

**TARLAC STATE UNIVERSITY
UNIVERSITY RESEARCH OFFICE**

2021 ANNUAL REPORT



TARLAC STATE UNIVERSITY
UNIVERSITY RESEARCH OFFICE

Units under the URO

The University Research Office is composed of 5 units namely:

1. **Research Management and Capacity Building Unit**- is primarily tasked to supervise researches from conceptualization to finished research papers and provide retooling services to researchers of the university.
2. **Research Publication and Information Communications Unit**- in-charge of overseeing finished research papers for their presentation and publications to TSU recognized journals or CHED accredited journals.
3. **Analytical Testing Laboratory- Natural Products Research Center**- provides services relating to water analysis in terms of physico-chemical and microbiological analysis both for internal and external clients.
4. **University Research Statistical Center**- was created to primarily provide statistical consultancy and related support services to researchers, students, faculty members, and even external clientele.
5. **Center for Tarlaqueño Studies**- serves as the principal venue of the Province of Tarlac on historical and cultural materials. The center is also responsible in the maintenance of the University Museum on Tarlac Studies.

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URO Organizational Chart



Figure 1. URO Organizational Chart

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Functions of the URO

The University Research Office (URO) was restructured by virtue of Board Resolution No. 14 series of 2020. The primary function of the URO is to oversee, coordinate, consolidate, and operationalize the conduct of research activities along the priority areas of the University. The following are the specific functions of the Office:

1. To set the research targets of the university;
2. To assist in the conduct of research colloquium of the different colleges and offices of the university including the evaluation of research proposals in the college level;
3. To provide opportunities and funding support to faculty researchers of the university in pursuing research projects that are relevant to the thrusts and needs of the university;
4. To establish linkages between public and private agencies, for the purpose of identifying relevant subjects or problems for research, pursue research endeavors on areas of common concern jointly with these agencies;
5. To coordinate and monitor research projects of the various colleges and units of the university;
6. To formulate and implement research policies and guidelines;
7. To aid in the dissemination of research outputs through research publication, research presentations, workshops, roundtable discussions, workshops, and newsletters; and
8. To plan and implement programs directed toward the continuing development of skills and competencies of research office personnel.

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Setting the research targets of the university

The University Research Agenda

Through the efforts of the University Research Office and the TSU Administration, the research agenda of the university was revisited last November 2020. From the 10-point research agenda, it was compressed into 5-point research agenda. The university’s newly crafted research agenda (Figure 2) was approved by the Board of Regents in December 2020 by virtue of Board Resolution No. 88 series of 2020.



Figure 2. The research agenda of TSU for 2021 to 2023. ICT and GAD are integrated in all the five-research agenda

To identify the priority research programs under the five (5) research agenda, a stakeholder consultation was conducted through an online survey. The goal of the survey is to determine the needs and priorities of the university’s stakeholders in terms of research and extension services and incorporate these needs and priorities to the research and extension agenda of the university for 2021 to 2023. After the survey, the table below shows the priority programs determined per research agenda:

Table 1. Research Priority Areas Under the Five Research Agenda

RESEARCH AGENDA	PRIORITY RESEARCH PROGRAMS
	<ol style="list-style-type: none"> 1. Training on Food Handling and Processing 2. Food safety awareness

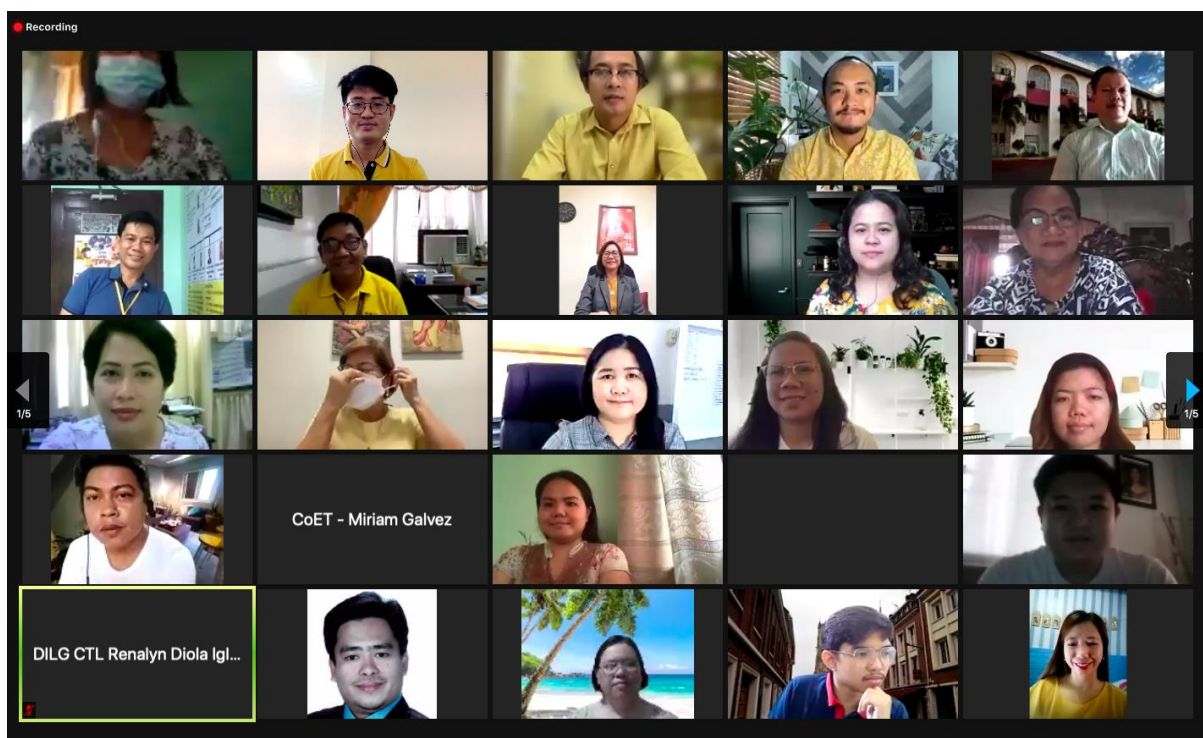
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Food Safety and Security	<ol style="list-style-type: none"> 3. Product and Food Development 4. R&D projects for food security 5. Smart Food Value Chain
Responsive Health System	<ol style="list-style-type: none"> 1. COVID-19 Programs 2. Accessible healthcare services 3. Application of Information Communication Technology in Health 4. Provision of Maternal and Child Health 5. Technology and Innovation for Health
Science, Technology and Innovation	<ol style="list-style-type: none"> 1. Application of ICT in local governance 2. Technology development for Disaster Risk Reduction 3. Development of technologies for water management 4. Capacity building on ICT 5. Commercialization and utilization of technology
Business, Education and Policy Formulation	<ol style="list-style-type: none"> 1. Skills and livelihood Development 2. Promotion of local products 3. Poverty alleviation programs 4. Values formation and restoration 5. Provision of continuing education and professional development of employees
Environmental Management and Disaster Risk Reduction	<ol style="list-style-type: none"> 1. Hazards, Vulnerability and Risk Assessment 2. R&D projects on solid waste management 3. Promotion of livelihood and ecotourism for sustainable watershed management 4. Management of natural resources and environment

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5. Assessment of Impact of various climate change scenarios on water supply

Relative to the results of the online survey, on April 14, 2021, the University Research Office (URO) and Extension Services Management Office (ESMO) have organized and conducted an online activity entitled **"Coffee and Collaboration: Research and Extension Agenda Presentation to the Stakeholders"**. The goal of the activity is to introduce the University's research and extension agenda and the identified priority programs to the government and non-government agencies/organizations in Tarlac Province and in Region III. The activity also provided a venue where the different colleges of the university have presented and showcased their research and extension capabilities and programs to the university stakeholders.



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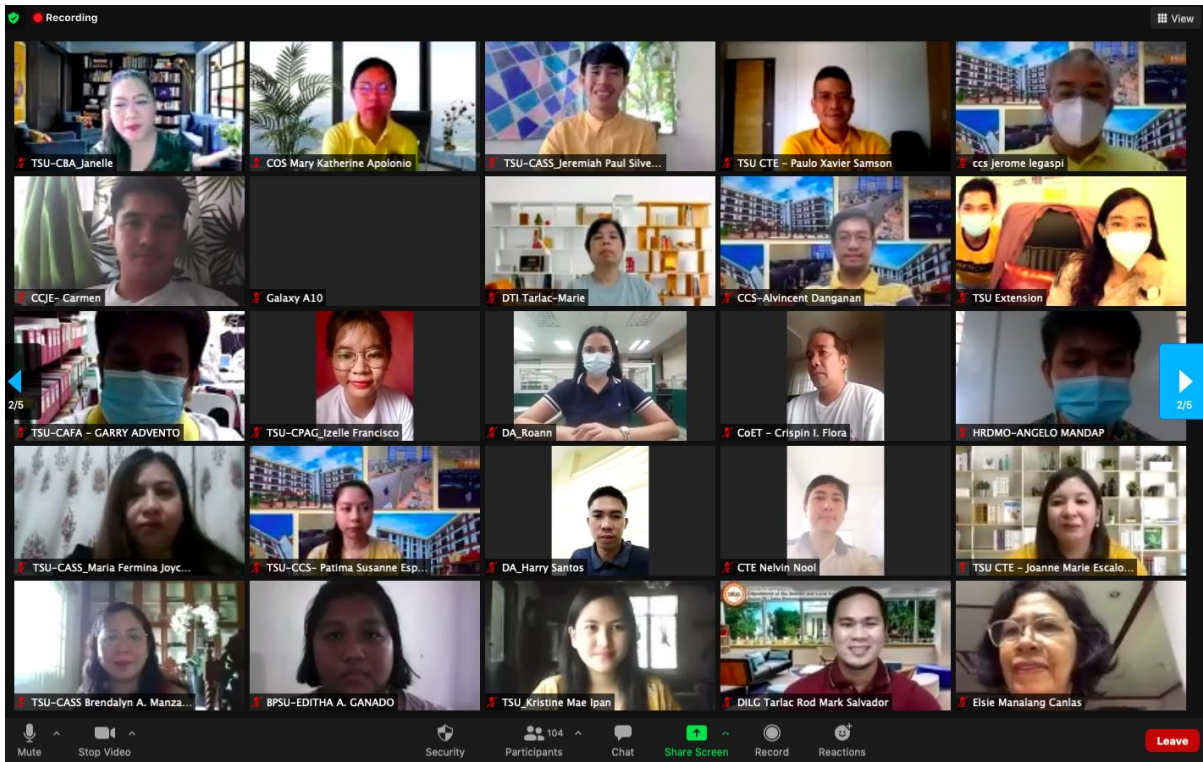


Figure 3. Sample Photos Taken During the Coffee and Collaboration: TSU Research and Extension Agenda Presentation to Stakeholders

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PBB and PREX C Targets

Aside from setting the University Research Agenda, the office is also in-charge in setting the PBB and PREX C targets as well as in monitoring the accomplishment. For this year, the table below shows the 2021 PBB targets with the accomplishments.

Table 2. PBB Targets and Accomplishments

FY 2020 PREXC PERFORMANCE INDICATORS	FY 2020 TARGET	2020 ACTUAL ACCOMPLISHMENT January to December	ACCOMPLISHMENT RATE
Performance indicator 1: Number of research outputs completed within the year	40	40	100%
Performance Indicator 2: Percentage of research outputs published in internationally- refereed or CHED recognized journal within the year	15%	5.49% (5/91)	36.6%
Performance Indicator 3: Number of research outputs in the last three years utilized by the industry or by other industries	14	14	100%

SUC Levelling Targets

Together with the PBB targets, the office also monitors the accomplishment of the SUC levelling targets. The table below shows the SUC levelling targets with the accomplishment for 2021.

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a. Research-based paper published in an international refereed journal or publication in the				1.5							1.5
Indicators:	1	2		0.25	5	5	4	14	1.5		
	3	5		0.5							
	6	8		0.75							
	9	11		1							
	12	ABOVE		1.5							
b. Research-based paper published in a refereed journal accredited by CHED in the past three (3)				1							0.125
Indicators:	1	2		0.125			1	1	0.125		
	3	5		0.25							
	6	8		0.5							
	9	11		0.75							
	12	ABOVE		1							
c. Percentage of research-based paper published in refereed journals to the total number of				1				13.76%			0.5
Indicators:	5	9	%	0.25	Number of Published Papers in Refereed Journals						0.5
	10	14	%	0.5	5	5	5	15			
	15	19	%	0.75	Total Number of Research Output						
	20	ABOVE	%	1	33	37	39	109			

c. Percent of S&T oriented research outputs patented over the total S&T research outputs				0.5							0
Indicators:	0.5	0.99	%	0.25				0			0
	1	ABOVE	%	0.5				0			0
TOTAL				14							10.0625

CURRENT LEVEL IS **LEVEL IV**

MIN PTS	LEVEL
4	II
7	III
10	IV
13	V

Research Targets per College

In order to achieve the PBB and SUC levelling targets of the university, the office sets targets for the colleges depending on the number of the faculty members and in consideration with their academic ranks as well. The figure below shows the targets per college and another table for the accomplishments in 2021.

College	Number of Approved Research Proposals		Number of Finished Research Paper		Number of Faculty Researchers	Number of Publications		Number of Presentations		Number of Invention Patented &/ Commercialized	Number of Utilized Research Outputs by Industry or Community	Number of Externally Funded Research Project or Study
	STEM	ABLESS	STEM	ABLESS		INT	CHED Accred	Int	Reg			
CPAG	0	1	0	1	1	0	1	2	0	0	1	0
CASS	2	5	0	4	9	1	2	2	2	0	2	0
CBA	3	4	1	3	10	1	2	2	2	0	2	1
CET	9	0	8	0	13	2	2	3	1	1	2	1
CCS	3	0	4	0	5	2	1	2	0	0	1	1
CAFA	1	1	1	1	2	0	1	1	0	0	1	0
CTE	4	6	1	4	14	3	0	3	1	0	3	1
COS	6	0	6	0	8	2	1	2	1	0	2	1
CCJE	0	1	0	1	0	0	1	1	0	0	1	0
TOTAL	28	18	21	14	62	11	11	18	7	1	15	5

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Figure 4. 2021 Research Targets distributed per College

COLLEGE	PROPOSAL STAGE	APPROVED RESEARCH		ON-GOING RESEARCH	FINISHED RESEARCH		PRESENTED PAPERS		PUBLISHED PAPERS		FACULTY RESEARCHERS		UTILIZATION		INVENTION		EXT FUNDED		CITATIONS
		T	A		T	A	T	A	T	A	T	A	T	A	T	A	T	A	
		CAFA	3		2	0	1	2	0	1	0	1	0	2	0	1	0	0	
CASS	24	7	3	5	4	0	4	1	3	0	9	1	2	0	0	0	0	2	3
CBA	21	7	5	3	4	2	4	2	3	0	10	0	2	0	0	0	1	2	7
CCJE	11	1	0	0	1	0	1	1	1	0	0	0	1	0	0	0	0	0	0
CCS	25	3	7	14	4	3	2	7	3	0	5	5	1	1	0	0	1	1	13
CET	22	9	3	11	8	0	4	0	4	0	13	0	2	1	1	0	1	3	6
COS	23	6	1	10	6	1	4	5	3	0	8	0	2	0	0	0	1	5	0
CPAG	0	1	5	3	1	2	1	4	1	0	1	0	1	0	0	0	0	0	0
CTE	14	10	9	7	5	4	4	5	3	0	14	1	3	2	0	0	1	0	2

Figure 5. 2021 Research Accomplishments per College

Assistance in the conduct of research colloquium of the different colleges and offices of the university including the evaluation of research proposals in the college level

This year, the URO organized and held a university- wide research proposal colloquium, instead of having it done per college like the usual practice. The colloquium, with the theme **“Innovative Researches in Response to the Needs of the Community”**, was held on July 29- 30, 2021 wherein faculty members from difference college presented their research proposals. A total of 36 research proposals was presented in the colloquium. The office invited 2 external evaluators (1 for ABLESS and 1 for STEM) who are both experts in their fields. Dr. Bon Adrian Santiago, the Director of the Research Development, and Innovation Center of Our Lady of Fatima University evaluated ABLESS research proposals. On the other hand, Dr. Ryan John De Lara, the Director of the Research Development and Productivity Office of the Wesleyan University- Philippines evaluated the STEM research proposals. The table below shows the list of research proposals presented during the 2021 University- wide Research Proposal Colloquium.

Table 4. List of Entries for the 2021 Call for Research Proposal Colloquium

No	Research Title	Author/s	College
1	Influence of Organizational Culture on Teachers’ Organizational Commitment, Job Satisfaction and Performance of Tarlac State University	Maria Fermina Joyce C. Nucum and Nerissa S. Olarte	CASS
2	Analysis on the Accessibility of healthcare services among IP’s in Sitio Poquis, Camiling Tarlac during Covid 19. Pandemic	Sylyn Dizon Rico	COS

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3	An Ethnographic Study of the Ayta Abellens of Burgos, San Jose, Tarlac	Maria Elena D. David, Agnes M. Macaraeg, and Louella P. Capitulo	CASS
4	Motor Vehicle Collisions in Tarlac City, Philippines: Its Implication to Road Safety Engineering	Murphy P. Mohammed	CET
5	Climate Change and Health Risks: Barriers, Perspectives and Adaptive Practices of Indigenous People in Tarlac	Alma Corpuz	COS
6	Assessment of the Inventory Management Practice of XYZ Drugstore	Anna May M. Angeles	CET
7	Web-Based Document Requisition System	Joselito T. Tan, Anna Cazandra T. Delos Reyes, John F. Fernandez	CCS
8	The Role of Microenterprises in. Employment Creation and Income Generation in Tarlac City	Aldrex G. Laxamana, Sheila Jane L. Gonzales	CBA
9	The Role of Microenterprises in. Employment Creation and Income Generation in Tarlac City	Aldrex G. Laxamana Sheila Jane L. Gonzales	CBA
10	LGBT Management in Tarlac State University	Sheila Jane L. Gonzales Christine Janelle M. Santiago Dante C. Fernandez Jr.	CBA
11	Impact Study on Coke-TESDA Sari-Sari Store Training and Access to Resources	Jose Mariano S. Palomiano Sheila Jane L. Gonzales	CBA
12	Consumer Environmentalism and Behavioral Intention to Purchase Green	Jose Mariano S. Palomiano Sheila Jane L. Gonzales Christine Janelle M. Santiago	CBA
13	Antecedents and Consequence of Satisfaction towards Online Food Delivery Applications: A Modified UTAUT Model Perspective	Dr. Wilmark J. Ramos Prof. Chris Mark V. Catalan	CBA
14	Understanding Oral Communication Apprehension in an Online Public Speaking	Maria Vanesa Arador Jose Russel Arador	CASS

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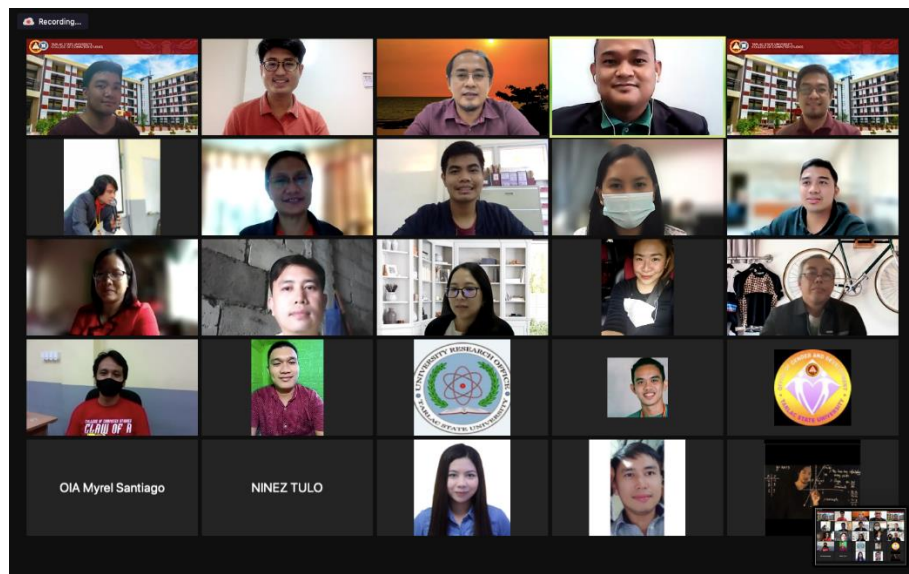
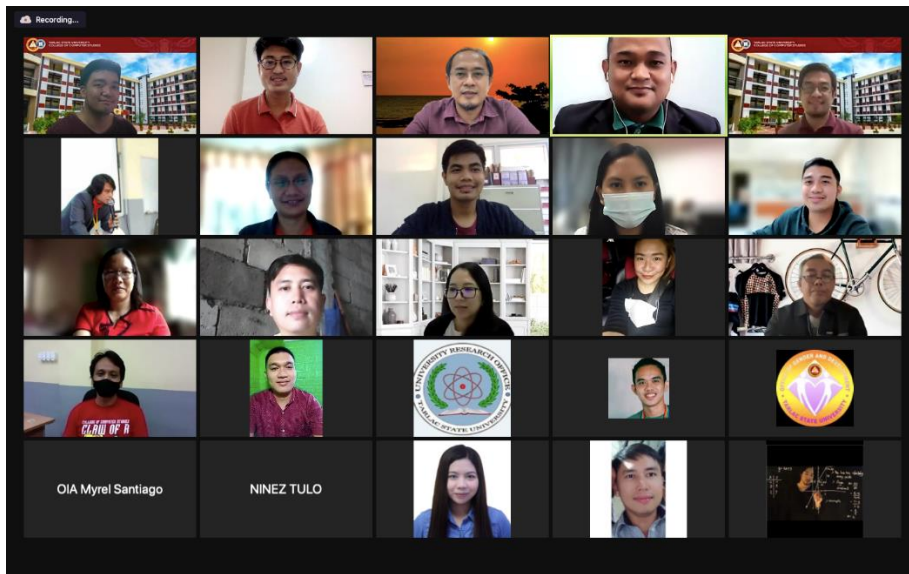
	Class During the COVID-19 Pandemic		
15	Assessing the English Language Proficiency of English Language Professionals in an ESL Workplace Context	Brendalyn Manzano.	CASS
16	Best Practices of the Tarlac State University College of Criminal Justice Education in Maintaining the Status of TSU as Top School in the Criminology Licensure Examination	Jan Vincent Carmen Theodore M. Timpac Francis D. Bicoy	CCJE
17	The Barangay Peacekeeping Action Team (BPAT) of Tarlac City Police Office, Barangay Tibag	Ramil M. Las-igan Jayson R. Felix Arturo Panzo	CCJE
18	Level of Appreciation of Barangay Officials on the Performance of Police Personnel in Selected Barangays of Concepcion, Tarlac	Lian Carla C. Luzong Marie Fe Buscayno Jairus Soriano	CCJE
19	Flood control system of the Municipality of La Paz Tarlac: Basis for Policy Enhancement	Roel R. Alviar Jelly Ann Mercado Girlie Bautista	CCJE
20	A Student Online Lab Approach Using Virtual Machine Access in Cloud for Tarlac State University College of Computer Studies	Kwinno L. Pineda Rojen John Agustin Lito Alexis Tolentino	CCS
21	Developing Marya-marya Seeds as Add-in to Beverages	Elsie M. Canlas Jeremy Canlas Siti Norliza C. Muza	CTED
22	Tilapia-Catfish Loaf: Its Acceptability, Shelf-life, and Nutritional Characteristics,	Elsie M. Canlas Jeremy R. Canlas, Lalaine C. Razon	CTED
23	Exploring Inutuken Dish as Image-Maker of Tarlac	Deyo Carlos L. Dela Cruz Jeremy R. Canlas Lalaine C. Razon	CTED
24	The CTED Way: Flexible Teaching Strategies of Teacher Education Towards The Better Normal	Deyo Carlos L. Dela Cruz Mark P. Castillo	CTED
25	Lived Experiences of Last Mile School Teachers in Teaching Social Studies in the New Normal	Douglas C. Ferrer Deyo Carlos L. Dela Cruz	CTED

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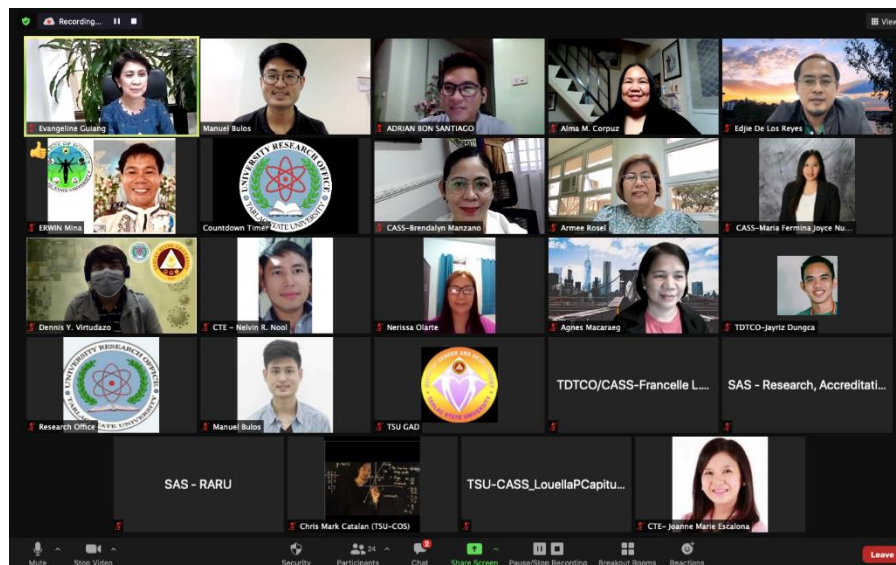
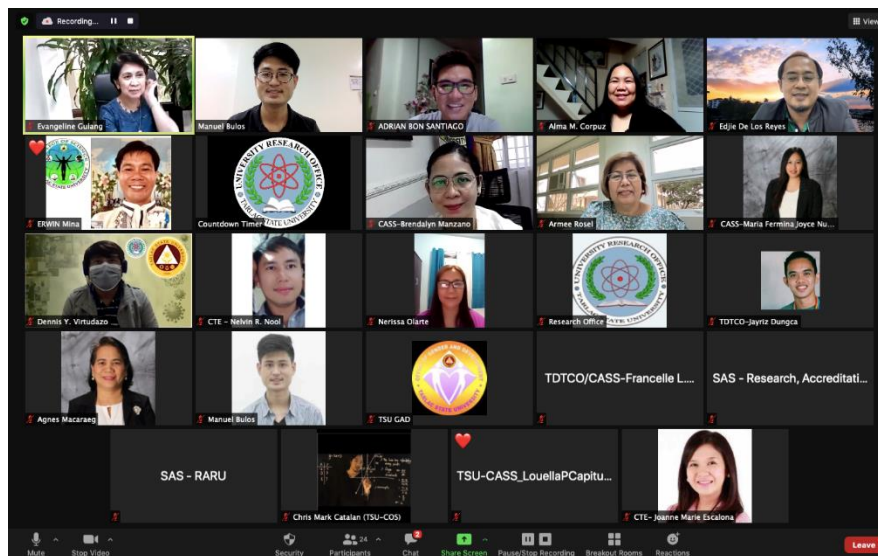
26	Profiling the Internet Access of College Students in Tarlac Province: An Input in Developing Assessment Tasks	Gilbert Gonzales Patima Sussane Espinosa Lito Alexis Tolentino	CCS
27	Early Childhood Education Teachers' Preparation for Inclusive Education and Diverse School Environment: Implications to Teacher Education Programs	Joanne Marie I. Escalona	CTED
28	Three-Decadal Changes in the Agricultural Lands of Tarlac City, Philippines	Wesley Gagarin Arnan Araza	COS
29	GenPAW: A Generic Veterinary Clinic Management Application	Ronnie Mercado Carlos Flores James Bryan Roman Regina Arceo Joshue Manaloto	CCS
30	Tarlac State University Community-Based Tourism Center Transforming and Revitalizing Local Arts and Culture (TSU CBTC TARLAC)	Myrel M. Santiago Jasper Jay N. Mendoza Ninez B. Tulo Bryan Jan S. Dizon	Office of International Affairs
31	Farm to Table" Tourism: Linking Community-Based Farmers and Home-Grown Restaurants towards a Safe and Sustainable Food Supply	Criselda Alamo- Tonelada Ferdinand Y. Silaran Princes Carol L. Feliciano	CBA
32	Tarlac State University (TSU) Scholar Graduates' Tracer Study	Evangeline Guiang	SAS
33	Gender impact of the outbreak: An analysis of sex disaggregated data on COVID-19 in the province of Tarlac	Rita Pulmano Suzzane Cruz	GAD
34	Deposit Operations for Objects in Repository Applied to Learning Management System	Dennis Y. Virtudazo Ronnie B. Mercado Jerome C. Legaspi	CCS
35	Customization and User Acceptance of a Flexible Learning Program with Emphasis to Content Management System	Dennis Y. Virtudazo Marlon V. Gamido Valarie D. Simbol	CCS
36	Evaluation of the Effectiveness of Orientation Programs on the	Evangeline Guiang	SAS

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Academic Retention of Freshmen Students		
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Sample photos during the University- wide Research Proposal Colloquium

Providing opportunities and funding support to faculty researchers of the university in pursuing research projects that are relevant to the thrusts and needs of the university

In the pursuit to become a champion institution in the area of research, the Tarlac State University, led by the TSU Administration, shows its full support in all research endeavors of the faculty members. Different efforts were made to develop the research culture among its faculty members towards global competitiveness and in the achievement of its mission and vision. One of the biggest supports given by the Administration is the funding of all research activities of the faculty members. The budget allocated for the research undertakings is stated in the University Annual Procurement Plan. Aside from funding the research endeavors of the faculty members, an incentive scheme is

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also being implemented which is stated in the Research Operations Manual. The tables below show the list of incentives awarded to faculty members for the year 2021.

Table 5. List of Awarded Presentation Incentives

Research Title	Author/s	Conference	Date
Energy Consumption Analysis in a Computer Laboratory	Dennis Y. Virtudazo, Jerome C. Legaspi	3 rd National Conference on Food, Environment, Engineering and Technology	September 15-17, 2021
Composition and Process of Improving the Stability of Non-Carbonated Calamondin (Citrofortunella Microcarpa) Ready to Drink Juice	Lea B. Milan, Abegail F. Feliciano	3 rd National Conference on Food, Environment, Engineering and Technology	September 15-17, 2021
Mapping and Improving the Composition and Process of Producing Sweet Potato-based Desserts	Lea B. Milan	3 rd National Conference on Food, Environment, Engineering and Technology	September 15-17, 2021

Table 6. List of Awarded Publication Incentive

Research Title	Author/s	Journal
Pre-service Teachers' Reflection Logs: Pieces of Evidence of Transformative Teaching and Emancipation	Jasper Jay N. Mendoza	International Journal of Higher Education
Evidence of Transformative Teaching Extracted from the Reflection Logs of Pre-service Teachers using Butin's Cultural Lens	Jasper Jay N. Mendoza	International Journal of Education and Practice
Improved MSHA-1 Algorithm with Mixing Method	Rogel L. Quilala, Theda Flare G. Quilala	Bulletin of Electrical Engineering and Informatics
An Enhanced Overlapping Clustering Algorithm for Data Analysis	Alvincent E. Danganan. Edjie M. De Los Reyes	Bulletin of Electrical Engineering and Informatics
Modified Blowfish Algorithm Analysis using Derivation Cases	Theda Flare G. Quilala, Rogel L. Quilala	Bulletin of Electrical Engineering and Informatics

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Table 7. List of Awarded Citation Incentives

Research Title	Author/s	Citing Article
Performance in the Licensure Examination of Teacher Education Institutions in Central Luzon	Nelvin R. Nool, Maria Agnes P. Ladia	School Profile and Licensure Examination Performance of Teacher Education Graduates in Northern Philippines
Competency Requirements for Professional Accountants: Basis for Accounting Curriculum Enhancement	Henry D. Rufino, Rhene G. Payabyab, Grace T. Lim	Accounting Information System Courses: Developing a Hybrid Syllabus in the Era of Digitization
Competency Requirements for Professional Accountants: Basis for Accounting Curriculum Enhancement	Henry D. Rufino, Rhene G. Payabyab, Grace T. Lim	Unleashing the Role of e-Learning in Student Engagement Practices and Accounting Professional Competencies
Sanitary Conditions of Food Vending Sites and Food Handling Practices of Street Food Vendors along the Peripheral Area of Tarlac State University, Main Campus: Implication for Food Hygiene and Safety	Criselda A. Tonelada, Ferdinand Y. Silaran, Maria Cristina A. Bildan	The Food Safety knowledge of Street Food Vendors and the Sanitary Compliance of their Vending Facilities, Johannesburg, South Africa
River Flood Hazard Modelling: Forecasting Flood Hazard for Disaster Risk Reduction Planning	Murphy P. Mohammed	Correlation between Coastline Soil Loss Rate and Artificial Intelligence English Vocabulary based on GIS System
River Flood Hazard Modelling: Forecasting Flood Hazard for Disaster Risk Reduction Planning	Murphy P. Mohammed	Influence of GIS Technology on Coastal Atmospheric Climate and Employee's Innovation Intention
River Flood Hazard Modelling: Forecasting Flood Hazard for Disaster Risk Reduction Planning	Murphy P. Mohammed	The Relationship between Ecosystem Service Supply and Demand in Plain Areas Undergoing Urbanization: A Case Study of China's Baiyangdian Basin
River Flood Hazard Modelling: Forecasting Flood Hazard for Disaster Risk Reduction Planning	Murphy P. Mohammed	Simulating Flash Flood Hydrograph and Behavior Metrics across China: Implication for Flash Flood Management

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River Flood Hazard Modelling: Forecasting Flood Hazard for Disaster Risk Reduction Planning	Murphy P. Mohammed	Financial Market Prediction under Deep learning Framework using Auto Encoder and Kernel Extreme Learning Machine
Does Accreditation Status Matter? Evidence on the LET Performance of State Universities and Colleges	Maria Agnes P. Ladia, Elizabeth P. Balanquit, Niño B. Corpuz, Nelvin R. Nool	School Profile and Licensure Examination Performance of Teacher Education Graduates in Northern Philippines
Disaster Risk Reduction and Management of Tarlac City	Murphy P. Mohammed	Dam Related Disaster Framework for Emerging Preparedness
OCA: Overlapping Clustering Application Unsupervised Approach for Data Analysis	Alvincent E. Danganan	Home Appliances Recommendation system Based on weather Information using Combined Modified K-Means and Elbow algorithms
Developing a Secured Image file Management System using Modified Advanced Encryption Standard	Heidilyn V. Gamido, Marlon V. Gamido	A Lightweight Security Scheme for Advanced Metering Infrastructures in Smart Grid
Developing a Secured Image file Management System using Modified Advanced Encryption Standard	Heidilyn V. Gamido, Marlon V. Gamido	Triple Layer Image Security using Bit-shift, Chaos, and Stream Encryption
An improved Overlapping Clustering Algorithm to Detect Outlier	Alvincent E. Danganan	A Semi-supervised QoA-Aware Classification for Wide Area Networks with Limited resources
Implementation of a Bit Permutation-based Advanced Encryption Standard for Securing Text and Image Files	Heidilyn V. Gamido	Real-time FPGA implementation of Concatenated AES and IDEA Cryptography System
QR Code Integrity Verification Based on Modified SHA-1 Algorithm	Rogel L. Quilala	Enhancement in Data Security and Integrity using Minhash Technique
Modified AES Cipher Round and Key Schedule	Edjie M. De Los Reyes	Secure Framework enhancing AES Algorithm in Cloud Computing
Modified AES Cipher Round and Key Schedule	Edjie M. De Los Reyes	A Metaheuristic Approach to Secure Multimedia Big Data for IoT Based Smart City Applications

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Personal Finance Practices of TSU Faculty and Personnel	Jhonel Panlilio, Rowena Ramos, Remedio Tamina	Actual Participation: the Effects of Information Sharing and Familiarity Team on Budget Decision Quality
Management Accounting Practices (MAPs) of Small and Medium-sized Manufacturing Enterprises in the City of Tarlac	Henry D. Rufino	Innovative Management Accounting Practices for Sustainability of Manufacturing Small and Medium Enterprises
Management Accounting Practices (MAPs) of Small and Medium-sized Manufacturing Enterprises in the City of Tarlac	Henry D. Rufino	Chinese Enterprises' Use of Management Accounting Tools
Spending and Borrowing Practices in the Province of Tarlac	Jhonel Panlilio	The Role of Women's Entrepreneurial Orientation to Access External Financial Supports: Empirical Evidence from the Small and Medium Enterprises (SMEs) in Indonesia using PLS-SEM
Ethno-botanical Survey of Plants Commonly Used for Diabetes	Erwin C. Mina	An Introduction to Bioactive Natural Products and General Applications
Toxicity of Cu^{2+} , Cd^{2+} , and Pb^{2+} Metal Ions in Chironomids and Factors that Affect Metal Accumulation	Claire C. Lagrana	Accumulation of Cd and Pb in Various Body Parts, Organs and Tissues of <i>Lymantria dispar asiatica</i> (Lepidoptera: Erebidae)
Communication Strategies Employed by Nepalese Learners of English	Brendalyn A. Manzano	Effects of Employing In-service EFL Teachers Strategy-based Instruction on their Performance of Teaching Listening Comprehension in Amman-Jordan
Communication Strategies Employed by Nepalese Learners of English	Brendalyn A. Manzano	Understanding English Speaking Practice in Public Schools in Kazakhstan: A Case Study in Almaty
Communication Strategies Employed by Nepalese Learners of English	Brendalyn A. Manzano	A Systematic overview of issues for Developing EFL Learners' Oral English Communication Skills

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Table 8. List of Fundings awarded for Publication

Research Title	Author/s	Journal
Evidence of Transformative Teaching Extracted from the Reflection Logs of Pre-service Teachers using Butin's Cultural Lens	Jasper Jay N. Mendoza	International Journal of Education and Practice
Improved MSHA-1 Algorithm with Mixing Method	Rogel L. Quilala, Theda Flare G. Quilala	Bulletin of Electrical Engineering and Informatics
An Enhanced Overlapping Clustering Algorithm for Data Analysis	Alvincent E. Danganan. Edjie M. De Los Reyes	Bulletin of Electrical Engineering and Informatics
Modified Blowfish Algorithm Analysis using Derivation Cases	Theda Flare G. Quilala, Rogel L. Quilala	Bulletin of Electrical Engineering and Informatics

Establishment of linkages between public and private agencies, for the purpose of identifying relevant subjects or problems for research, pursue research endeavors on areas of common concern jointly with these agencies

The University is consistent to establish collaborative ventures with research-oriented agencies and institutions. To establish research collaborations, it is important to showcase the researches produced by the faculty researchers. In order to disseminate the researches, a coffee and collaboration was organized. On April 14, 2021, the University Research Office (URO) and Extension Services Management Office (ESMO) have organized and conducted an online activity entitled **"Coffee and Collaboration: Research and Extension Agenda Presentation to the Stakeholders"**. The URO and ESMO have sent invitation letters addressed to the head of offices of government agencies, private organizations as well as State Universities and Colleges (SUCs) in the Tarlac and Region III to participate in the presentation of research and extension agenda. Aside from external stakeholders, the URO and ESMO have also invited college deans and representatives to attend the activity. The goal of the activity is to introduce the University's research and extension agenda and the identified priority programs to the government and non-government agencies/organizations in Tarlac Province and in Region III. The activity also provided a venue where the different colleges of the university have presented and showcased their research and extension capabilities and programs to the university stakeholders. Table 9 shows the list of collaborative researches in 2021.

Collaborative Researches

Table 9. List of Collaborative Researches

Title	Researcher/s	Collaborating Agency
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Assessment of Integration of Environmental Education (IEE) in the New Teacher Education curriculum (NTEC) of SUCs in Region 3: Exploring Steps towards Curriculum Greening.	Julieta M. Lagasca Teody San Andres Alma M. Corpuz	Bulacan State University
A Survey on the Telepsychology Practices of Licensed Counselors and Psychologists in the Philippines	Laarni T. Capinding Alain Bernal	Holy Angel University
Three-Decadal Changes in the Agricultural Lands of Tarlac City, Philippines	Wesley S. Gagarin Arnan Araza	Wageningen University

Externally- funded Researches

Aside from collaborative researches with other research institutions, the university also promotes collaborative researches with external funding from private and public organizations. Table 10 shows the list of researches co- funded by other organizations, both from public and private sectors.

Table 10. List of Externally- funded Researches

Research Title	Proponent/s	Funding Agency
Pilot-Testing of a Multi-Adoptive Continuous Solar Power Charging System for Electric utility Vehicle (EUV)	Myrna Q. Mallari, Rodel T. Botio, Armee N. Rosel, Jhonel P. Panlilio, Leo P. Piao, Rico Teodoro	Department of Science and Technology-3
Development, Fabrication and Performance Evaluation of an Integrated Solar Power Generator and Water/ Irrigation Pump (Phase 3: Technology Demonstration and Commercialization)	Myrna Q. Mallari, Rodel T. Botio, Edjie M. De Los Reyes, Jhonel P. Panlilio, Edgar Macaraeg, Erwin C. Mina	Department of Agriculture Region III
Utilization of Calamansi (Citrofortunella Microcarpa) as Enricher to Flavoured Gummy Jelly Candy	Abegail F. Feliciano, Lea B. Milan, Aljon N. Lusong	R.P. Corpus Sales Enterprises
Standardization of Process, Product	Lea B. Milan, Abegail F. Feliciano, Mary Katherine	Department of Science and Technology

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Specification, and Packaging of Artisanal “Chicharon Camiling” of Tarlac Province	A. Apolonio, Kristine Mae G. Pagala, Aljon N. Lusong, Geraldine R. Gamoso, Jaidriel Meg G. Cabanding, Claire C. Lagrana, Marnella O. Guinto, Maryliz L. Sison	
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Coordination and monitoring of research projects of the various colleges and units of the university

Monitoring is important to ensure the timely completion of the research projects. Monitoring of research proposals is a joint effort between the RMCBU and the College Research Chairpersons as it is one of their responsibilities. Every month, one of the RMCBU staff sends a monitoring form to the CRCs wherein they will input the status and updates based on the answers of the faculty members.

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Research ID	Research Title	Researcher(s)	Expected Date of Completion
TSU-CCS-18-001	Estimating the Number of CCS Graduates Using the Least-Squares Regression Method	Anna Cazandra P. Delos Reyes	19-Mar-22
TSU-CCS-17-002	Design and Development of iAMS: Supply and Property Module for Tarlac State University	Heidilyn V. Gamido Marlon V. Gamido Jesus R. Valdoz, Jr.	5-May-21
TSU-CCS-19-002	E-Learning System for the Web Development Course of College of Computer Studies	Anna Cazandra P. Delos Reyes Rojen John D. Agustin	19-Mar-22
TSU-CCS-19-003	OCKMEx: An Explorative Approach for the Overlapping with K-Median Extension Algorithm	Alvincent E. Danganan Regina P. Arceo	11-May-21
TSU-CCS-19-004	Intelligent Farming Control System for Castro Tomas Agri-Techture Farm Schooland Training	Rojen John D. Agustin Kwino L. Pineda Julius Caesar C. Ramos	19-Mar-22
TSU-CCS-20-003	Implementation of an Electronic Document Management System for LAN-based organizations	Heidilyn V. Gamido Marlon V. Gamido	19-Mar-22
TSU-CCS-20-004	OdeSIS: In Depth Analysis of Outlier Detection Positioning Using Median Absolute Deviation	Alvincent V. Danganan	11-May-21
TSU-CCS-20-007	Dynamic Appointment Scheduling with Priority-Based Tagging	Angelo O. Garcia Nicolas J. Diaz, Jr.	11-May-21
TSU-CCS-20-010	Development of an E-Book on Early Childhood Development Centers of Municipal Social Welfare and Development Office	James Byran T. Roman	22-Dec-21
TSU-CCS-20-014	Design of User Acceptance Models as Applied in Information Systems	Theda Flare G. Quilala Rogel L. Quilala	25-Sep-21
TSU-CCS-20-015	Document Integrity Verification Using QR Code with Modified SHA-1 and Modified Blowfish Algorithm	Rogel L. Quilala Theda Flare G. Quilala	25-Sep-21
TSU-CCS-20-019	Performance of ICT Graduates: An Analysis	MeI Johnson P. Aquino Gloria L. Puellejera Anna Cazandra Delos Reyes	9-Jun-21
TSU-CCS-20-021	Dual S-Box Implementation in the AES Key Expansion Algorithm	Edjie M. Delos Reyes	5-May-21
TSU-CCS-20-022	IntelliCharger: Maintaining SoC of Batteries	Edjie M. Delos Reyes Jerome C. Legaspi Marlon V. Gamido	25-Sep-21

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TSU-CCS-20-025	Time-Domain Analysis of Breathing Patterns Via Audio Waveforms	Dennis Y. Virtudazo	4-May-22
TSU-SP-21-001	CONTACTLESS GATE ACCESS AND MONITORING IDENTIFICATION SYSTEM: COVID19 RESPONSE	Heidilyn V. Gamido Arnel A. Punla Larry A. Suboc Bryan Christopher C. Sico Ferdinand L. Marcos Jesus R. Valdoz Jr.	3-Feb-22
TSU-CBA-18-002	Gender Roles in Public Accounting Office	Henry D. Rufino	June 22, 2022
TSU-CBA-19-002	The Intervening Role of Profile Variables on Materialism and Impulse Buying of Young Professionals	Wilmark J. Ramos	December 22, 2021
TSU-CBA-20-002	The Students Motivation and Engagement in Pursuit of their MBA	Wilmark J. Ramos Susan D. Ramirez	March 22, 2022
TSU-CET-19-002	Analysis of Traffic Management System in Tarlac City Using DMAIC Approach	Jayriz D. Dungca Ann Jeanette S. Lopez Neil Andrew I. Meneses Don Hero P. Alega Anna May M. Angeles	October 20, 2020
TSU-CET-19-007	Performance Evaluation of Electric Vehicle with Backup Solar Charger	Leo P. Piao Raul D. Canlas	January 18, 2020
TSU-CET-20-006	Design and Installation of 1kW Solar PV System Models	Leo P. Piao Crispin I. Flora Alejandro D. Caranto	November 17, 2021
TSU-CET-20-012	Design and Development of a Solar Photovoltaic (PV) System Algorithm Based on Solar Irradiance and Tilt-Angle Optimization of Tarlac City	Maan B. Florendo Leo P. Piao Aldrin Joar Taduran	October 02, 2023
TSU-CET-20-015	PET Bottles as a Filament for 3D Printer	Adam F. Rombaoa Aldrin Joar Taduran Aldrin Villanueva	October 11, 2022
TSU-CET-20-018	Durability of Tarlac State University- Administration Building against Carbonation Induced Corrosion	Leonides A. Tatu Neil Andrew I. Meneses Bonjabee R. Bello	August 02, 2021
TSU-CET-20-019	Automated Backyard Gardening System for Rehoboth Children's Home, Incorporated	Enalyn Domingo Ferdinand L. Marcos Crispin I. Flora	September 25, 2021

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TSU-CET-20-020	Infrared Thermal Analysis Model for Detecting and Correcting Unbalanced Electrical Loads	Crispin I. Flora Ferdinand L. Marcos Enalyn Domingo	September 25, 2021
TSU-CET-20-025	Design and Development of a Portable Lamp Powered by a Corn Leaf Electrolyte	Crispin I. Flora Maan B. Florendo Miriam S. Galvez	September 25, 2022
TSU-SP-21-003	Design and Development of Hybrid Utility Vehicle (HUV)	Larry A. Suboc Miriam S. Galvez Leo P. Piao Aldrin Joar R. Taduran Michael B. Tomas Adam F. Rombaoa	February 03, 2022
TSU-CAF-20-001	Queng Dalan: Identifying Spaces Conducive for Creative Placemaking within Poblacion, Tarlac City	Ma. Lourdes Josefina M. Reyes Judeo R. Herrera	7/12/2021
TSU-CAS-18-001	Research Efficacy vis-à-vis Research Process Experiences of Undergraduate Psychology Students	Jeremiah Paul C. Silvestre Marie Paz H. Angeles	Airil 12, 2021
TSU-CAS-18-002	Examining the Interrater Reliability between Self and Teacher Assessment of Students' Oral Performance in Filipino	Dexter L. Manzano	March 19, 2022
TSU-CAS-20-016	Development of Filipino Adversity Quotient Scale (FAQS)	Editha Q. Villavicencio Jersey P. Pangilinan Angela Christine Q. Villavicencio	March 19, 2022
TSU-CAS-20-017	Work from Home Experiences: A Corona Virus Disease (COVID-19) Aftermath	Editha Q. Villavicencio	April 20, 2022
TSU-COS-17-004	Research Made Easy: A Workbook Using Simplified Research Writing Approach Phase 1: For College Students, Phase 2: For High School Students, Phase 3: For Elementary Students	Alma M. Corpuz Nancy Mati and Cynthia Quiambao	February 14, 2019
TSU-COS-18-004	Utilization of Calamansi (Citrofortunella Microcarpa) as Enricher to Flavoured Gummy Jelly Candy	Abegail F. Feliciano Lea B. Milan Aljon N. Lusong	September 19, 2021
TSU-SP-21-002	Development of an Improved Alcohol (Ethanol-Based hand Sanitizer) AVHS Formulation Through the Incorporation of Ylang-Ylang Essential Oil	Jaidriel Meg Cabanding Geraldine Gamoso Xyris Gerard Fernandez	March 03, 2023
TSU-SP-21-005	An Environmental Impact Assessment of the TSU Lagoon and its Potential for Native Freshwater Fish Propagation and Avifaunal Diversity Conservation	Bertrand Aldous Santillan Mary Jane Rigor Wesley Gagarin Geraldine Gamoso Xyris Gerard Fernandez Jasmin Quilala	August 05, 2022

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TSU-CTE-20-002	Online Modyul para sa MAED Fil Pagsasalang Wika: Isang Pagtataya	Jessica Marie I. Dela Peña	11-Oct-21
		Arlyn C. Cura	
TSU-CTE-20-003	Evaluation of Students' Service-Learning Experiences: Basis for an Interdisciplinary Curriculum Model	Maria Agnes P. Ladia	20-Oct-21
TSU-CTE-20-004	Science Teachers' Involvement in Climate Change Mitigation: Basis for An Action Plan for Integration into School Programs	Cynthia G. Quiambao	20-Apr-22
		Alma M. Corpuz	
TSU-CTE-20-011	Review of Curricular Offerings at the TSU-CTE Graduate School: Basis for Enhancements during the Challenging Times	Jasper Jay N. Mendoza	22-Dec-21
		Ma. Theresa A. Acosta	
		Mellany G. Masangkay	
TSU-CTE-20-013	The Level of Teaching Competence of Teachers Who Graduated from TSU-CTE Graduate School Using the Seven Domains of Philippine Professional Standards for Teachers (PPST)	Ma. Theresa A. Acosta	20-Apr-22
TSU-CTE-20-014	Teacher Preparedness for Inclusive Education: Its Implications to the Teacher Education Program	Joanne Marie I. Escalona	22-Dec-21
TSU-CTE-20-015	Assessment of Integration of Environmental Education (IEE) in the New Teacher Education curriculum (NTEC) of SUCs in Region 3: Exploring Steps towards Curriculum Greening.	Julieta M. Lagasca	7-May-22
		Teody San Adres	
		Alma M. Corpuz	

Figure 6. Screenshots of the Data of Monitored Researches

Crafting and Implementation of Research Policies and Guidelines

To continually contribute to the attainment of the university mission, the office aims to propose policies, procedures, rules and other systems, subject to the approval of the Board of Regents for the effectiveness and efficiency of research operations. With these, the policies which were approved by the Board of Regents last November 2020 were being implemented this year.

Mentor- Mentee Program

The Mentor and Mentee Program approved, with Resolution No. 86, series of 2020, by the TSU Board of Regents on November 13, 2020 during the 120th Regular Meeting. It intends to encourage reliable and experienced faculty members to become a mentor to the faculty members who need assistance in their research endeavors especially in their research publication.

Table 11. List of Approved Mentors

No	Name	College
1	Alvincent Danganan	CCS
2	Murphy Mohammed	CET
3	Edjie De Los Reyes	CCS
4	Theda Flare Quilala	CCS
5	Rogel Quilala	CCS
6	Rita Pulmano	COS

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Table 12. List of Approved Mentees

No	Name	College
1	Anna Cazandra P. delos Reyes	CCS
2	Angelo Gabriel Bucad	CAFA
3	Darylle Ann Cea	CAFA

Implementing Rules and Regulations of the Research Undertakings of the Faculty Members of the TSU

The IRR highlights that the Assistant Professor and Professor will be given 12 units teaching load and 6 units research assignment. Researchers shall conduct their research within a year.

Table 13. List of Faculty Researchers with Approved ETL Deloading

Name of Faculty Researcher	Research Title	ETL
Alma Corpuz	Assessment of Integration of Environmental Education (IEE) in the New Teacher Education Curriculum (NTEC) of the SUCs in Region 3: Exploring Steps Toward Curriculum Greening	3
Henry Rufino	Segment Reporting and Financial Performance of Universal Banks	6
Dexter Manzano	Examining the Interrater Reliability between Self and Teacher Assessment of Students' Oral Performance in Filipino	6

Grammarly Subscription

To ensure the quality of researches the university has recently subscribed to Grammarly. Grammarly is a cloud- based platform that serves as a writing assistant that reviews spelling, grammar, punctuation, clarity, engagement, and detect possible plagiarism. It uses AI to identify and search for an appropriate replacement for the mistake it locates. This will be of great help in checking and improving our scholarly works. Each college was given Grammarly account that can be shared to all faculty members.

Special Research Projects

Timeliness in the conduct of relevant researches are in utmost importance to provide innovative solutions to current pressing issues and concerns. In this light, the University President may commission the different offices or colleges to conduct researches which will be treated as Special Research Projects. These special research projects have an expedited research evaluation process. Sources of special projects are:

1. Externally funded Research

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2. Priority Research Project of an Office/ College
3. Research Project from the Member of Administrative Council
4. Research that will emanate from the Mentor- Mentee Program

The guidelines and procedures were disseminated through an Office Memorandum Order No. 03 s. 2021 posted at the eDMS.

Table 14. List of Approved Special Research Projects

Proponent	Research Title
Engr. Larry A. Suboc, Dr. Miriam S. Galvez, Dr. Leo Piao, Engr. Aldrin Joar R. Taduran, Engr. Michael B. Tomas, Engr. Adam F. Rombaoa	Design and Development of Hybrid Utility Vehicle
Heidilyn V. Gamido, Arnel A. Punla, Larry A. Suboc, Bryan Christopher C. Sico, Ferdinand L. Marcos, Jesus R. Valdoz Jr	Contactless Gate Access and Monitoring Identification System: COVID- 19 Response
Jaidriel Meg Cabanding, Geraldine Gamoso, Xyris Gerard Fernandez	Optimization and Production of Alcohol-Based Hand Sanitizer Formulation based on the World Health Organization (WHO)- Recommended Formulation
Dr. Myrna Q. Mallari, Angelo Mandap	Researcher’s Difficulties: Strengthening the Level of Research Writing Competencies and Overcoming Completion and Publication Productivity
Maricar Banting, Anna May Angeles, Dick Tuazon	Impact Evaluation of the 2018 Technical Assistance of Mechanical Engineering Program on Design and Fabrication of Production Tools for the Selected Micro Food Processors (2) of Tarlac City
Dr. Myrna Q. Mallari, Angelo Mandap	Societal Impact Assessment of the Continuing Education Services to the Professional Competency of TRADOC Philippine Army
Mary Jane Rigor, Bertrand Aldous Santillan, Wesley Gagarin, Geraldine Gamoso, Xyris Gerard Fernandez, Jasmin Quilala, Emmanuel Lacadin	An Environmental Impact Assessment of the TSU Lagoon and its Potential for Native Freshwater Fish Propagation and Avifaunal Diversity Conservation
Maryliz L. Sison Angela Christine Pangilinan	A Root-Cause Analysis on the Challenges of New Faculty Members of Tarlac State University

Dissemination of research outputs through research publication, research presentations, workshops, roundtable discussions, workshops, and newsletters

A research often culminates in publication or dissemination of the research findings. This passes the possible advantages of a research to a wide scope of audience, organizations, both from the public and private sectors. It also fulfils obligations to funding bodies. The University Research Office is continually crafting and implementing policies, providing opportunities like funding supports and trainings, to ensure the quality of researches for the dissemination to the stakeholders. The figures below show the list of published, presented and cited researches in 2021.

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COLLEGE	RESEARCH TITLE	AUTHOR/S	TITLE OF FORUM/CONFERENCE	TYPE OF FORUM/CONFERENCE	CONFERENCE DATE
CBA	Relationship of Operating Segments (IFRS 8) and Profitability of Universal Banks in the Philippines	Henry D. Rufino	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CBA	Technological Innovativeness of Micro Entrepreneurs in Tarlac City	Bryan Jan S. <u>Dizon</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CBA	The Intrapreneurship Practices of TSU-BS Entrepreneurship Graduates in the Workplace	<u>Limuel Pavico</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CCJE	Victim Survivor of Forced Labor among <u>Aetas</u> : A Case Study in Tarlac	<u>Ramil M. Las-igan</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CPAG	Assessment of Competency of Barangay Officials in Municipality of Concepcion, Tarlac	Patricia Ann D. Estrada, <u>Izelle C. Francisco</u> , <u>Jerich Ralph S. Lobo</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CPAG	Citizen Satisfaction on Governance and Response in the Municipality of Concepcion, Tarlac	Patricia Ann D. Estrada		INTERNATIONAL	December 9-11, 2021
			1st International Multidisciplinary Online Conference		
CPAG	Plight of Disadvantaged Elderly in the City of Tarlac: A Case Study	<u>Jerich Ralph S. Lobo</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CPAG	Towards Fostering Knowledge Co-Creation: A Case Study of Knowledge Management Implementation among Selected LGUs in the Province of Tarlac	Maria Tiara Fatima F. <u>Galang</u> , <u>Vien Jamaica Samson</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CTE	Secondary School Teachers' Perspectives and Involvement in Climate Change Action/Mitigation: Bases for an Action Plan	Cynthia G. Quiambao, Alma M. <u>Corpuz</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CTE	Integration of Environmental Education (EE) in Teacher Education Programs: Towards Sustainable Curriculum Greening	Julieta M. <u>Lagasca</u> , <u>Teody San Andres</u> , Alma M. <u>Corpuz</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CTE	Archetypes of Women in Philippine Fictions	<u>Ninez B. Tulo</u> - Tarlac State University		INTERNATIONAL	December 9-11, 2021

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COS	Water Quality and Ambient Environmental Conditions of Food Service Establishments in Tarlac City, Philippines	Lea B. Milan, <u>Jaidriel Meg G. Cabanding</u> , Geraldine R. <u>Gamoso</u> , Wesley S. <u>Gagarin</u> , <u>Maryliss S. Sison</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
COS	Composition and Process of Improving the Stability of Non-Carbonated Calamansi (<u>Citrofortunella microcarpa</u>) Ready-to-drink Juice	Lea B. Milan and <u>Abegail F. Feliciano</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
COS	Improving the Composition and Process of Producing Sweet Potato-based Desserts using Extension-Led R&D Approach	Lea B. Milan	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CCS	<u>OCKMEx</u> : An Effective Approach for Overlapping Clustering with K-Median Extension Algorithm	<u>Alvincent Danganan</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CCS	Development and Implementation of Supply and Property Management System: A Model for State Universities and Colleges in the Philippines	<u>Heidilyn V. Gamido</u> , <u>Marlon V. Gamido</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
	and Real-Life Situations		1st International Multidisciplinary Online Conference		
CTE	CONTINUING PROFESSIONAL DEVELOPMENT OF THE TEACHER EDUCATION FACULTY AMONG STATE UNIVERSITIES AND COLLEGES IN REGION III	<u>Ninez B. Tulo</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CTE	Online <u>Modul</u> para sa MAED-Fil <u>Pagsasaling-Wika</u> : Isang <u>Pagtataya</u>	Jessica Marie I. Dela Pena, <u>Arllyn C. Cura</u> , <u>Juvy V. Galamay</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
COS	Development and Validation of a Research Workbook Using a Simplified Writing Approach	<u>Alma M. Corpuz</u> , Cynthia G. <u>Quiambao</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
COS	Mapping and Improving the Composition and Process of Producing Sweet Potato-based Desserts	Lea B. Milan	3 rd National Conference on Food, Environment, Engineering and Technology	NATIONAL	September 15-17, 2021

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CCS	Web-based Performance Monitoring System for Higher Educational Institutions in the Philippines	Jay Pabustan, <u>Heidilyn Gamido</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021
CCS	Energy Consumption Analysis in a Computer Laboratory	Dennis Y. <u>Virtuadazo</u>	1st International Multidisciplinary Online Conference	INTERNATIONAL	December 9-11, 2021

Figure 7. List of Presented Researches

COLLEGE	RESEARCH TITLE	AUTHOR/S	TITLE OF JOURNAL OR PUBLICATION	VOL. NO. & ISSUE NO.	ISSN/ISBN
CASS	The Mediating Effects of Ego Resilience on the Relationship between Professionalism Perception and Technostress of Early Childhood Teachers	<u>Jiyoung Lee</u>	International Journal of Learning, Teaching and Educational Research	Vol. 20 No. 4	ISSN: 1694-2116
CCS	<u>eHMCCKE</u> : An Enhanced Overlapping Clustering Algorithm for Data Analysis	<u>Alvincent E. Danganan</u> , <u>Edjie M. De Los Reyes</u>	Bulletin of Electrical Engineering and Informatics	Vol. 10 No. 4	ISSN: 2302-9285
CCS	Improved MSHA-1 Algorithm with Mixing Method	<u>Rogel L. Quilala</u> , <u>Theda Flare G. Quilala</u>	Bulletin of Electrical Engineering and Informatics	Vol. 10 No. 4	ISSN: 2302-9285
CCS	Modified Blowfish Analysis using Derivation Cases	<u>Theda Flare G. Quilala</u> , <u>Rogel L. Quilala</u>	Bulletin of Electrical Engineering and Informatics	Vol. 10 No. 4	ISSN: 2302-9285
COS	Food Safety Compliance and Challenges of Micro Food Business Operators: Implications to COVID-19 Pandemic	<u>Lea B. Milan</u> , <u>Abegail F. Feliciano</u> , <u>Aljon N. Lusong</u>	<u>Recoletos</u> Multidisciplinary Research Journal	Vol. 9 No. 2	ISSN: 2408-3755

Figure 8. List of Published Researches

COLLEGE	CITING ARTICLE/BOOK	CITING JOURNAL/BOOK	AUTHOR/S
CCS	Data Modelling and Data Processing Generated By Human Eye Movements	International Journal of Electrical and Computer Engineering	<u>Heidilyn V. Gamido</u> & <u>Marlon V. Gamido</u>
CCS	Implementing data-driven decision support system based on independent educational data mart	International Journal of Electrical and Computer Engineering	<u>Heidilyn V. Gamido</u> & <u>Marlon V. Gamido</u>
CCS	Real-time FPGA Implementation of concatenated AES and IDEA cryptography system	Indonesian Journal of Electrical Engineering and Computer Science	<u>Heidilyn V. Gamido</u>
CCS	Linear Equation for Text Cryptography Using Letters' Coordinates	Indonesian Journal of Electrical Engineering and Computer Science	<u>Heidilyn V. Gamido</u>
CCS	Improvement Security in E-Business Systems Using Hybrid Algorithm	TELKOMNIKA Telecommunication, Computing, Electronics and Control	<u>Heidilyn V. Gamido</u>
CCS	Enhancement in Data Security and Integrity using <u>Minhash</u> Technique	Indonesian Journal of Electrical Engineering and Computer Science	<u>Rogel Quilala</u>
CCS	A Metaheuristic Approach to Secure Multimedia Big Data for IoT Based Smart City Applications	Wireless Communications and Mobile Computing	<u>Rogel Quilala</u>

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CCS	Secure Framework enhancing AES Algorithm in Cloud Computing	Security and Communication Networks	Edjie M. De Los Reyes
CCS	Home Appliances Recommendation <u>system</u> Based on weather Information using Combined Modified K-Means and Elbow algorithms	Indonesian Journal of Electrical Engineering and Computer Science	Alvincent E. Danganan
CCS	A Lightweight Security Scheme for Advanced Metering Infrastructures in Smart Grid	Bulleting of Electrical Engineering and Informatics	Heidilyn V. Gamido , Marlon V. Gamido
CCS	Triple Layer Image Security using Bit-shift, Chaos, and Stream Encryption	Bulleting of Electrical Engineering and Informatics	Heidilyn V. Gamido , Marlon V. Gamido
CCS	A Semi-supervised QoA-Aware Classification for Wide Area Networks with Limited resources	International Journal of Innovative Technology and Exploring Engineering	Alvincent E. Danganan
CCS	A Metaheuristic Approach to Secure Multimedia Big Data	Wireless Communications and Mobile Computing	Edjie M. De Los Reyes
CBA	Unleashing the Role of e-Learning in Student Engagement Practices and Accounting Professional Competencies	Journal of Applied Research in Higher Education	Henry D. Rufino , Rhene G. Payabyab , Grace T. Lim
CBA	The food safety knowledge of street food vendors and the sanitary compliance of their vending facilities, Johannesburg, South Africa	Journal of Food Safety	Criselda Alamo-Tonelada , Ferdinand Y. Silaran , Maria Cristina A. Bildan
CBA	Accounting Information System Courses: Developing a Hybrid Syllabus in the Era of Digitization	International Journal of Digital Accounting Research	Nelvin R. Nool , Maria Agnes P. Ladia
CBA	The role of women's entrepreneurial orientation to access external financial supports: empirical evidence from the small and medium enterprises (SMEs) in Indonesia using PLS-SEM	International Journal of Trade and Global Markets	Jhonel C. Panlilio
CBA	Chinese Enterprises' Use of management Accounting Tools	Book: Management Accounting in China and Southeast Asia	Henry D. Rufino
CBA	Innovative management Accounting Practices for Sustainability of Manufacturing Small and Medium Enterprises	Environment, Development and Sustainability	Henry D. Rufino
CBA	Actual Participation: The Effects of information Sharing and Familiarity Team on Budget Decision Quality	International Journal of Monetary Economics and Finance	Dr. Jhonel Panlilio , Dr. Rowena Ramos , Prof. Remedio Tamina
CET	Correlation between coastline soil loss rate and artificial intelligence English vocabulary based on GIS system	Arabian Journal of Geosciences	Murphy Mohammed
CET	Influence of GIS technology on coastal atmospheric climate and employee's innovation intention	Arabian Journal of Geosciences	Murphy Mohammed
CET	The relationship between ecosystem service supply and demand in plain areas undergoing urbanization: A case study of China's Baiyangdian Basin	Journal of Environmental Management	Murphy Mohammed
CET	Simulating Flash Flood Hydrograph and Behavior Metrics across China: Implication for Flash Flood Management	Science of Total Environment	Murphy P. Mohammed
CET	Financial Market Prediction under Deep learning Framework using Auto Encoder and Kernel Extreme Learning Machine	Applied Soft Computing Journal	Murphy P. Mohammed
CET	Dam Related Disaster Framework for Emerging Preparedness	Planning Malaysia: Journal of the Malaysian Institute of Planners	Murphy P. Mohammed
CASS	A Systematic overview of issues for Developing EFL Learners' Oral English Communication Skills	3L: Language Linguistics, Literature	Criselda Madriaga ; Aloysius Madriaga
CASS	Effects of Employing In-service EFL Teachers Strategy-based Instruction on their Performance of Teaching Listening Comprehension in Amman-Jordan	3L: Language Linguistics, Literature	Criselda Madriaga ; Aloysius Madriaga

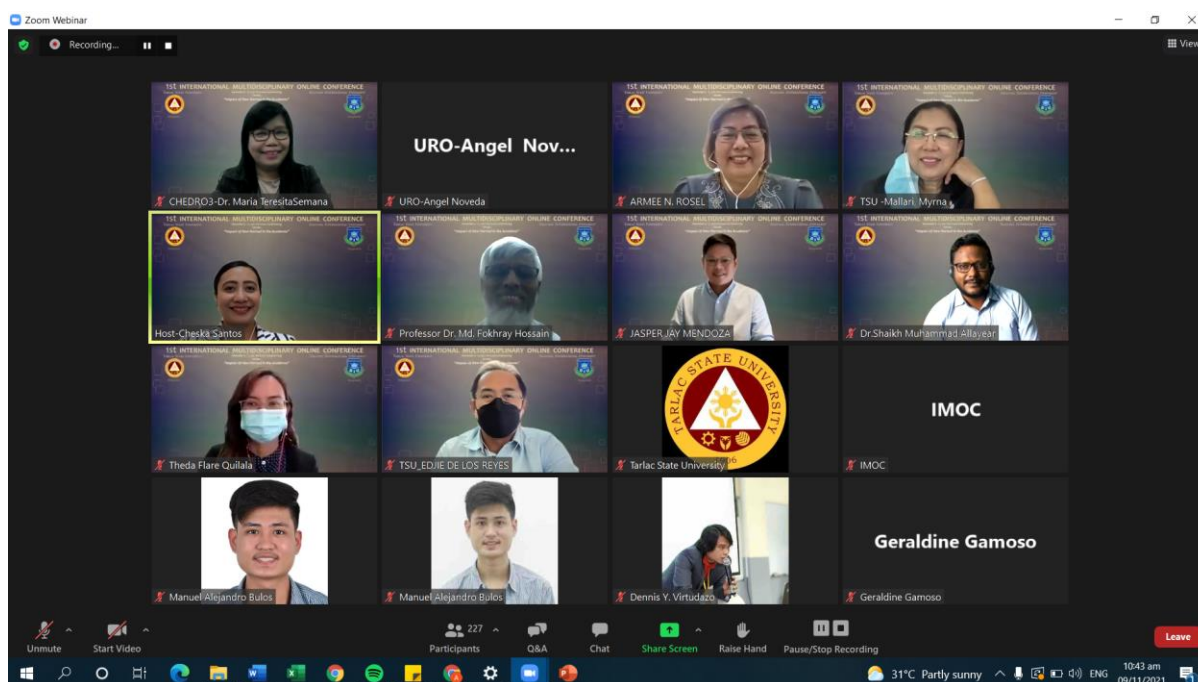
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CASS	Understanding English Speaking Practice in Public Schools in Kazakhstan . A Case Study in Almaty	3L: Language Linguistics, Literature	Criselda Madriaga ; Aloysius Madriaga
COS	An Introduction to Bioactive Natural Products and General Applications	Bioactive Natural Products for Pharmaceutical Applications-Advanced Structural Materials	Erwin C. Mina
COS	Accumulation of Cd and Pb in Various Body Parts, Organs and Tissues of Lymantria dispar asiatica (Lepidoptera: Erebidae)	Journal of Asia-Pacific Entomology	Claire C. Lagrana
CTE	School Profile and Licensure Examination Performance of Teacher Education Graduates in Northern Philippines	Asia Pacific Journal of Multidisciplinary Research	Nelvin Nool & Maria Agnes P. Ladia
CTE	School Profile and Licensure Examination Performance of Teacher Education Graduates in Northern Philippines	Asia Pacific Journal of Multidisciplinary Research	Nelvin R. Nool , Maria Agnes P. Ladia

Figure 9. List of Cited Researches

The 1st International Multidisciplinary Online Conference

The Tarlac State University, in collaboration with the Daffodil International University in Bangladesh, held its 1st International Multidisciplinary Online Conference on November 9-11, 2021 via Zoom platform with the theme "Impact of the New Normal in the Academia." The 1st virtual conference was participated by 46 SUCs and HEIs in the Philippines, 11 universities from other countries like Nigeria, Somalia, Bangladesh, Thailand, Malaysia, Zambia, Jordan, India, Indonesia, and Pakistan. There were also participants from the different government agencies like CHED, DepEd and DOLE and LGUs in the different provinces in the Philippines. A total of 67 research papers were presented during the 3- day research conference. The research papers were presented by researchers from 15 universities and HEIs in the Philippines and 2 institutions from other country.



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Figure 9. Sample photos during the 1st IMOC

Planning and implementation of programs directed toward the continuing development of skills and competencies of faculty members and research office personnel

College Orientations on Research Processes and Guidelines

The URO conducted online orientation on the new processes and policies to the colleges, to capacitate the new CRCs and faculty members and to serve as

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a refresher course for the previous ones. The said orientations were conducted via Zoom meeting.

College of Teacher Education

The first college oriented was the College of Teacher Education conducted on February 10, 2021.



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**COMPOSITION OF EVALUATION COMMITTEES
(CREC, UREC, REC)**

- College Research Evaluation Committee (CREC)**
 - College Dean
 - URO Representative
 - External Expert Evaluator
- University Research Evaluation Committee (UREC)**
 - Vice President for Research and Extension Services
 - URO Director
 - Internal Expert for STEM Researches
 - Internal Expert for ABLESS Researches
- Research Evaluation Committee (REC)**
 - Vice President for Research and Extension Services
 - URO Director
 - Representative from TDTCO
 - Internal Expert for STEM Researches
 - Internal Expert for ABLESS Researches

Sample photos during the CTEd Orientation

College of Business Administration

The URO conducted an online orientation to the College of Business and Accountancy on February 17, 2021.

**ORIENTATION ON
RESEARCH
POLICIES AND
PROCESSES**

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CRC_Derrick Figueroa...

**FRAMEWORK
FOR RESEARCH**

Henry Rufino

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    graph TD
      Faculty[Faculty Researchers] --> ResComp[RESEARCH COMPANIONS]
      ResComp --> URO[UNIVERSITY RESEARCH OFFICE  
- Consideration, management, and organization of general researches]
      URO --> CREC[College Research Evaluation Committee]
      URO --> UREC[University Research Evaluation Committee]
      URO --> REC[Research Evaluation Committee]
      URO --> ResEthics[RESEARCH ETHICS EVALUATION COMMITTEE  
- Evaluation of ethical aspects of researches]
      URO --> ResPub[Research Management and Grants Writing Unit]
      URO --> ResPubInfo[Research Publication and Information Communications Unit]
      URO --> ResLab[Analytical Testing Laboratory and Micro-Product Research Center]
      URO --> ResInst[University Research Institutional Center]
      URO --> ResStat[Center for Statistical Studies]
      URO --> ResApp[APPROVAL OF RESEARCH]
      URO --> ResCon[CONDUCT OF RESEARCH]
      URO --> ResMon[MONITORING OF RESEARCH]
      ResApp --> ResDev[PRODUCT/PROCESS DEVELOPMENT  
TESTING AND VALIDATION]
      ResCon --> ResDev
      ResMon --> ResDev
      ResDev --> ResNet[NETWORK SERVICES  
- HUMANITARIAN RELIEF AND COMMUNITY EXTENSION]
      ResDev --> ResCust[STAKEHOLDER CLIENTS]
  
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RESEARCH SUPPORT AND INCENTIVES

PRESENTATION FUNDING AND INCENTIVE

- Funding support for oral presentation in national or international research conferences PROVIDED that such papers were endorsed by RMCBU
- Faculty member may opt to present their research outputs not organized by TSU on either OT (Official Time) or OB (Official Business)
 - If OT, conference fees and other related expenses will not be shouldered by the university. However, the faculty member can claim an incentive of Php 10,000.00
 - If OB, conference fees and other related expenses will be shouldered by the university. However, the faculty member can no longer claim the incentive.
- Funding support will be provided only if:
 - The conference was organized by the sponsoring agency in collaboration with a university/college, and/or
 - The conference is recognized by CHED
- A permanent faculty may receive funding support for paper presentations at a conference not organized by TSU **ONLY ONCE PER YEAR**. Likewise, paper presentation of a research paper in any conference not organized by TSU may receive funding support from the university **ONLY ONCE**.
- Presentation to any national or international conference with full-paper proceeding is **HIGHLY DISCOURAGED**

Abie Feliciano

Sample photos during the CBA Orientation

College of Science and College of Criminal Justice Education

The office conducted the orientation to the College of Science and College of Criminal Justice Education on March 16, 2021 via Zoom Meeting.

Recording... You are viewing URO-Wesley Gagarin's screen View Options

SHOW TASKBAR DISPLAY SETTINGS END SLIDE SHOW

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ORIENTATION ON RESEARCH POLICIES AND PROCESSES

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Next slide

UNIVERSITY RESEARCH OFFICE MANUAL

BOOK NO. 14.9.2020

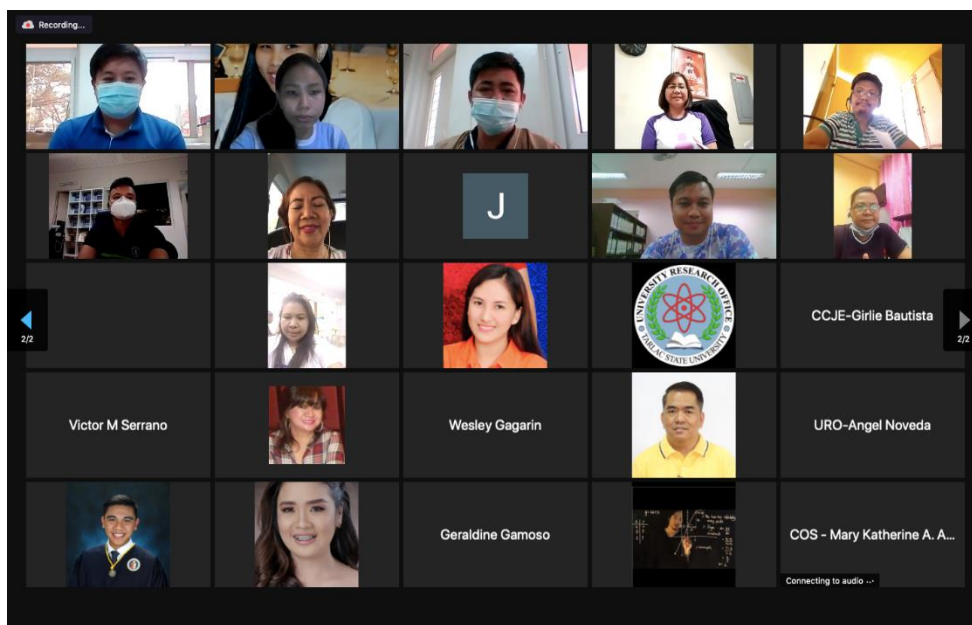
No Notes.

Slide 1 of 19

Participants: COS Emvi - Bertrand Aid..., Manuel Bulos, COS-Mary Jane Rigor, URO-Wesley Gagarin, COS_Mines Mina

Unmute Stop Video Security Participants Chat Share Screen Pause/Stop Recording Reactions Leave

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Sample photos during the COS and CCJE Orientation

College of Computer Studies and College of Architecture and Fine Arts

An orientation on the research processes and policies was also conducted to the College of Computer Studies and College of Architecture and Fine Arts on June 25, 2021 via Zoom.



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RESEARCH SUPPORT AND INCENTIVES

■ RECOGNITION INCENTIVE

RESEARCH OUTPUT	CORRESPONDING MONETARY INCENTIVES (Php)
Winner in Regional or National Research Paper Presentation/ Competition	1 st Place/ Best paper (20, 000) 2 nd Place (10, 000) 3 rd Place (5, 000)
Winner in International Research Paper Presentation/ Competition	1 st Place/ Best paper (30, 000) 2 nd Place (20, 000) 3 rd Place (10, 000)
RESEARCH OUTPUT	CORRESPONDING MONETARY INCENTIVES (Php)
Best Oral Presentation in Regional and National Research Conference	Php 10,000.00
Best Oral Presentation in International Research Conference	Php 15,000.00

Sample photos during the CCS and CAFA Orientation

Training Workshop in Writing Research Proposals in Context of Data Mining


The University Research Office, initiated by the RMCBU, conducted a Training Needs Analysis together with the HRDMO to identify possible researches and available data for the upcoming “Training Workshop in Writing Research Proposals in Context of Data Mining” on April 29, 2021 via Zoom.




The University Research Office, in partnership with the Human Resource Development and Management Office, organized and conducted an activity entitled “Training on Research Proposal Writing Using Data Mining Techniques” on June 1-2, 2021 via Zoom Conferencing app. The training aimed to utilize the data from HRDMO and convert them into useful researches; to strengthen the knowledge and skills of the faculty members and non-teaching personnel of the university in terms of data mining techniques and research proposal writing; and to produce quality research proposals on human resources management that can be presented in College Research Proposal Colloquium or can be submitted for external funding.

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Introduction
What is Cluster Analysis?




- ▶ A cluster is a collection of objects which are similar to one another within the same group.
- ▶ Cluster Analysis is partitioning a given set of data points into a set of groups which are similar as possible.
- ▶ Cluster Analysis belongs to unsupervised learning in Data Mining.
- ▶ It is either a stand alone tool or a preprocessing step for other algorithms.



**DEPARTMENT OF
STATISTICS**

**Introduction to Data Mining
and Statistical Learning**



Question & Answer



Sample photos during the training

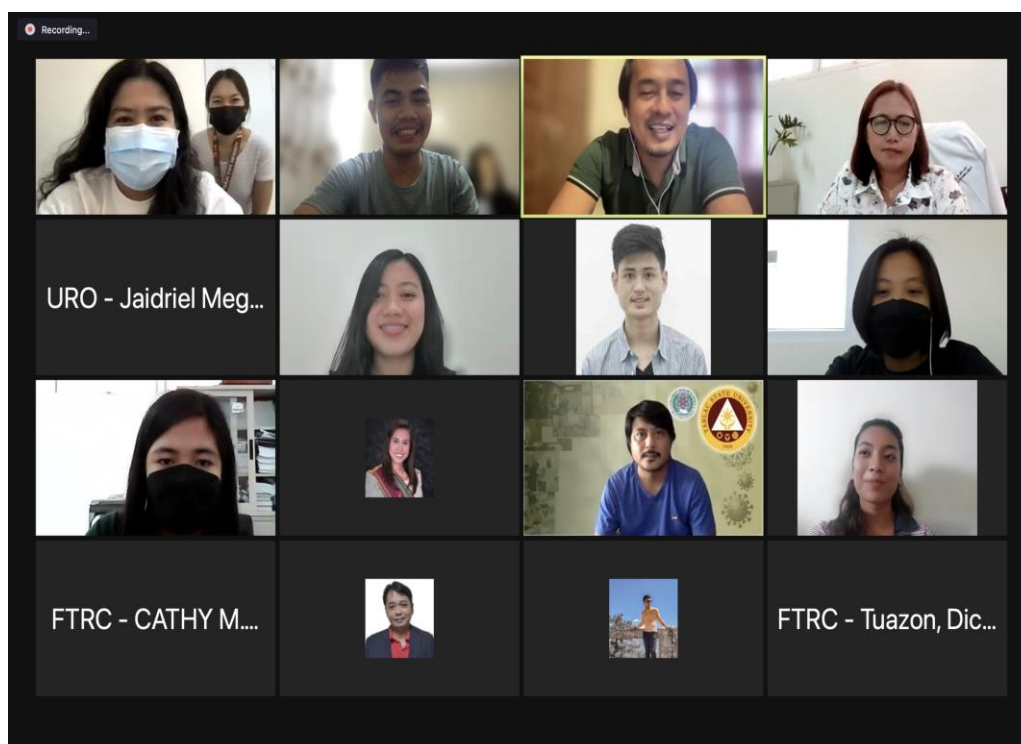
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Training on Research Publication to Mindanao Journal of Science and Technology and to International Food Research Journal

A 3- day training series was conducted on July 12, 19 and August 2 with a title "Training on Research Publication to Mindanao Journal of Science and Technology and to International Food Research Journal". The objectives of the training series are to capacitate faculty researchers to publish their completed research and to employ the mentor-mentee program. The completed research papers underwent review, revision and critiquing to fit the target journal submission format. The speaker ensured that participants submit their write ups every end of each session. The deliverables were critiques by the resource speaker. The workshop also included lecture discussion from the resource speaker and small group discussions of the participants. The invited resource speaker was Dr. Theda Flare Quilala, a faculty researcher from the College of Computer Studies. A total of 24 faculty members from CET, COS, CBA attended the said training.

Training on Report Preparation and Data Visualization

The University Research Office organized and conducted a Training on Report Preparation and Data Visualization on October 1 and 8, 2021 via Zoom platform. The training was participated by the staff and personnel from the URO and the Food Technology and Research Center. The URO Director, Prof. Edjie De Los Reyes served as the resource speaker in the said training wherein the features of the MS Word, MS Excel and MS Power BI were being discussed.

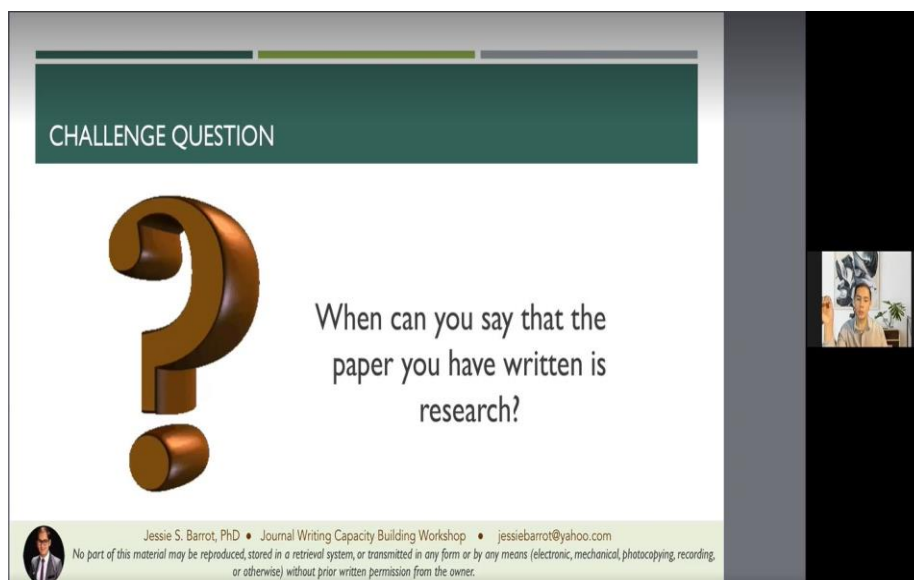
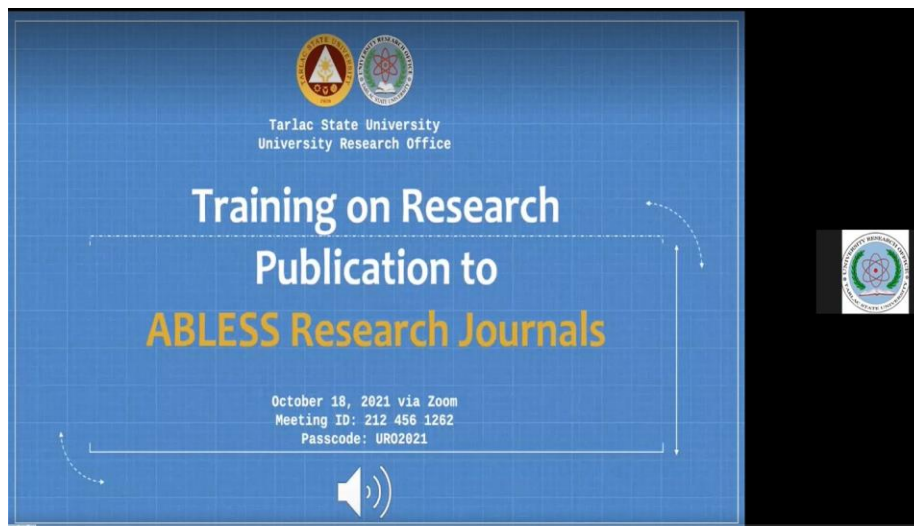


Sample photo during the training

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Training on Research Publication to ABLESS category Journals

A Training on Research Publication to ABLESS category Journals was conducted on October 18, 2021 via Zoom with a total of 16 participants, who are faculty members from CTE, CPAG, CBA and CCJE with unpublished researches. The invited resource speaker was Dr. Jessie Barrot, a full professor and the Dean of the College of Education, Arts and Sciences at the National University. At present, 2 research papers from the participant were already submitted to the TSU accredited journal.



Sample photos during the training

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Other Accomplishments

Turn Over of Solar- Powered Vehicles

On January 29, 2021, the Food Technology and Research Center was inaugurated wherein the Chairperson of the Commission on Higher Education (CHED) Dr. J. Prospero De Vera was invited as the guest speaker. Part of the event is the turn- over of the five solar- powered vehicles as products of a research co-funded by DOST to TSU.



Sample photos during the event

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2021 Philippine Academic Innovation Forum

As part of the initiative of the Benita and Catalina Yap Foundation (BCYF), in collaboration with the DOST, the TSU conducted the “2021 Philippine Academic Innovation Forum” as part of the celebration 2021 Philippine Innovation Month. The said event was done through Zoom meeting and via FB live. Part of the event were presentations from the Directors of the University Research Office and Food Technology and Research Center showcasing the researches of TSU which specialized in solar and food technology.



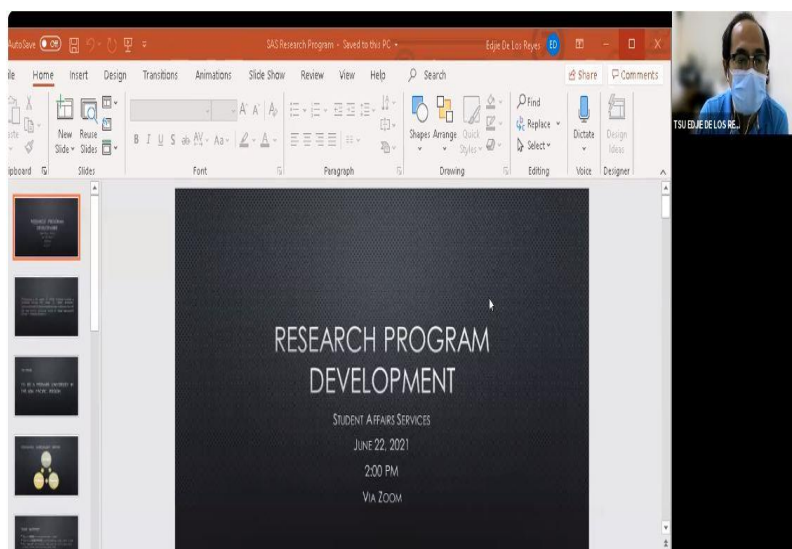
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Sample photos during the 2021 PAIF

Presentation of R & D Program

On June 22, 2021, Prof. Edjie De Los Reyes presented the proposed Research and Development program for the Student Affairs Services with the theme "Groundwork Assessment as Basis in Addressing the Youth's Needs Leading to the Generation of Student-Centered and Solution-Focused Programs (GABAY NG SAS)." A presentation of R & D Program was also conducted to the College of Computer Studies on July 1, 2021 at the Dean's Office which was attended by the program chairpersons, CRC and CEC.



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ASSESSMENT OF STUDENT DEVELOPMENT SERVICES AND PROGRAMS TOWARDS A REFORMED STUDENT DEVELOPMENT MODEL

- ASSESS THE EFFECTIVENESS OF THE ORIENTATIONS, THE SEMINARS, AND THE TRAININGS IN THE DEVELOPMENT OF STUDENTS
- ANALYZE THE STRENGTHS AND WEAKNESSES IN IMPLEMENTING THE ORIENTATION, THE SEMINARS, AND THE TRAININGS

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graph LR; PT[Project Title] --> O[Orientation]; PT --> S[Seminar]; O --> SDM[Student Development Model]; S --> SDM;
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The diagram illustrates a process flow. On the left, a box labeled 'Project Title' has two arrows pointing to a central column of two boxes: 'Orientation' (top) and 'Seminar' (bottom). From the 'Orientation' box, an arrow points to a box on the right labeled 'Student Development Model'. Similarly, an arrow points from the 'Seminar' box to the 'Student Development Model' box.

TSU EDU@DEL.OSTR

Sample photos during the Presentation to SAS



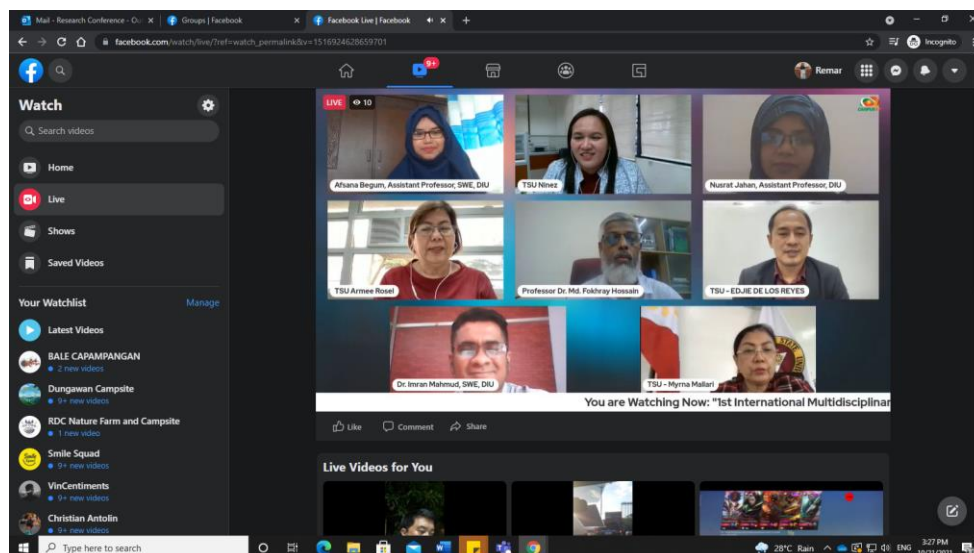
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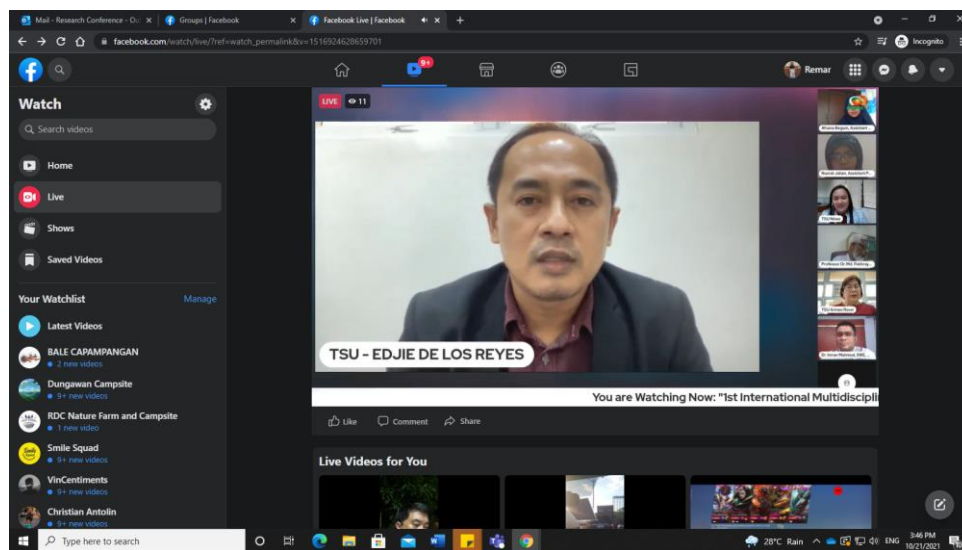
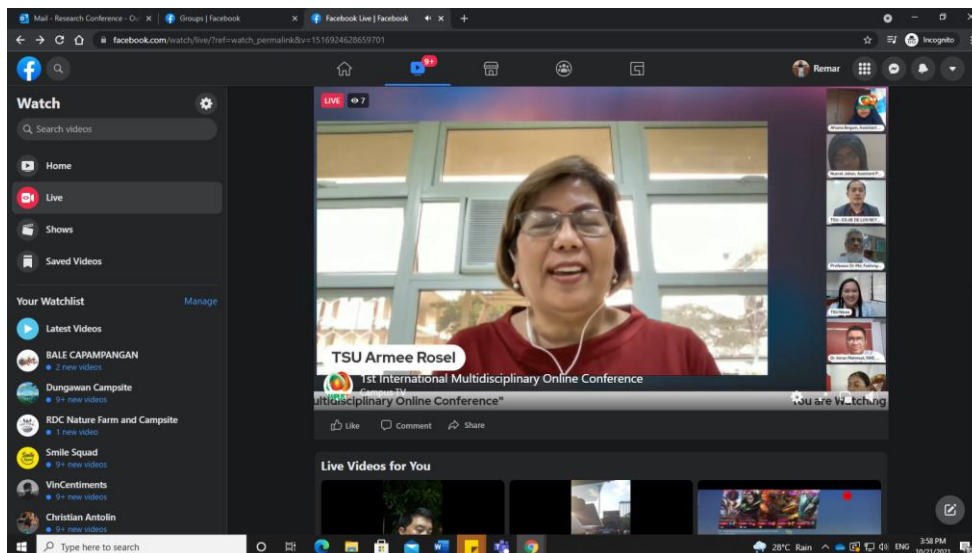
Sample photos during the presentation to CCS

Virtual MOA Signing with the Daffodil International University

The URO, in collaboration with the OIA, participated in the virtual MOA signing with the Daffodil International University on October 21, 2021 via StreamYard which is also livestreamed in Facebook. The MOA signing is for the establishment of partnership between the TSU and the DIU relative to the 1st International Multidisciplinary Online Conference.



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Sample photos during the Virtual MOA Signing

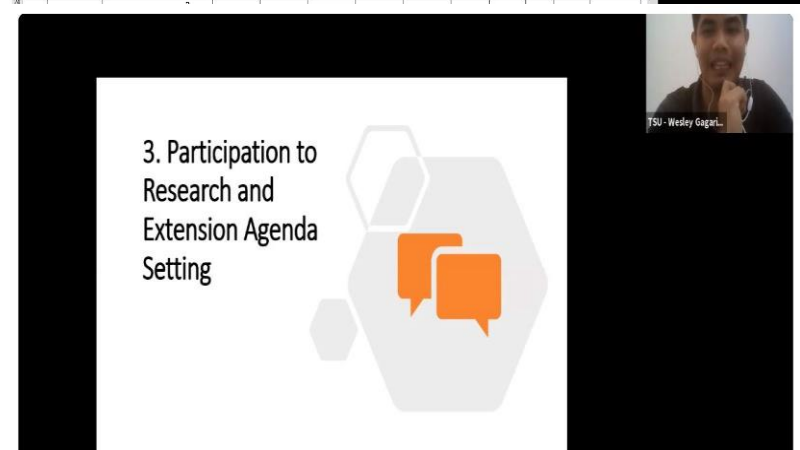
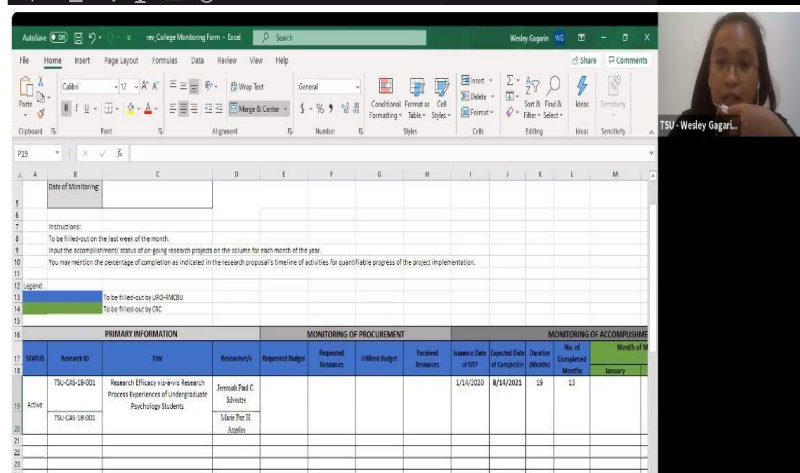
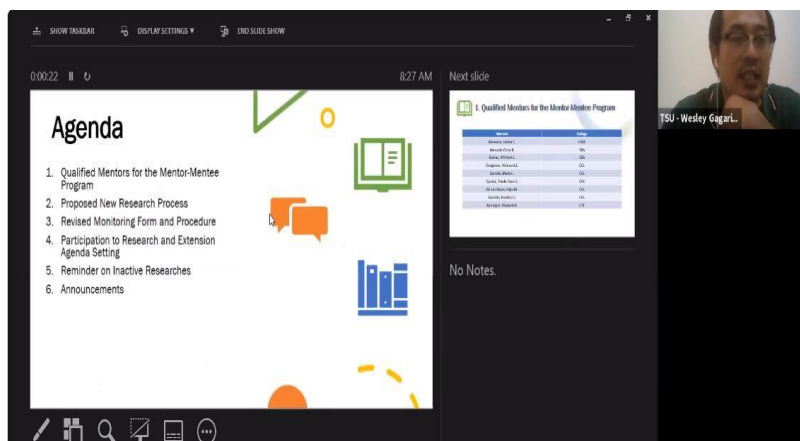
Quarterly Meetings of the College Research Chairpersons

1st Quarterly Meeting

The 1st Quarterly Meeting of the College Research Chairpersons was conducted on March 5, 2021 via Zoom Meeting. The meeting tackled the following agenda:

- Qualified Mentors for the Mentor-Mentee Program
- Proposed New Research Process
- Revised Monitoring Form and Procedure
- Participation to Research and Extension Agenda Setting
- Reminder on Inactive Researches
- Announcements

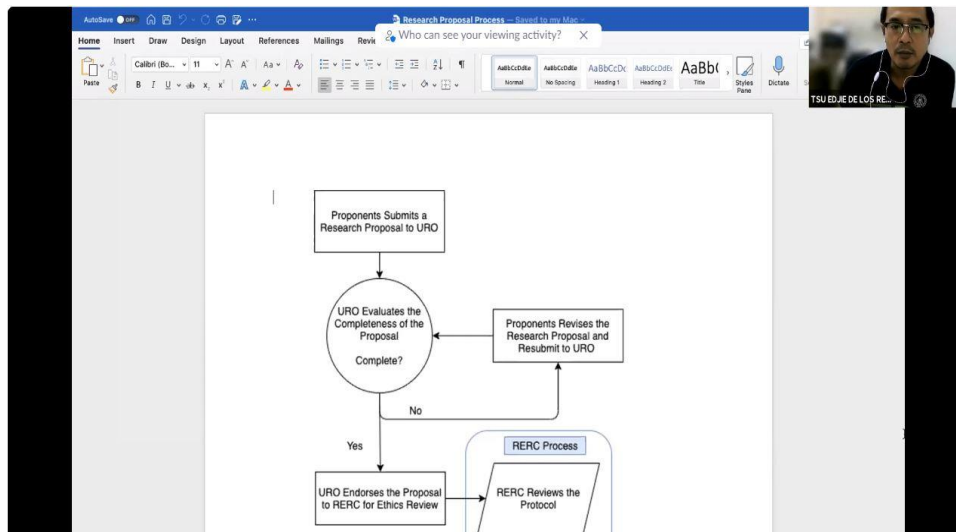
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Sample photos during the 1st Quarter Meeting of CRC
2nd Quarterly Meeting

The 2nd Quarterly Meeting of the College Research Chairpersons (CRCs) was conducted on June 11, 2021.

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Accomplishments as of May 2021

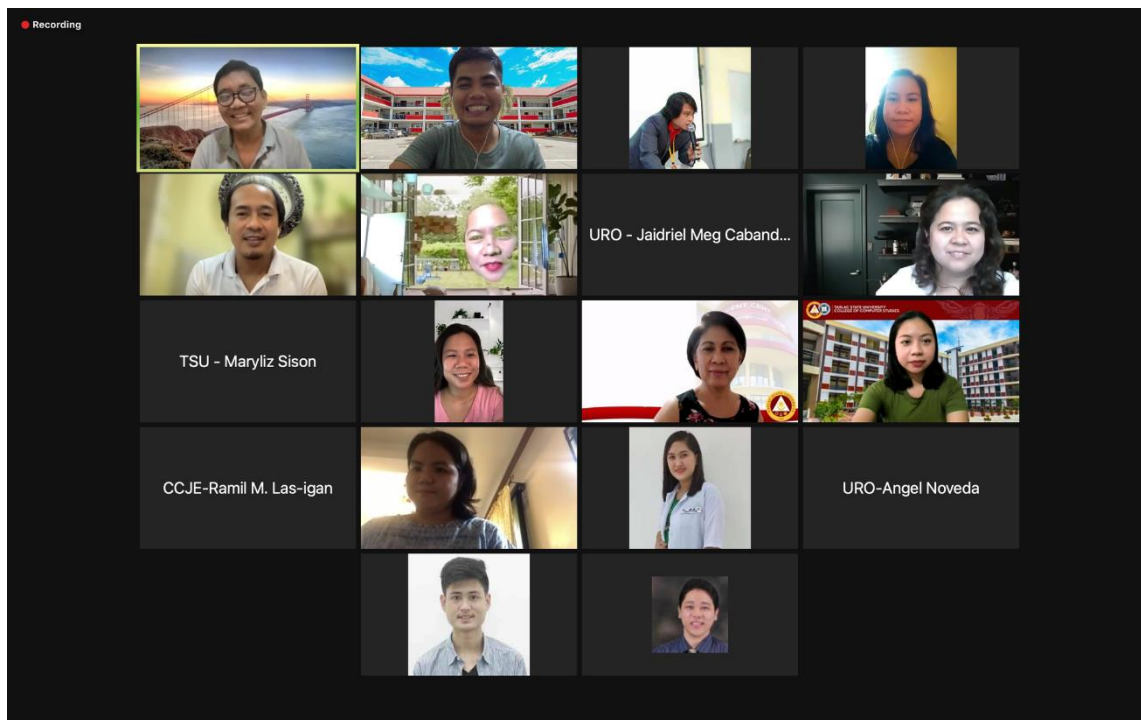
COLLEGE	TARGET-PUBLICATION	ACCOMPLISHMENT-PUBLICATION	TARGET-UTILIZATION	ACCOMPLISHMENT-UTILIZATION	CITATIONS	COMPLETED
CPAG	1	0	1	0	0	0
CASS	3	0	2	0	3	0
CBA	3	0	2	0	4 (1 book)	0
CET	4	0	2	1	3	1
CCS	3	3 (accepted)	1	2	4	5
CAFA	1	0	1	0	0	0
CTE	3	0	3	1	2	1
COS	3	1 (submitted)	2	10	2 (book)	11
CCJE	1	0	1	0	0	0
TOTAL	22	4	15	14	18	17

Sample photos during the 2nd Quarter Meeting of CRCs

3rd Quarterly Meeting

The 3rd Quarterly Meeting of the College Research chairpersons was held on August 17 via Zoom Teleconferencing wherein important matters were discussed especially the monitoring of research proposals for the attainment of the university targets in terms of publication.

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Sample photo taken during the 3rd Quarterly Meeting of CRCs

4th Quarter Meeting

The 4th quarter meeting of the CRCs was conducted on December 22, 2021 wherein the RMCBU and RPICU presented the research accomplishments of each college.



Sample photo during the 4th Quarter Meeting of CRCs

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Summary of Services Provided (2021)

Analytical Testing Laboratory

Service Provided	Number of Clients
Laboratory Services	5
Consultation Services	27 (16 external clients)
TOTAL	32

University Research Statistical Center

Service Provided	Number of Clients
Request for Anti- plagiarism Scan	168
Request for Statistician	77