, Leorence Tandog, & Debbie Marie Verzosa
3. USM LIFER Project: USM & Ligawasan Marsh Fish & Meat-Based Enhanced Ready-to-Eat (RTE) Products		2022	600,000.00	Fund 101	Pia Amabelle Flores Jonald Pimentel Rowell Nitafan Pia Amabelle Flores Vic Laurence Oliva Leanne Jay Manceras Bryan Llolyd Bretaña Mary Joy S. Cañolas
4. **STUDY**: Genetics or Environment: Tracing the Root Cause of Increasing Homosexual Population		2019		USM Fund 101	Jonald L. Pimentel, Anna Jean S. Garcia
5. Study: Educational Innovations in Rural And Remote Communities : A Multi-Dimensional Approach	1 year	2021	200,000.00	Research and Development Office	Leorence C. Tandog Debbie Marie B. Versoza Astrofil Hyde M. Alcala Shandra C. Gonsang Joy Gloria P. Sabutan Mitzi Aileen M. Alba Benedict Entera Eimer M. Estilloso
6. Analysis of the Alignment Between	1 year	2018	150,000.00	USM Fund 101	Debbie Marie Verzosa and Philip Lester Benjamin

USM's Mathematics Programs the Students' Present Academic or Future Professional Needs					
7. Water Quality Assessment and Characterization of Liguasan Marsh in Cotabato Province: A Comprehensive Analysis of Physico-Chemical Parameters, Heavy Metal Contamination, and Biological Assessment	1 year	2024	1,594,296.00		Project Leader: Lydia C. Pascual, PhD. Project Staff: Debbie Marie B. Verzosa, PhD. Project Members: Hanna Lou B. Diez, and Lemuel Jon P. Gabuay
8. PRODUCT DEVELOPMENT AND COMMERCIALIZATION OF INDIGENOUS CROP AND FISH PRODUCTS (MINSUPALA-IRDC Project Phase 3)		ongoing			Lydia C. Pascual Jennet R. Mag-aso Leonila V. Papalid Romiel P. Basan Debbie Marie B. Verzosa Carlito P. Basay

- State all Student researches

Research Title	Time Frame	Date of Completion	Researher/s	Faculty Adviser
TRIANGULAR ARRAYS AND POLYNOMIAL COEFFICIENTS	1.5 YEARS	June 11, 2026	NORSIDA U. SANGKOPAN	SANDRA A. NANDING, MSc.
SECURE DOMINATING SET OF THE GRAPH: FAN, FRIENDSHIP, LADDER, AND PRISM	1.5 YEARS	June 02, 2026	NICOLE ANNE I. EGLESIAS	PHILIP LESTER P. BENJAMIN, PhD.
BIPARTITE DOMINATION	1.5 YEARS	June 01, 2026	AKMAD K. GALMAK	PHILIP LESTER P.

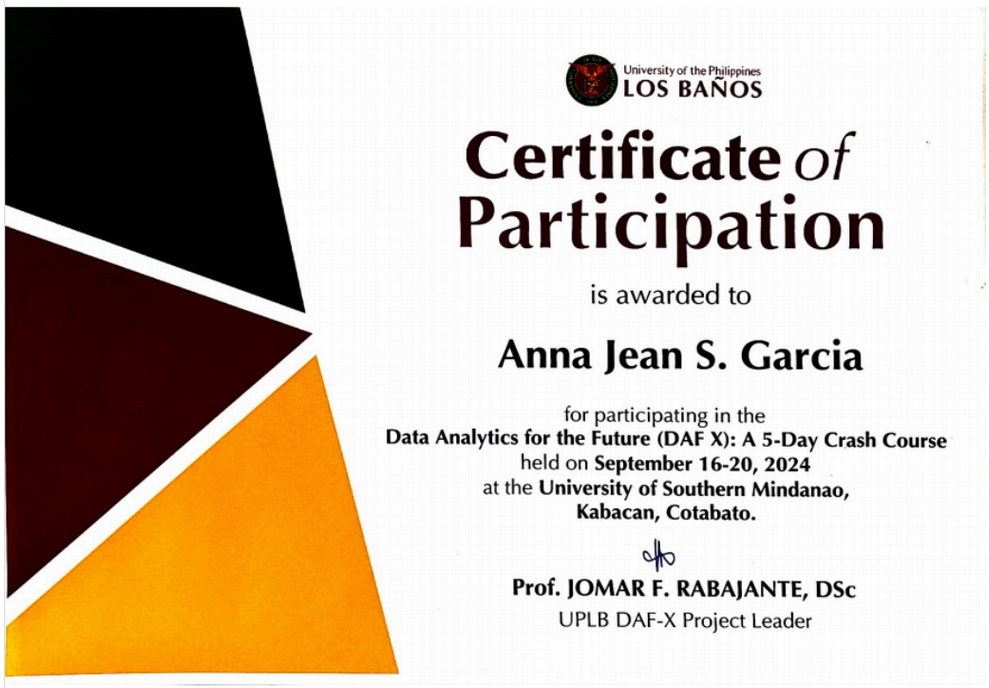
NUMBER OF SOME SPECIAL GRAPHS				BENJAMIN, PhD.
ON THE COMPARISON BETWEEN FRIEDMAN AND QUAD TESTS	1.5 YEARS	June 01, 2026	NORONISA E. MUSTAPHA	DARYL MAE C. MAMON, PhD.
APPLICATIONS OF GRAPH THEORY TO THE POSTMAN'S PROBLEM FOR OPTIMAZING J&T RIDER ROUTES IN DAGONG MLANG	1.5 YEARS	June 01, 2026	HAIRONISA E. MUSTAPHA	JUPITER G. PILONGO, MS
COMPARISON OF THE ITEM DIFFICULTY ESTIMATES ON THE MATHEMATICS IN THE MODERN WORLD EXAMINATION USING DIFFERENT IRT MODELS	1.5 YEARS	May 26, 2026	NORHATA M. MASLAMAMA	JONALD L. PIMENTEL, PhD.
CONNECTED CERTIFIED DOMINATION OF SOME SEPCIAL GRAPHS	1.5 YEARS	May 25, 2026	MARDIYAH I. MOKALAM	SANDRA A. NANDING, MSc.
CERTIFIED PERFECT DOMINATION OF SOME SPECIAL GRAPHS	1.5 YEARS	May 25, 2026	ZULHANNI M. SAWA	SANDRA A. NANDING, MSc.
CERTIFIED DOMINATION OF SOME SPECIAL GRAPHS	1.5 YEARS	May 25, 2026	BAINIYA M. LAPADZING	SANDRA A. NANDING, MS
OPTIMIZING AMBULANCE ROUTES FROM THE HOSPITAL OF BANISILAN WITHIN BANISILAN PROBLACION, NORTH COTABATO USING DIJKSTRA'S ALGORITHM	1.5 YEARS	May 15, 2026	JEROSE P. EBAL	JUPITER G. PILONGO, MS
MATHEMATICAL MODEL FOR NOROVIRUS TRANSMISSION WITH HUMAN INFECTION AND ENVIRONMENTAL COMPARTMENT DYNAMICS	1.5 YEARS	May 13, 2026	RESSA MAE R. ZOLINA	JEAD M. MACALISANG, MSc.
APPLICATION OF GRAPH THEORY USING WARSHALL'S ALGORITHM FOR USM TRICYCLE ROUTE NETWORK OPTIMIZATION		May 13, 2026	JASMINE N. GUIAMALOD	JUPITER G. PILONGO, MS
EXPLORING NORMALITY TEST METHODOLOGY WITH SECONDARY DATA	1.5 YEARS	June 04, 2025	DARLA C. CAJUTOL	DARYL MAE C. MAMON, MAS
FORECASTING MONTHLY WHOLESALE PRICE OF MILKFISH IN THE PHILIPPINES UNDER THE ARIMA MODELING	1.5 YEARS	June 03, 2025	RONNIE A. JAMELARIN JR.	ANNA JEAN S. GARCIA,MAS
FORECASTING THE FARMGATE PRICE OF DRY PALAY OF COTABATO PROVINCE	1.5 YEARS	June 03, 2025	ROY D. JONGCO	ANNA JEAN S. GARCIA,MAS

TIC-TAC-TOE ON GRAPHS: IT'S WINNING AND DRAWING STRATEGIES	1.5 YEARS	May 30, 2025	HANNIN K. ISMAEL	JUPITER G. PILONGO, MS
LIKELIHOOD OF PASSING LICENSURE EXAM IN AGRICULTURE AMONG USM GRADUATES USING BINARY LOGISTIC REGRESSION	1.5 YEARS	May 30, 2025	JEAN B. BABARAN	DARYL MAE C. MAMON, MAS
OPTIMAL ROUTES USING DIJKSTRA'S ALGORITHM AND GRAPH MODELS	1.5 YEARS	May 29, 2025	IVY JOY O. BENEMERITO	JUPITER G. PILONGO, MS
ORECASTING THE OIL PALM PRICE MILL IN CARMEN NORTH COTABATO	1.5 YEARS	May 29, 2025	NORMI-ANN L. OLYMPAIN	ANNA JEAN S. GARCIA, MAS
ANALYZING THE TRENDS OF VOLUME OF PRODUCTION OF THE CORN IN THE PHILIPPINES USING ARIMA MODEL (1987.2023)	1.5 YEARS	May 29, 2025	MERIAM T. DATANG	ANNA JEAN S. GARCIA,MAS
AN OVERVIEW OF SOME STRONGLY PERFECT GRAPHS	1.5 YEARS	May 26, 2025	NASROLAH B. ANDOYUGEN	SANDRA A. NANDING, MSc.
GENERALIZED TOPOLOGIES INDUCED FROM MAXIMAL PATHS OF DIRECTED GRAPH		May 26, 2025	JOHARIS B. HADJI SABIL	PHILIP LESTER P. BENJAMIN, PhD.
THE EFFECT OF OPTION HOMOGENEITY IN THE ITEM DIFFICULTY ESTIMATES ON A MULTIPLE-CHOICE EXAMINATION UNDER THE RASCH MODEL	1.5 YEARS	May 23, 2025	CARL IVAN P. LELIS	JONALD L. PIMENTEL, PhD
BIPARTITE DOMINAITON NUMBER IN JOIN GRAPHS	1.5 YEARS	May 21, 2025	SAULA P. KAMENSA	PHILIP LESTER P. BENJAMIN, PhD.
PEPFECT DOMINATION SETS IN THE JOIN OF GRAPHS		May 05, 2025	SAMRA E. LIDASAN	LEONARD M. PALETA, PhD.
FORECASTING THE EXCHANGE RATES OF US DOLLAR TO PHILIPPINE PESO USING ARIMA TIME SERIES ANALYSIS	1.5 YEARS	April 04, 2025	DESIREE G. VICTORIA	JONALD L. PIMENTEL, PhD.
ANALYSIS OF SCORING SCHEMES FOR MULTIPLE-CHOICE EXAMINATION	1.5 YEARS	June 06, 2024	ZAHERA S. KADIL	DEBBIE MARIE B. VERSOZA, PhD.
DOMINATION IN THE JOIN OF GRAPHS	1.5 YEARS	June 06, 2024	MIKEE V. TONIACAO	LEONARD M. PALETA, PhD.
HOP DOMINATION IN THE JOIN OF GRAPHS	1.5 YEARS	June 06,2024	FAHAD E. PIANG	SANDRA A. NANDING, MS
DOMINATION IN THE EDGE CORONA OF GRAPHS	1.5 YEARS	June 06, 2024	JANNA FIE A. TORMIS	LEONARD M. PALETA, PhD
COMPARISON OF NEWTON'S	1.5 YEARS	June 06, 2024	LUWALHATI M. ORBISTA	ENGR. ARNEL B.

SECANT, BISECTION, AND FIXED-POINT ITERATION METHODS IN THE SOLUTION OF NON-ELEMENTARY EQUATIONS				TOLEDO
ON THE CALIBRATION OF ITEM PARAMETERS OF THE UNIVERSITY OF SOUTHERN MINDANAO-COLLEGE ENTRANCE EXAMINATION USING 2PL MODEL: A CASE FOR ENGLISH ITEMS	1.5 YEARS	June 06, 2024	MARGIELY C. CALAWIGAN	JONALD L. PIMENTEL, PhD.
COMPARISON OF NEWTON'S, SECANTS, BISECTION, AND FIXED-POINT ITERATION METHODS IN THE SOLUTION OF NON-ELEMENTARY EQUATIONS	1.5 YEARS	June 06, 2024	LUWALHATI M. ORBISTA	ENGR. ARNEL B. TOLEDO
PREDICTING WINS AND LOSSES IN TOURNAMENTS USING VARIOUS RATING METHODS	1.5 YEARS	June 06, 2024	AMIRA Y. ABDULLATIP	DEBBIE MARIE B. VERZOSA, PhD.
DOMINATION IN THE CORONA OF GRAPHS	1.5 YEARS	June 05, 2024	FLORABELLE L. CAMPOS	LEONARD M. PALETA, PhD
ON THE CALIBRATION OF ITEM PARAMETERS CHARACTERISTICS OF THE UNIVERSITY OF SOUTHERN MINDANAO -COLLEGE ENTRANCE EXAM USING 2PL MODEL: A CASE FOR MATHEMATICS ITEMS	1.5 YEARS	June 05, 2024	JALANIE T. MATULIK	JONALD L. PIMENTEL, PhD
ITEM PARAMETER CALIBRATIONS ON THE USMCEE USING TWO PARAMETER LOGISTIC: A CASE FOR ABSTRACT REASONING ITEMS	1.5 YEARS	June 5, 2024	HAMIDA K. UTI	JONALD L. PIMENTEL, PhD.
ON THE CALIBRATION OF ITEM PARAMETERS OF THE UNIVERSITY OF SOUTHERN MINDANAO-COLLEGE ENTRANCE EXAMINATION USING 2PL MODEL: A CASE FOR SCIENCE ITEMS	1.5 YEARS	June 05, 2024	JOLINA A CAMANO	JONALD L. PIMENTEL, PhD.
DOMINATION IN THE CORONA OF GRAPHS	1.5 YEARS	June 05, 2024	FLORABELLE L. CAMPOS	LEONARD M. PALETA, PhD.
AN EXPOSITORY STUDY ON THE PANEL REGRESSION MODELING ON COFFEE PRODUCTION AMONG THE TOP FIVE PRODUCERS IN THE PHILIPPINES	1.5 YEARS	June 04, 2024	NORMAILA M. PUTONG	DARYL MAE C. MAMON, MAS

- Name all Opportunities for Research Capability Building

Type of Activity (e.g., advanced studies, upgrading, retooling, etc.)	Title of Training	Sponsoring Agency	Date and Venue	No. of Trained Faculty/Staff
Upgrading/retooling in data analytics	Data Analytics for the Future (DAF X): A 5-Day Crash Course	University of the Philippines Los Baños	September 16–20, 2024; University of Southern Mindanao, Kabacan, Cotabato	2—Anna Jean S. Garcia and DEBBIE MARIE B. VERZOSA
Upgrading	Planning, Monitoring and Evaluation for Development Results	CAARRDEC	April 24 – 26, 2019	100
Upgrading	Writeshop on Mechanics of Writing Fundable Research Proposal	Biology Department, CAS, USM	June 16, 2020	100
Retooling	Writeshop on Mechanics of Writing Fundable Research Proposal	USM	2 September 2016 (8 hrs.) / USM	150
Retooling	Seminar on Qualitative Research: Phenomenology and Grounded Theory	USM	19 September 2015 (8 hrs.) / USM	75
Upgrading	Seminar on How to Get Your Paper Published?	USM	15 August 2015 (8 hrs.) / USM	100
Retooling	Statistical Data, Analysis Retooling Training and Workshop	USM	November 10-11, 2017	100
Upgrading	Training Workshop on Plagiarism Prevention Policies	USM	February 28, 2019	100
Retooling	Online Indexing System	USM	October 17, 2019	25
Upgrading	Writing for Publication/Ethics/ IPR	USM	25	
Upgrading	Webinar on Research Publication	Isabela State University	July 28-29, 2020	4
Upgrading	Write shop for External Funding	USM	August 13, 2020	15



- Describe the research monitoring and evaluation system (instruments used, evalution results, etc.)

Faculty research projects are regularly monitored and evaluated through the University's Midyear and Year-End In-House Reviews, during which ongoing and completed research projects are presented for evaluation and feedback. Selected students also present their research through the separate Student In-House Review.

https://www.usm.edu.ph/56-research-papers-evaluated-at-usm-2025-midyear-rde-in-house-review

https://www.usm.edu.ph/usm-recognizes-best-papers-posters-at-44th-rde-year-end-in-house-review

- Describe the utilization of research results/outputs (e.g. for instructional development, enhancement of instruction process, technology transfer, etc.)

Title of Research	Nature of Utilization	Brief Description
1. Statistical Tool Selector(Stat Select): A Mobile App for Faculty, Students and Researchers	Intended use as an instructional and research guidance tool	The project aims to formulate procedures to be translated into a mobile application called StatSelect. The app is intended to guide students, advisers, and other researchers in identifying appropriate statistical tools and research instruments for their studies.

- Describe the mechanism adopted to protect IPR and observance of research ethics among faculty and student researchers

The University of Southern Mindanao protects intellectual property rights and promotes research ethics among faculty and student researchers through institutional policies, designated offices, review procedures, and capacity-building activities.

https://www.usm.edu.ph/wp-content/uploads/obs/2020/Research%20Independence%20Academic%20Freedom/Implementing%20Rules%20and%20Regulations%20%28IRR%29%20for%20Intellectual%20Property%20Rights%20%28IPR%29.pdf

For intellectual property protection, the University implements the provisions of its RDE Manual through the Intellectual Property, Technology Transfer and Business Development Office (IPTTBDO). Researchers disclose potentially protectable outputs using prescribed forms and supporting documents. These outputs undergo assessment and the applicable institutional review before filing for protection. The IPTTBDO assists with IP documentation, filing, and maintenance of registered intellectual property. The policy also establishes ownership provisions, protects confidential information, and permits restrictions on public access to theses or dissertations containing potentially patentable or confidential findings.

https://uqac.usm.edu.ph/pluginfile.php/9891/mod_resource/content/1/Intellectual%20Property%20Rights.pdf

For research ethics, USM maintains a Research Ethics Committee (REC) and provides procedures for submitting research protocols for ethical review. Its prescribed documents include informed consent forms for adult participants, assent forms for minors, and forms for legally authorized representatives, where applicable. Compliance is supported through resubmission procedures, review of amendments to approved protocols, and continuing review reports documenting adherence to the approved protocol and problems encountered. Research involving animals follows a separate review process through the Institutional Animal Care and Use Committee (IACUC). These procedures and forms are accessible through the University's RDE Link Center.

https://usm.edu.ph/wp-content/uploads/obs/2025/Research%20independence%20%26%20Academic%20freedom%20policy/Approving%20the%20Proposed%20Policy%20for%20Payment%20for%20Ethics%20Application%20at%20the%20University%20of%20Southern%20Mindanao.pdf

These mechanisms are reinforced through research ethics orientations for student researchers and intellectual property awareness and patent-related training for faculty and researchers. Such activities help researchers understand their responsibilities in protecting research outputs and conducting studies ethically.

https://www.usm.edu.ph/usm-research-ethics-committee-conducts-university-wide-orientation-for-undergraduate-researchers/

3. OUTCOMES

- Present/Show evidence that implementation, monitoring, evaluation and research utilization outputs are effective.

The University of Southern Mindanao implements research monitoring and evaluation through its Midyear and Year-End In-House Reviews, during which ongoing and completed research projects are presented for assessment and feedback. These activities document the operation of mechanisms for reviewing research progress and accomplishments. https://www.usm.edu.ph/56-research-papers-evaluated-at-usm-2025-midyear-rde-in-house-review/

Evidence of research productivity is further reflected in the University's PRAISE Special Awards for Research, Development, and Extension. In September 2026, the University recognized 116 authors for 110 Scopus-indexed publications and conferred Intellectual Property Awards on 56 faculty members and staff. These accomplishments demonstrate the production and dissemination of research outputs and the implementation of institutional recognition mechanisms.

https://www.usm.edu.ph/usm-recognizes-researchers-innovators-through-praise-awards/

University reports also document examples of research utilization. In 2024, the Gawad Likha recognized 24 personnel whose intellectual property assets had been utilized. The University likewise recognized the BIOnihan Para Sa Kalikasan 2.0 project, which helped facilitate a wildlife conservation ordinance in Columbio. These examples provide supporting evidence that selected University research outputs have progressed toward practical application and policy contributions.

https://www.usm.edu.ph/researchers-and-extensionists-recognized-in-gabi-ng-parangal/

4. BEST PRACTICES

- Cite as many best practices as you can on Parameter C (Implementation, Monitoring, Evaluation and Utilization or Research Results/Outputs).

  There is annual monitoring and evaluation of research outputs through the conduct of University In-House review for faculty. In this, all the on-going and completed faculty research outputs presented and evaluated. Selected students are also invited to present their work through the student In-House Review.

  - Research proponents receive guidance and relevant information about various aspects of implementing a research project (conceptualization, writing, fund utilization, publication).
  - There is a University Evaluation instrument used for student research outputs adopted by the Department to identify the best thesis to compete during the college in-house.
  - The College Research Coordinators invited an external panel of evaluators to examine the student research outputs during the College Student In-house Review.
  - The College conducted trainings and seminar-workshops for anti-plagiarism and undergraduate thesis writing, data analysis, interpretation and presentation.
  - The Department included Undergraduate Thesis as part of the old curriculum as stipulated in the CMO No. 48, series of 2017. There is a grading criteria/rubrics used by the department during the defense in undergraduate thesis for students.

PARAMETER D - PUBLICATION and DISSEMINATION

1. SYSTEM-INPUTS AND PROCESSES

- Present an approved and copyrighted Research Journal

- The University maintains institutionally recognized, peer-reviewed research journals, including JARDET, SNAPS, JECD, and JBEGS, as avenues for scholarly publication and research dissemination.

- Present guidelines on paper presentations; journal outstanding research related to performance and patented outputs
  - As stated in the USM Research, Development, and Extension Manual 2024 (pp 65-94) USM RDE Manual 2024.pdf, there are mechanics of scientific paper presentation and publication.

2. IMPLEMENTATION

- Name all modes of dissemination of research results/outputs (Publication, Paper Presentation, Forum, etc.)

The University of Southern Mindanao (USM) actively supports the dissemination of research results through various institutional mechanisms, including conferences, seminars, and publication services.

Key Dissemination Channels

- **Conferences and Seminars:** USM hosts and participates in various forums to share research findings. For example, the **Scholar Professors Advancing Research Knowledge (SPARK) Conference Series** provides a venue for experts to share their research with the wider community. The university also conducts regular **Annual Research, Development, and Extension (RDE) In-House Reviews**.
- **Publication Services:** The **Research Publication Services Office (RPSO)** manages peer-reviewed journals and documentation to promote research contributions through print and online media.
- **Extension Programs:** Research outputs are disseminated through extension services, which include seminars, trainings, and community engagements designed to reach target clientele and stakeholders.
- **Incentives:** The university promotes the publication and patenting of research outputs by providing incentives for faculty and researchers who publish in high-quality, indexed journals (such as Scopus or Web of Science).

Institutional Support

The **Office of the Vice-President for Research, Development and Extension (OVPRDE)** oversees these efforts to ensure that research is effectively delivered to stakeholders for utilization and commercialization. USM's research focus areas include education, food security, environmental protection, and engineering, among others.

https://www.usm.edu.ph/usm-experts-share-their-research-expertise-through-the-spark-conference-series/

https://www.usm.edu.ph/rde/vp/rpso
https://jardet.usm.edu.ph/index.php/jardet/about

https://www.usm.edu.ph/bionihan-para-sa-kalikasan-conducts-inception-meeting-for-its-3rd-year-partnership-with-columbio-sultan-kudarat/

https://www.usm.edu.ph/usm-recognizes-researchers-innovators-through-praise-awards/

- State all published research related to the Program.

Research Title	Researcher/s	Journal	ISSN	Volume/Issue No.	Date Published	Publisher	Extent of Circulation
1. Some Biases in Likert Scaling Usage and its Correction	Jonald L. Pimentel	International Journal of Sciences: Basic and Applied Research	2307-4531	45(1) pp. 183–191	18 Apr 2019	Global Society of Scientific Research and Researchers	International; open access online
2. A Note on the Usage of Likert Scaling for Research Data Analysis	Jonald L. Pimentel	USM R&D Journal	0302-7937	18(2) pp. 109–112	2010	University of Southern Mindanao	Philippine university journal; author copy online; geographic circulation unverified
3. Modeling Nonignorable Missing Data in Speeded Tests	Cees A. W. Glas; Jonald L. Pimentel	Educational and Psychological Measurement	0013-1644 (P) 1552-3888 (E)	68(6) pp. 907–922	11 Mar 2008 online; Dec 2008 issue	SAGE Publications	International; subscription / online access
4. Nonignorable Data in IRT Models: Polytomous Responses and Response Propensity Models with Covariates	C. A. W. Glas; J. L. Pimentel; S. M. A. Lamers	Psychological Test and Assessment Modeling	2190-0493 (P) 2190-0507 (E)	57(4) pp. 523–541	2015	Pabst Science Publishers	International online availability; full text freely available
5. Fixed Effects IRT Model	Jean-Paul Fox; Jonald Pimentel; Cees Glas	Behaviormetrika	0385-7417 (P) 1349-6964 (E)	33(1) pp. 27–42	Jan 2006 issue; 7 Apr 2006 J-STAGE release	The Behaviormetric Society	International online availability; journal access conditions apply
6. Comparison of Item Difficulty Estimates in a Basic Statistics Test using ltm and CTT Software Packages in R	Jonald L. Pimentel; Marah Luriely A. Villaruz	International Journal of Advanced Computer Science and Applications	2158-107X (P) 2156-5570 (E)	11(3) pp. 367–372	2020	The Science and Information Organization	International; open access online
7. Vertex-weighted (k_1,k_2) E-torsion Graph of Quasi Self-dual Codes	Jupiter Pilongo; Leonard Mijares Paleta; Philip Lester P. Benjamin	European Journal of Pure and Applied Mathematics	1307-5543 (E)	17(2) pp. 1369–1384	30 Apr 2024	New York Business Global	International; open access online
8. Duality of Codes over a Certain Ring of Order 2^m	Jupiter Pilongo; Rowena Alma Betty; Lucky Galvez	Proceedings of the International Conference on ICT Application Research	2758-9412 (E)	Vol. 2 pp. 27–29	15 Nov 2024	International ICT Application Research Society	International conference proceedings; free access on J-STAGE

9. Crystallographic Patterns in Philippine Indigenous Textiles	M. L. A. N. De Las Peñas; Agnes Garciano; Debbie Marie Verzosa; Eduard C. Taganap	Journal of Applied Crystallography	1600-5767 (E)	51(2) pp. 456–469	Apr 2018 issue	International Union of Crystallography	International journal; online publisher and repository records
10. Symmetry Groups of the Batak Basketweave Patterns	Ma. Louise Antonette De Las Peñas; Agnes Garciano; Debbie Marie Verzosa; Mark Tomenes	Journal of Applied Crystallography	1600-5767 (E)	57(6) pp. 1896–1906	1 Dec 2024 issue	International Union of Crystallography	International; subscription / online access
11. Color Symmetry in the Hand Woven Mats of the Jama Mapun	Ma. Louise Antonette De Las Peñas; Agnes Garciano; Debbie Marie Verzosa	Proceedings of Bridges 2014: Mathematics, Music, Art, Architecture, Culture	1099-6702	2014 proceedings pp. 357–360	2014	Tessellations Publishing	International; print distribution and free online archive
12. Mathematics Embedded in Culture: The Weaves of Batak Basketry	M. L. A. N. De Las Peñas; Agnes D. Garciano; Debbie Marie Verzosa	Philippine Studies: Historical and Ethnographic Viewpoints	2244-1093 (P) 2244-1638 (E)	69(1) pp. 35–70	Mar 2021 issue	Ateneo de Manila University	Philippine journal; international online availability
13. Weaving Mat(h)s	Ma. Louise Antonette N. De las Peñas; Agnes D. Garciano; Debbie B. Verzosa	The Mathematical Intelligencer	0343-6993 (P) 1866-7414 (E)	36(4) pp. 36–46	16 Jul 2014 online; 2014 issue	Springer	International; subscription / online access
14. Convex Roman Dominating Functions in a Graph	Rona Jane G. Fortosa-Macalisang; Sergio R. Canoy, Jr.	European Journal of Pure and Applied Mathematics	1307-5543	16(3), pp. 1705–1716	July 2023	New York Business Global	International; open access online
15. Geodetic Roman Dominating Functions in a Graph	Rona Jane G. Fortosa-Macalisang; Sergio R. Canoy, Jr.	European Journal of Pure and Applied Mathematics	1307-5543	16(4), pp. 2368–2383	2023	New York Business Global	International; open access online
16. Convex 2-Domination in Graphs	Sergio R. Canoy, Jr.; Ferdinand P. Jamil; Rona Jane G. Fortosa-Macalisang; Jead M. Macalisang	European Journal of Pure and Applied Mathematics	1307-5543	17(3), pp. 1539–1552	July 31, 2024	New York Business Global	International; open access online
17. Convex Roman Dominating Functions on Graphs under Some Binary Operations	Rona Jane G. Fortosa-Macalisang; Ferdinand P. Jamil; Sergio R. Canoy, Jr.	European Journal of Pure and Applied Mathematics	1307-5543	17(2), p. 1335-1351	2024	New York Business Global	International; open access online
18. Convex Italian Domination in Graphs	Sergio R. Canoy, Jr.; Ferdinand P. Jamil; Rona Jane G. Fortosa-Macalisang	Kyungpook Mathematical Journal	1225-6951 (print); 0454-8124 (electronic)	65(1), pp. 149–167	2025	Kyungpook Mathematical Journal	International; journal publication
19. Optimal Vaccination Control for COVID-19 in a Metapopulation Model: A Case of the Philippines	Randy L. Caga-anan; Jead M. Macalisang; John Lemuel M. Dalisay; Michelle N. Raza; Joey Genevieve T. Martinez; Jayrold P. Arcede	Frontiers in Applied Mathematics and Statistics	2297-8747	9, Article 1154634	May 18, 2023	2023Frontiers Media SA	International; journal publication

20. Optimal Control for a COVID-19 Model Accounting for Symptomatic and Asymptomatic	Jead M. Macalisang;ML Caay; Jayrold P. Arcede; Randy L. Caga-anan	Computational and Mathematical Biophysics	2544-7297	8(1), pp. 168–179	2020	De Gruyter	International; journal publication
21. Star-Induced Geodetic Number of Graphs	Michael E. Subido; Imelda S. Aniversario; Sergio R. Canoy, Jr.; Catherine I. Merca; Fitzmee Ann D. Tamulak	Asia Pacific Journal of Mathematics	2357-2205	13(151), pp. 1–12	September 21, 2026	Asia Pacific Academic	International; journal publication

- Describe the administrative support in research-related undertakings.
    - The Office of the Vice President for Research, Development and Extension facilitates the approval and funding of research proposals through a competent system of processing research proposals. Moreover, the University administration provides funds for research from Fund 101 (DBM) and Fund 164 (Tuition fees). Administration provides funds in two ways. One is through the direct allotment to the research unit (USMARC and PICRI) while the other is through the director for Research and Development Office (RDO) for college based research (stipulated in the USM Research, Development, and Extension Manual 2024).

- Name all Research results disseminated/presented in for a conference, symposia, etc.

Presentor	Title of Research	Activity/Event Where Presented	Date and Place
Jupiter Pilongo	Quasi Self-dual Codes over Sm(F2)	The 11th International Coding Theory Seminar	July 17, 2026 Philippines (Online)
Jupiter Pilongo	Duality of codes over a certain ring of order 2^m	The 2nd International Conference on ICT Application Research	Aug 31 - Sept 3, 2024 Aomori, Japan
Jead Macalisang	Asymptotic Behavior of Fungal Spread with Stochastic Dispersion	International Conference on Mathematics, Statistics, and Mathematics Education and the 19th Annual Convention of MSP Regions 10, 12, and BARMM, in collaboration with MSP Region 6	October 27-29, 2025 Location: Paradise Garden Resort Hotel and Convention Center, Boracay Island, Philippines

Rona Jane F. Macalisang	Geodetic Roman Dominating Functions in a Graph	The Mathematical Society of the Philippines Regions 10,12, and BARMM: 17th Annual Convention in honor of Prof. Dr. Sergio R. Canoy, Jr.	November 8-10, 2023 Central Mindanao University, Musuan, Maramag, Bukidnon, Philippines
Fitzmee Ann D. Tamulak	Star-Induced Geodetic in Graphs	The Mathematical Society of the Philippines Regions 10,12, and BARMM: 17th Annual Convention in honor of Prof. Dr. Sergio R. Canoy, Jr.	November 8-10, 2023 Central Mindanao University, Musuan, Maramag, Bukidnon, Philippines

3. OUTCOMES

- Present/show evidence that research outputs are published in referred journals, research outputs are utilized, patented, copyrighted and are commercialized.

The University's protection of research outputs is demonstrated by the copyright registration of "Statistical Tool Selector (StatSelect): A Mobile App for Faculty, Students and Researchers," as evidenced by the accompanying Certificate of Copyright Registration. The project aims to develop procedures for a mobile application that guides students, advisers, and other researchers in identifying appropriate statistical tools and research instruments. Its copyright registration documents the protection of the resulting intellectual work.



Republic of the Philippines
INTELLECTUAL PROPERTY OFFICE OF THE PHILIPPINES
Bureau of Copyright and Related Rights
Taguig City, Philippines

Certificate of Copyright Registration

Transfer Certificate No. 2024-01297-N-TCCR

Be it known that on March 25, 2024, the **UNIVERSITY OF SOUTHERN MINDANAO,** Kabacan, Cotabato caused the recordation and transfer in its name, the copyright of the work with the following specifications:

Title	:	STATISTICAL TOOL SELECTOR (STATSELECT): A MOBILE APP FOR FACULTY, STUDENTS AND RESEARCHERS
Author(s)	:	Anna Jean S. Garcia, Daryl Mae C. Mamon, Honey Vincent V. Valle, Roel S. Valenton, Rowel P. Madio, Philip Lester P. Benjamin, Debbie Marie B. Verzosa, Leorence C. Tandog, Jeaneth R. Licaros, Jonald L. Pimentel, Jupiter G. Pilongo, and Leonard M. Paleta
Class	:	Class N (Computer programs, software, games, applications)
Creation Date	:	November 10, 2023
Period of Protection	:	Lifetime of the last surviving author and for fifty (50) years after the said author's death.

By virtue of a notarized Deed of Assignment dated January 9, 2024 executed by **ANNA JEAN S. GARCIA, DARYL MAE C. MAMON, HONEY VINCENT V. VALLE, ROEL S. VALENTON, ROWEL P. MADIO, PHILIP LESTER P. BENJAMIN, DEBBIE MARIE B. VERZOSA, LEORENCE C. TANDOG, JEANETH R. LICAROS, JONALD L. PIMENTEL, JUPITER G. PILONGO, and LEONARD M. PALETA** and duly recorded in this office on March 25, 2024. The transfer/assignment of copyright shall not affect the copyright term or period of protection of the copyrighted work as indicated in this Transfer Certificate of Copyright Registration.

The recordation of copyright transfer is submitted to the National Library of the Philippines (NLP), through the Intellectual Property Office of the Philippines (IPOPHL), for the purpose of completing the records of the NLP in accordance with Section 182 of Republic Act No. 8293, the Intellectual Property Code of the Philippines. This certificate is a transfer from Certificate of Copyright Registration No. 2024-01296-N (totally cancelled) by virtue hereof in so far as the above-described work is concerned.

Issued on March 25, 2024 in the City of Taguig, Philippines.

ATTY. EMERSON G. CUYO
Director IV
Bureau of Copyright and Related Rights

4. BEST PRACTICES

- Cite as many best practices as you can on Parameter D (Publication and Dissemination).

No.	Practices	Supporting evidence and significance
1	Provision of institutional peer-reviewed journals	USM provides publication avenues through JARDET, SNAPS, JBEGS, and JECD, covering several disciplines and expanding opportunities to disseminate research. https://www.usm.edu.ph/usm-manages-four-peer-reviewed-journals
2	Institutional oversight of research publication	The Research Publication Services Office supports the management of University journals and publication-related processes, providing an organized mechanism for scholarly dissemination. https://www.usm.edu.ph/rde/vp/rpso
3	Guidance before journal submission	The Application for Intent to Publish process guides prospective authors, supports publication target-setting, and enables monitoring of submissions to quality journals. https://www.usm.edu.ph/rde/vp/rpso
4	Peer review and manuscript screening	JARDET's submission process includes initial screening for plagiarism and inappropriate generative AI use, followed by double-blind peer review. These procedures support

		publication quality and integrity. https://jardet.usm.edu.ph/index.php/jardet/announcement
5	Open access to research findings	JARDET makes its articles freely accessible online, allowing researchers, educators, and other readers to access published findings without subscription barriers. https://jardet.usm.edu.ph/index.php/jardet/announcement
6	Publication without article processing charges	JARDET states that it charges no article processing fees at any stage, reducing financial barriers to publication. https://jardet.usm.edu.ph/index.php/jardet/announcement
7	Digital preservation and repository sharing	JARDET deposits published articles in Zenodo and permits repository deposit with proper attribution, supporting preservation and wider availability. https://jardet.usm.edu.ph/index.php/jardet/announcement
8	Publication incentives and recognition	USM implements publication incentives and PRAISE recognition. Its September 2026 report documents recognition of 116 authors for 110 Scopus-indexed publications, demonstrating actual publication accomplishments. https://usm.edu.ph/wp-content/uploads/obs/2025/Research%20independence%20%26%20Academic%20freedom%20policy/Proposed%20Revisions%20In%20Granting%20Publication%20Incentives%20at%20the%20USM.pdf
9	Faculty mentoring of student publications	USM documents undergraduate students publishing research with faculty mentors, showing that publication opportunities extend to student researchers. https://www.usm.edu.ph/usm-undergraduate-students-publish-their-work-in-scholarly-journals
10	Presentation and feedback through In-House Reviews	Midyear and Year-End In-House Reviews provide venues for presenting research and receiving feedback. A separate Student In-House Review provides students with opportunities to communicate their findings. https://www.usm.edu.ph/56-research-papers-evaluated-at-usm-2025-midyear-rde-in-house-review/ https://www.usm.edu.ph/usm-recognizes-best-papers-posters-at-44th-rde-year-end-in-house-review/
11	Research sharing through the SPARK Conference Series	Faculty experts present their research and engage audiences through discussions and question-and-answer sessions, supporting scholarly exchange across disciplines. https://www.usm.edu.ph/usm-experts-share-their-research-expertise-through-the-spark-conference-series/
12	Direct communication of findings to community stakeholders	Through BIOnihan's 2025 activities, students presented food and water safety findings and recommendations to municipal representatives and community stakeholders. https://www.usm.edu.ph/bionihan-para-sa-kalikasan-conducts-inception-meeting-for-its-3rd-year-partnership-with-columbio-sultan-kudarat/

13	Practical dissemination through extension training	The Going Bananas Extension Project combined information manuals, demonstrations, and practical training on organic production and value-added processing for community participants. https://www.usm.edu.ph/usm-lgu-carmen-conduct-training-on-organic-cardava-production-management
14	Linking research-based extension to policy application	USM reports that BIOnihan Para Sa Kalikasan 2.0 facilitated implementation of a wildlife conservation ordinance in Columbio, providing a documented example of knowledge reaching policy practice.
15	Protection of intellectual outputs alongside dissemination	The StatSelect copyright certificate, which you identified as available evidence, can document protection of a research output. Use the exact title and registration details appearing on the certificate. Copyright protection complements dissemination but does not establish actual use or commercialization.

5. EXTENT of COMPLIANCE with the Team Recommendations for Area V – Research in the last Survey Visit.

    - Present the status of Compliance Matrix of Area V focusing on interventions done on the recommendations

The available documents indicate that the Bachelor of Science in Applied Mathematics program at the University of Southern Mindanao - Kabacan Campus was granted Candidate Status for August 1, 2025 to July 31, 2027. The Technical Review report recorded an Area V (Research) mean of 3.67. It directs the program to comply with recommendations under each area, prepare an updated Program Performance Profile (PPP), conduct a self-survey using the appropriate survey instrument, and apply in writing for the First Survey Visit. The recommendation to prepare for a repeat Preliminary Survey was not checked.

For Area V, the accomplished self-survey records an overall area mean of 4.50 (Very Satisfactory). Its parameter means are: A. Priorities and Relevance - 4.19; B. Funding and Other Resources - 4.75; C. Implementation, Monitoring, Evaluation and Utilization of Research Results/Outputs - 4.86; and D. Publication and Dissemination - 4.21.

The available materials indicate institutional mechanisms for research agenda-setting, research funding and resources, research management and intellectual property protection, monitoring and evaluation, and publication and dissemination.

Duly Accomplished Self-Survey Instrument

Self-Survey-AREA-5 (1).pdf

- Present the Summary of Findings and Recommendations for Area V (Research) during the _____ (**Preliminary**, 1st Survey, 2nd Survey, 3rd Survey, or 4th Survey) in terms of;

1. Strengths
2. Areas Needing Improvement
3. Recommendations
4. Present the Summary of Ratings on the quantitative assessment on Area V

Applied Math Candidate Status (July 15, 2025).pdf