

CIVIL ENGINEERING PROGRAM CATALOG 2024 EDITION



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NWSSU VISION

The premier technological university in the region providing transformative education where graduates are globally competitive, innovative, and responsive to the demands of a changing world

NWSSU MISSION

NwSSU shall lead in providing highly technical and professional education and lifelong learning in the trade, fishery, agriculture, science, education, commerce, engineering, forestry, nautical, and other emerging programs in the digital age. It shall generate cutting-edge technology and undertake sustainable community development in accordance with the university mandates, thrusts, and directions

NWSSU QUALITY POLICY

Northwest Samar State University commits to provide excellent, relevant, and quality instruction, research, extension, and production by adhering to regulatory and statutory requirements and pledging to continually improve its Quality Management System, thereby satisfying client needs and producing world-class professionals.

NWSSU CORE VALUES

Resilience
Integrity
Service
Excellence



COLLEGE OF ENGINEERING & ARCHITECTURE'S

GOALS

The College of Engineering and Architecture shall spearhead in the holistic development of students and achieve a status capable of administering effectively outcomes-based education, research, and extension services that meet professional and technical needs of local and international industries.



INSTITUTIONAL

GRADUATE OUTCOMES

Creative and Critical Thinkers

Life-long Learners

Effective Communicators

Morally and Socially Upright

Individuals

NATURE OF THE FIELD STUDY

Civil engineering is a profession that applies the basic principles of science in conjunction with mathematical and computational tools to solve problems associated with developing and sustaining civilized life on our planet. Civil Engineering works are generally one-of-a-kind projects; they are often grand in scale; and they usually require cooperation among professionals of many different disciplines. The completion of a civil engineering project involves the solution of technical problems in which information from numerous sources and myriad non-technical factors play a significant role. Some of the most common examples of civil engineering works include bridges, buildings, dams, airports and hangars, ports and harbors, highways and railways, tunnels, river and shore improvements, lighthouses, dry docks, irrigations, flood protection, drainage, water supply, and towers.

PROFESSIONS/CAREERS FOR GRADUATES

The scope of the practice of Civil Engineering is defined in the Civil Engineering Law of 1950 or R.A. 544 and embrace services in the form of consultation, design, preparation of plans, specifications, estimates, erection, installation and supervision of the construction of streets, bridges, highways, railroads, airports, and hangars, port works, canals, river and shore improvements, lighthouses, and dry docks; buildings, fixed structures for irrigation, flood protection, drainage, water supply and sewerage works; demolition of permanent structures; and tunnels.

MEET THE FACULTY



OTILIA G. TADUYO

Assistant Professor I

Earned Units in Master in Engineering major in Water Resource and Environment

Length of Service: 34years

ROMEO B. SANTOS

Associate Professor V

Faculty Association
Vice President

Doctor of Management
Master in Engineering

Length of Service: 33years



ERWIN B. MIANO

Instructor III

Completed Academic Requirements in Master in Engineering major in Engineering Management

Length of Service: 21years



MEET THE FACULTY



MARLON D. SOBREVIGA

Assistant Professor IV

SPFIDO Director

Master in Engineering major
in Engineering Management

Length of Service: 20years

TEODORO A. AMATOSA

Assistant Professor I

- Doctor in Engineering major in Water and Wastewater
- Master in Engineering major in Engineering Management

Length of Service: 16years



**MARIANNE LOU A.
PALOMAR**

Instructor III

Master in Engineering major
in Engineering Management

Length of Service: 11years



MEET THE FACULTY



DINAH FE T. OLITAN

Instructor II

BSCE Program Chair

Master in Engineering major
in Engineering Management

Length of Service: 7years

**ANGEL MARY CRIS S.
ROSALES**

Instructor I

Completed Academic
Requirements in Master in
Engineering major in
Engineering Management

Length of Service: 2years



LELAND G. AFUNDAR

Instructor I

Completed Academic
Requirements in Master in
Engineering major in
Engineering Management

Length of Service: 1year



CURRICULUM CHECKLIST

(SY 2023 - 2024)

First year - 1st Sem.

Course Code	Course Description	Hours		Units	Pre-Re./Co-Re
		Lec	Lab		
B1	Engineering Algebra	3	0	3	None
B2	Engineering Trigonometry	3	0	3	None
B3	Solid Mensuration	3	0	3	None
B4	Analytic Geometry	3	0	3	None
GE 7	Science, Technology & Society	3	0	3	None
GE 4	Mathematics in the Modern World	3	0	3	None
ChemE	Chemistry for Engineers	3	3	4	None
CE 112	Civil Engineering Orientation	2	0	2	None
GEC Elec 1	Living in the IT Era	3	0	3	None
PE1	Movement Competency Training (PATHFit 1)	2	0	2	None
NSTP 1	National Service Training Program 1	3	0	3	None
TOTAL HOURS:		34	31	3	32

First year - Summer

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re
		Lec	Lab		
Math 2	Calculus 2	3	0	3	Math 1
PhysE 1	Physics for Engineers (Calculus Based)	3	3	4	Math 1
TOTAL HOURS:		9	6	3	7

Second year - 1st Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
Math 4	Differential Equations	3	0	3	Math 2
ES 2	Computer-Aided Drafting	0	3	1	ES 1
CE213	Statics of Rigid Bodies	3	0	3	Math 2, PhysE
CE214	Fundamental of Surveying	3	3	4	CE 121
BES 4	Engineering Economics	3	0	3	2 nd yr. Standing
BES 6	Engineering Management	2	0	2	2 nd yr. Standing
GE 5	Purposive Communication	3	0	3	None
GE 2	Readings in Philippine History	3	0	3	None
PE 3	Group Activities (PATHFit 3)	2	0	2	None
TOTAL HOURS:		28	22	6	24

Third year - 1st Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE 314	Structural Theory	3	3	4	CE 242, CE 224
CE 313	Highway and Railroad Engineering	3	0	3	CE 214
CE 333	Engineering Utilities 1	3	0	3	PhysE
CE 353	Engineering Utilities 2	3	0	3	PhysE
CE 373	Numerical Solutions for CE Problems	2	3	3	Math 4
GE 8	Ethics	3	0	3	None
GEC Elec 3	Indigenous Creative Crafts	3	0	3	None
TOTAL HOURS:		26	20	6	22

Third year - Summer

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE OUT	On the Job Training	2	3	3	4 th yr. Standing
TOTAL HOURS:		5	2	3	3

Fourth year - 1st Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE 412	CE Project 2	1	3	2	CE 362
CE 432	Correlational Course 1	0	6	2	4 th yr. Standing
CE 413	Principles of Transportation Engineering	3	0	3	CE 313
CE 414	Geotechnical Engineering 1 (Soil Mechanics)	3	3	4	CE222, CE224
ST-COURSE 1	Specialized Course 1: Project Construction and Management	2	3	3	4th year standing
ST-COURSE 2	Specialized Course 2: Advanced Construction Method & Equipment	2	3	3	4th year standing
ST-COURSE 3	Specialized Course 3: Construction Cost Engineering	2	3	3	4th year standing
TOTAL HOURS:		34	13	21	20

First year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
GE 3	The Contemporary World	3	0	3	None
GE 1	Understanding the Self	3	0	3	None
Math 1	Calculus 1	3	0	3	B1, B2, B3, B4
CE 121	Engineering Drawings and Plans	0	3	1	None
ES 1	Computer Fundamentals and Programming	0	6	2	None/ Math 1
GEC Elec 2	The Entrepreneurial Mind	3	0	3	None
PE 2	Exercise-Based Fitness Activities (PATHFit 2)	2	0	2	None
NSTP 2	National Service Training Program 2	3	0	3	NSTP 1
TOTAL HOURS:		26	17	9	20

Second year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
Math 3	Engineering Data Analysis	3	0	3	Math 2
CE 222	Geology for Civil Engineers	2	0	2	ChemE
CE 242	Dynamics of Rigid Bodies	2	0	2	CE 213
CE 224	Mechanics of Deformable Bodies	4	0	4	CE 213
CE 223	Construction Materials and Testing	2	3	3	CE 213/ CE224
GE 6	Art Appreciation	3	0	3	None
RIZAL	Life and Works of Rizal	3	0	3	None
PE 4	Sports (PATHFit 4)	2	0	2	None
MATH 5	Advanced Engineering Mathematics	3	0	3	Math 4
TOTAL HOURS:		27	24	3	25

Third year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
BES 5	Technopreneurship 101	3	0	3	3 rd yr. Standing
CE 323	Building Systems Design	2	3	3	CE 121
CE 343	Principles of Steel Design	2	3	3	CE 223, CE 314
CE 324	Principles of Reinforced/Pre-stressed Concrete	3	3	4	CE 223, CE 314
CE 322	Hydrology	2	0	2	3 rd yr. Standing
CE 325	Hydraulics	4	3	5	3 rd yr. Standing
CE 342	CE Laws, Ethics, and Contracts	2	0	2	3 rd yr. Standing
CE 362	CE Project 1	1	3	2	3 rd yr. Standing
TOTAL HOURS:		34	19	15	24

Fourth year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE 422	Correlational Course 2	0	6	2	4 th yr. Standing
CE 442	Quantity Surveying	1	3	2	CE323
CE 462	Computer Softwares in Structural Analysis	0	6	2	4 th yr. Standing
CE 423	Foundation and Retaining Wall Design	2	3	3	4 th yr. Standing
CE 443	Construction Methods and Project Management	2	3	3	4th year standing
ST-COURSE 4	Specialized Course 4: Database Management Construction	2	3	3	4th year standing
ST-COURSE 5	Specialized Course 5: Construction Occupational Safety and Health	2	3	3	4th year standing
TOTAL HOURS:		36	9	27	18

CURRICULUM CHECKLIST

(SY 2024- 2025)

First year - 1st Sem.

Course Code	Course Description	Hours		Units	Pre-Re/Co-Re
		Lec	Lab		
B1	Engineering Algebra	3	0	3	None
B2	Engineering Trigonometry	3	0	3	None
B3	Solid Mensuration	3	0	3	None
B4	Analytic Geometry	3	0	3	None
GE 4	Mathematics in the Modern World	3	0	3	None
ChemE	Chemistry for Engineers	3	3	4	None
CE 112	Civil Engineering Orientation	2	0	2	None
PE1	Movement Competency Training (PATHFit 1)	2	0	2	None
NSTP 1	National Service Training Program 1	3	0	3	None

TOTAL HOURS: 28 25 3 26

First year - Summer

Course Code	Subject Description	Hours		Units	Pre-Re/Co-Re
		Lec	Lab		
Math 2	Calculus 2	3	0	3	Math 1
PhysE 1	Physics for Engineers (Calculus Based)	3	3	4	Math 1

TOTAL HOURS: 9 6 3 7

Second year - 1st Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
Math 4	Differential Equations	3	0	3	Math 2
ES 2	Computer-Aided Drafting	0	3	1	ES 1
CE213	Statics of Rigid Bodies	3	0	3	Math 2, PhysE
CE214	Fundamental of Surveying	3	3	4	CE 121
BES 4	Engineering Economics	3	0	3	2 nd yr. Standing
BES 6	Engineering Management	2	0	2	2 nd yr. Standing
GE 5	Purposive Communication	3	0	3	None
GE 2	Readings in Philippine History	3	0	3	None
PE 3	Group Activities (PATHFit 3)	2	0	2	None

TOTAL HOURS: 28 22 6 24

Third year - 1st Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE 314	Structural Theory	3	3	4	CE 242, CE 224
CE 313	Highway and Railroad Engineering	3	0	3	CE 214
CE 333	Engineering Utilities 1	3	0	3	PhysE
CE 353	Engineering Utilities 2	3	0	3	PhysE
CE 373	Numerical Solutions for CE Problems	2	3	3	Math 4
GE 8	Ethics	3	0	3	None
GEC Elec 3	Indigenous Creative Crafts	3	0	3	None

TOTAL HOURS: 26 20 6 22

Third year - Summer

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE OJT	On the Job Training	2	3	3	4 th yr. Standing

TOTAL HOURS: 5 2 3 3

Fourth year - 1st Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE 412	CE Project 2	1	3	2	CE 362
CE 413	Principles of Transportation Engineering	3	0	3	CE 313
CE 414	Geotechnical Engineering 1 (Soil Mechanics)	3	3	4	CE222, CE224
CE 432	Correlational Course 1	4	0	4	4 th yr. Standing
CE 433	Reinforced Concrete Design	2	3	3	CE 324
ST-COURSE 1	Specialized Course 1: Project Construction and Management	3	3	4	4th year standing
ST-COURSE 2	Specialized Course 2: Advanced Construction Method & Equipment	3	0	3	4th year standing
ST-COURSE 3	Specialized Course 3: Construction Cost Engineering	3	0	3	4th year standing

TOTAL HOURS: 34 22 12 26

First year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
GE 3	The Contemporary World	3	0	3	None
GE 1	Understanding the Self	3	0	3	None
Math 1	Calculus 1	3	0	3	B1, B2, B3, B4
CE 121	Engineering Drawings and Plans	0	3	1	None
ES 1	Computer Fundamentals and Programming	0	6	2	None/ Math 1
GEC Elec 1	Living in the IT Era	3	0	3	None
GEC Elec 2	The Entrepreneurial Mind	3	0	3	None
PE 2	Exercise-Based Fitness Activities (PATHFit 2)	2	0	2	None
NSTP 2	National Service Training Program 2	3	0	3	NSTP 1

TOTAL HOURS: 29 20 9 23

Second year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
Math 3	Engineering Data Analysis	3	0	3	Math 2
CE 222	Geology for Civil Engineers	2	0	2	ChemE
CE 242	Dynamics of Rigid Bodies	2	0	2	CE 213
CE 224	Mechanics of Deformable Bodies	4	0	4	CE 213
CE 223	Construction Materials and Testing	2	3	3	CE 213/ CE224
GE 6	Art Appreciation	3	0	3	None
GE 7	Science, Technology & Society	3	0	3	None
RIZAL	Life and Works of Rizal	3	0	3	None
PE 4	Sports (PATHFit 4)	2	0	2	None

TOTAL HOURS: 27 24 3 25

Third year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
BES 5	Technopreneurship 101	3	0	3	3 rd yr. Standing
CE 323	Building Systems Design	2	3	3	CE 121
CE 343	Principles of Steel Design	2	3	3	CE 223, CE 314
CE 324	Principles of Reinforced/Pre-stressed Concrete	3	3	4	CE 223, CE 314
CE 322	Hydrology	2	0	2	3 rd yr. Standing
CE 325	Hydraulics	4	3	5	CE 314
CE 342	CE Laws, Ethics, and Contracts	2	0	2	3 rd yr. Standing
CE 362	CE Project 1	1	3	2	CE 223, CE 314

TOTAL HOURS: 34 19 15 24

Fourth year - 2nd Sem.

Course Code	Subject Description	Hours		Units	Pre-Re./Co-Re.
		Lec	Lab		
CE 422	Correlational Course 2	4	0	4	4 th yr. Standing
CE 442	Quantity Surveying	1	3	2	CE323
CE 462	Steel Design	2	3	3	CE 343
CE 423	Foundation and Retaining Wall Design	2	3	3	4 th yr. Standing
CE 443	Construction Methods and Project Management	3	0	3	4th year standing
ST-COURSE 4	Specialized Course 4: Data Base Management Construction	3	0	3	4th year standing
ST-COURSE 5	Specialized Course 5: Construction Occupational Safety and Health	3	0	3	4th year standing

TOTAL HOURS: 27 18 9 21

PROGRAM EDUCATIONAL OBJECTIVES

1

Graduates will pass the licensure examination for Civil Engineers.

NOVEMBER 2024 CIVIL ENGINEER LICENSURE EXAMINATION					
TOP 30 SCHOOLS IN THE PHILIPPINES (WITH 50 OR MORE EXAMINEES)					
RANK	SCHOOL	OVERALL PERFORMANCE			
		PASSED	FAILED	TOTAL	% PASSED
1	UNIVERSITY OF THE PHILIPPINES - DILIMAN	82	6	88	93.18%
2	CARLOS HILADO MEMORIAL STATE UNIV. - TALISAY (FOR CCH MSC)	53	5	58	91.38%
3	PAMANTASAN NG LUNGOD NG MAYNILA	68	10	78	87.18%
4	PANGASINAN STATE UNIVERSITY - URDANETA	79	21	100	79.00%
		110	35	145	75.86%
		109	36	145	75.17%
		66	23	89	74.16%
		61	27	88	69.32%
		96	45	141	68.09%
		53	26	79	67.09%
		103	56	159	64.78%
		47	28	75	62.67%
		47	29	76	61.84%

CONGRATULATIONS! TO OUR NEW CIVIL ENGINEERS
FOR PASSING THE RECENT CIVIL ENGINEERING LICENSURE EXAMINATION 2024

YOUR NWSSU COMMUNITY IS PROUD OF YOU!

NORTHWEST SAMAR STATE UNIVERSITY PERFORMANCE
FIRST TIMERS: 61.76%
OVERALL SCHOOL PASSING: 51.56%
NATIONAL PASSING PERCENTAGE: 37.07%

YEAR	MONTH	First Timers			National Passing Percentag
		Passed	Failed	Passing Percentage	
2024	NOVEMBER	21	13	61.76% ↑	37.07%
	APRIL	10	10	50.00% ↑	39.27%
2023	NOVEMBER	25	28	47.17% ↑	33.26%
	APRIL	16	6	72.73% ↑	34.76%
2022	NOVEMBER	22	24	47.83% ↑	39.34%
	MAY	8	23	25.81% ↓	42.35%

24	SOUTHERN LEYTE STATE UNIVERSITY - SOGOD	33	28	61	54.10%
25	XAVIER UNIVERSITY	53	45	98	54.08%
26	MAPUA UNIVERSITY - MANILA	176	150	326	53.99%
27	MARINDUQUE STATE COLLEGE - BOAC	47	41	88	53.41%
28	UNIVERSITY OF BATANGAS	74	65	139	53.24%
29	UNIVERSITY OF MINDANAO - DAVAO CITY	161	146	307	52.10%
30	NORTHWEST SAMAR STATE UNIVERSITY - CALBAYOG	33	31	64	51.56%

Created by: [minijoyong](#) | [Twitter: @CivEnggr11](#) | [Facebook: tomercivengr11](#)

CONGRATULATIONS! TO OUR NEW CIVIL ENGINEERS
FOR PASSING THE RECENT CIVIL ENGINEERING LICENSURE EXAMINATION 2024

YOUR NWSSU COMMUNITY IS PROUD OF YOU!

NORTHWEST SAMAR STATE UNIVERSITY PERFORMANCE
FIRST TIMERS: 50%
OVERALL SCHOOL PASSING: 37.25%
NATIONAL PASSING PERCENTAGE: 39.27%

CONGRATULATIONS! TO OUR NEW CIVIL ENGINEERS!
FOR PASSING THE CE LICENSURE EXAM HELD ON NOVEMBER 17-18, 2023

WE ARE SO HAPPY OF YOUR SUCCESS! from: CEA Faculty, JPICE NwSSU Chapter, JPICE Calbayog Chapter, & NwSSU Administration

CONGRATULATIONS! TO OUR NEW CIVIL ENGINEERS
FOR PASSING THE CE LICENSURE EXAM HELD ON NOVEMBER 19-20, 2022

WE ARE SO HAPPY OF YOUR SUCCESS! from: CEA Faculty, JPICE NwSSU Chapter, JPICE Calbayog Chapter, & NwSSU Administration

CONGRATULATIONS! TO OUR NEW CIVIL ENGINEERS!
FOR PASSING THE CE LICENSURE EXAM HELD ON APRIL 23-24, 2023

WE ARE SO HAPPY OF YOUR SUCCESS! from: CEA Faculty, JPICE NwSSU Chapter, JPICE Calbayog Chapter, & NwSSU Administration

PROGRAM EDUCATIONAL OBJECTIVES

Graduates will achieve a high level of technical expertise so that they are able to succeed in positions in civil engineering practice or research, and in other fields they chose to pursue.

2

POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
GRADUATE SCHOOL
MS in Civil Engineering
PSM in Railway Engineering Management



WORKSHOP ON PREPARING JOURNAL MANUSCRIPT

FROM TERMINAL REPORT/DISSERTATION/THESIS

Time: 10:00am - 4:00pm
Date: 04 June, 2023

RESOURCE SPEAKER



DR. ERNESTO J. GUADES
Assistant Professor (Structural Engineering)
University of Guam, USA

1st Filipino recipient of the highly prestigious European Union's Marie Skłodowska Curie post-doctoral fellowship in Civil and Structural Engineering at the Technical University of Denmark (DTU).



"How to Become the 1% (World Scientist)"
Dr. Hossein Hassani
WORLD TOP 1% SCIENTIST
Adjunct Professor, Webster University
(Vienna, Austria)



"Most Common Reasons for Journal Editors Rejecting Paper"
Dr. Abu Reza Md. Towfiqul Islam
WORLD TOP 2% SCIENTIST
Associate Editor
Frontiers in Engineering and Built Environment
Guest Editor, FE and Sustainability



"Motivation for Research and Publication as an Academician"
Engr. Orlean G. Dela Cruz
PSMEM & MSCE CHAIRPERSON
Graduate School
Polytechnic University of the Philippines

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Swell Classification Analysis for Re-engineering Expansive Soil using Agricultural Waste Materials

Jovelyn D. Bastasa^a, April Joy B. Roxas^a, Kaeselle D. Sagayap^a, Roi Rafael L. Salurio^a, Jayzle O. Sampayan^a, Hanjin L. Taniñas^a, Marlon D. Sobreviga^a, Dinah Fe T. Olitan^a, Teodoro A. Amatoso, Jr.^{a,b}

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^bEngineering Graduate Program, School of Engineering, University of San Carlos, Talamban Campus, Cebu City, 6000 Philippines.

Corresponding Author

PSEE
PHILIPPINE SOCIETY FOR ENGINEERING EDUCATION

In cooperation with:
National Kaohsiung University of Science and Technology, Taiwan
Ho Chi Minh University of Technology, Vietnam

PSEE Research Webinar Series v1.0

August 14, 2021
6:00 - 8:00 PM

Speakers

CHRISTIAN DELLA, Ph.D.
University of Glasgow, UK

TEODORO A. AMATOSO, Jr., D.Eng.
Northwest Samar State University, Philippines

ROSE MARIE MONDOZA, Ph.D.

DONAMEL SAYARI, Ph.D.

TRAN HUU TUAN, Ph.D.
National Kaohsiung University of Science and Technology
Kaohsiung, Taiwan
Title: Biodegradation of Contaminated Soil with Dioxins using Food Waste Composting Process


VO THANH HANG, Ph.D.
Ho Chi Minh City University of Technology
Ho Chi Minh City, Vietnam
Title: Green New Deal: New Pathway on Sustainable Development

Registration Link: <https://forms.gis/BP4J9KwaaCVgajdM9>

CIVIL ENGINEERING AND RAILWAY ENGINEERING DEPARTMENT
<https://www.fb.com/ppcedept> @ppcedept

RE•IN•FOR•CE

TESTING REINFORCED CONCRETE
SEPTEMBER 3, 2021



DR. ERNESTO GUADES
PH.D., R.ENG, M.ASCE
SCIENTIFIC RESEARCHER
TECHNICAL UNIVERSITY OF DENMARK

PROGRAM EDUCATIONAL OBJECTIVES

3

Graduates will produce engineering designs that are based on sound principles that consider functionality, aesthetics, safety, cost effectiveness and sustainability.



4

Graduates will pursue lifelong learning such as graduate studies and other professional education.



Rommel Cui

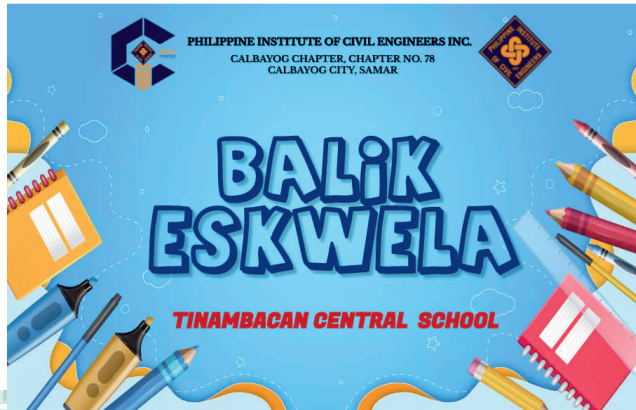


Jerwil Delabajan

PROGRAM OUTCOMES

5

Graduates will engage in professional service, such as participation in professional society and community service.



PICE Calbayog Annual General Assembly

PROGRAM OUTCOMES

6

Graduates will fulfill values, professional and ethical responsibilities in the practice of civil engineering, including social, environmental and economic considerations.

JPICE NWSSU
TECHNICAL SEMINAR ON BUILDING AND OCCUPANCY PERMITS APPLICATION
THEME: TRANSFORMATION IN INTERDISCIPLINARY APPROACHES TO CIVIL ENGINEERING CHALLENGES
MAY 24, 2023
8 AM - 6 PM
BDC AVR, NWSSU
ENR. MARLO D. SOBREVIGA, EnP., Director, Engineering Center
ENR. MARLO F. RESULTA, EnP., City Planning Officer
ENR. RICHARD B. DELAVE, EnP., Bureau of Fire Protection

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Swell Classification Analysis for Re-engineering Expansive Soil using Agricultural Waste Materials
Jovelyn D. Bantua*, April Joy B. Bantua*, Karoline H. Sagaya*, Rai Rafael L. Salazar*, Jayda O. Campanar*, Haajira L. Tanika*, Marlon D. Sobreviga*, Diwakar P. T. Othman*, Teodoro A. Amatoza, Jr.
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Abstract
Expansive Soils is the problem that does not only reach the required soil engineering properties but also its effect on the environment just because of the clay mineral constituents, that makes them display the swell-contraction. Looking for the best stabilizer to overcome problems in construction caused by weak soil is of significant interest. The objective of this study was to classify the effect of the properties of expansive soil strength re-engineering using the bank ash (BKA) and eggshell powder (ESP) as agricultural waste materials. The investigation provides an eleven (11) soil design with different percentage content of BKA, Chicken Egg Shell Powder (CESP) and Duck Egg Shell Powder (DESP) that has been tested. This paper thoroughly discussed their effectiveness for stabilizing expansive soils. Test for direct shear, Atterberg limit and Unconfined Compressive Strength (UCS) was conducted. Results revealed that adding of BKA along with CESP has considerably improved the unconfined compressive strength and shear strength of the soil performance. Moreover, the addition of BKA and CESP reduced the swell potential of the expansive clay soil.
Keywords: waste materials, swell classification, expansive soil, one bank ash (BKA), eggshell powder (ESP)

1. INTRODUCTION
In the civil engineering field of specialization, various kinds of soils are being utilized; however, application in construction are suitable, by their natural form soil deposit. Whereas, various treatment, either are suitable and become soil problems. Before they can undergo the applicable load using proper structure, soil need to be rigid and expand on their properties should be modified. Expansive soils considered as typical problems, such which are observed continuously worldwide, rather than the active regions (Shanbhag, 2008). Soil is the necessary foundation for any civil engineering structure. It is required to bear the loads founded on them without undergoing failure. In some places, the soil may be weak which causes even the loads that rest on them leading to the break-up of roadways, channel and reservoir linings, pavements, building foundations, water lines, irrigation systems, members for which are made and water lines (Gillerman, 2009).
One of the recent technique demonstrated in large amount is coke, ash, and lime. This process denser soil properties in shear strength, and bearing capacity particles in a uniform manner (2002). Natural fibers are the improved discover from new applications, soil reinforcement because of the advantage of a availability, secure handling, its environmentally friendly. Many works of literature reported imp has caused a significant answer (Suresh Dinesh and Hlotz, 1973), a volume change variation to much from fine-grained clay, mine, in cost implication, geotextile may be the properties of fine-grained soil, compare with the soil replace (Ganes, 2002; Hanay et al., 2010).
Some existing studies of expansive bank ash (Bantua, Raj R et al., 2018) made use of plastic and plastic by (Dumar et al., 2017). There were, soil and ash combination in percentage with the dry weight. Furthermore, studies were well query that in improving the clay (Suresh, 2016).
However, no study was found to be using eggshell powder (ESP). Also, the researchers decided to re-evaluate of the bank ash (BKA) on the index and engineering p re-engineering using 4, 7, and 14,

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