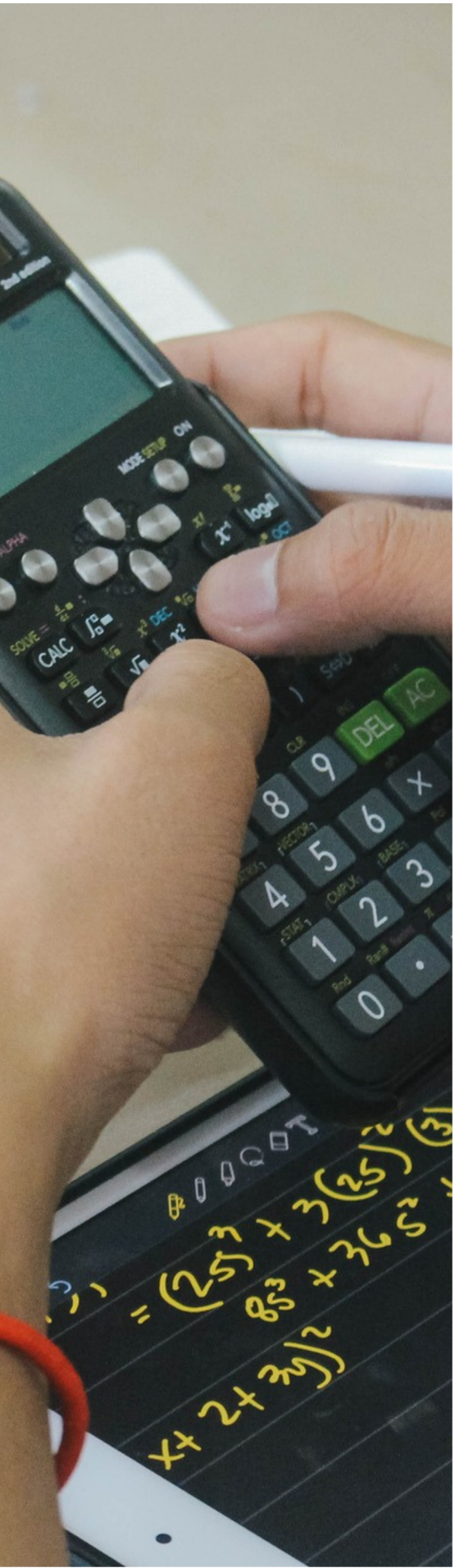
ELECTRONICS ENGINEERING

PROGRAM CATALOG 2024

COLLEGE OF ENGINEERING AND ARCHITECTURE
NORTHWEST SAMAR STATE UNIVERSITY



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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 needsand producing world-class professionals.

NwSSU Core Values

Resilience. Integrity. Service. Excellence.

College of Engineering and 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

Electronics Engineering is a discipline which utilizes nonlinear and active electrical components – such as semiconductor devices to design electronic circuits, devices, integrated circuits and their systems. The discipline typically also designs passive electrical components, usually based on printed circuit boards.

Electronics is a subfield within the wider electrical engineering academic subject but denotes a broad engineering field that covers subfields such as analog electronics, digital electronics, consumer electronics, embedded systems and power electronics. Electronics engineering deals with implementation of applications, principles and algorithms developed within many related fields, for example solid-state physics, radio engineering, telecommunications, control systems, signal processing, systems engineering, computer engineering, instrumentation engineering, electric power control, robotics, and many others.

Profession/ Careers for Graduates

The scope of practice of Electronics Engineering is defined in Section 5a of the prevailing Electronics Engineering Law or RA 9292 and pertains to professional services and expertise including, but not limited to:

- any work or activity relating to the application of engineering sciences and/or principles to the investigation, analysis, synthesis, planning, design, specification, research and development, provision, procurement, marketing and sales, manufacture and production, construction and installation, tests/measurements/control
- operation, repair, servicing, technical support and maintenance of electronic components, devices, products, apparatus, instruments, equipment, systems, networks, operations and processes in the fields of electronics,
- including communications and/or telecommunications, information and communications technology (ICT), computers and their networking and hardware/firmware/software development and applications
- broadcast/broadcasting, cable and wireless television, consumer and industrial electronics, electro-optics/photonics/opto-electronics, electro-magnetics, avionics, aerospace, navigational and military applications, medical electronics, robotics, cybernetics, biometrics and all other related and convergent fields;
- it also includes the administration, management, supervision and regulatory aspects of such works and activities
- similarly included are those teaching and trainingg activities which develop the ability to use electronic engineering fundamentals and related advanced knowledge in electronics engineering, including lecturing and teaching of technical and professional subjects given in the electronics engineering and electronics technician curriculum and licensure examinations.

The ECE Faculty

MA. AIMEE F. YABAO
Instructor I
BSECE Program Chairperson

Completed Academic Requirements in Master in Engineering Major in Engineering Management
Length of Service: 4 years

JOSEPH MARIAN B. ROMANO
Assistant Professor I
Sports and Physical Fitness Development Director

Bachelor of Science in Electronics Engineering
Length of Service: 26 years

MA. DARLENE O. GEMENTIZA
Instructor I
QA Coordinator, JIECEP Advisor

Completed Academic Requirements in Master in Engineering Major in Engineering Management
Length of Service: 3 years

NICKMAR N. BALVEZ
Instructor I
Extension Coordinator

Completed Academic Requirements in Master in Engineering Major in Engineering Management
Length of Service: 2 years

Curriculum Checklist

SY 2022-2023

First Year - 1st Semester

Course Code	Subject Description	Grade	Units		Pre-Re/Co-Re
			Lec	Lab	
B1	Engineering Algebra		3	0	
B2	Engineering Trigonometry		3	0	
B3	Solid Mensuration		3	0	
B4	Analytic Geometry		3	0	
ChemE	Chemistry for Engineers		3	3	
GE 4	Mathematics in the Modern World		3	0	
BES 2	Computer-Aided Drafting		0	3	
GE 1	Understanding the Self		3	0	
PE 1	Movement Competency Training (PATHFit 1)		2	0	
NSTP 1	National Service Training Program 1		3	0	
ECE Tech 1	ECE Technology 1		0	3	

TOTAL 29

First Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Pre-Re./Co-Re.
			Lec	Lab	
MATH 1	Calculus 1		3	0	B1, B2, B3, B4
MATH 3	Engineering Data Analysis		3	0	
AC 1	Materials Science and Engineering		3	0	ChemE
CpE 2	Computer Programming		0	6	
GE 7	Science, Technology and Society		3	0	
PE 2	Exercise-Based Fitness Activities (PATHFit 2)		2	0	PE 1
NSTP 2	National Service Training Program 2		3	0	NSTP 1
ECE Tech 2	ECE Technology 2		0	3	ECE Tech 1

TOTAL 20

First Year - Summer

Course Code	Subject Description	Grade	Units		Pre-Re/Co-Re
			Lec	Lab	
Math 2	Calculus 2		3	0	Math 1
PhysE 1	Physics for Engineers 1		3	3	Math 1
Phys 2	Physics 2		3	3	PhysE 1

TOTAL 11

Second Year - 1st Semester

Course Code	Subject Description	Grade	Units		Pre-Re/Co-Re
			Lec	Lab	
MATH 4	Differential Equations		3	0	Math 2
EE 214	Circuits 1		3	3	Phys 2
ECE 214	Electronics 1: Electronic Devices and Circuits		3	3	EE 214
ECE 213	ECE Laws, Contracts, Ethics, Standards and Safety		3	0	
GE 5	Purposive Communication		3	0	
BES 4	Engineering Economics		3	0	
PE 3	Group Activities (PATHFit 3)		2	0	PE 2

TOTAL 22

Second Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Pre-Re./Co-Re.
			Lec	Lab	
MATH 5	Advanced Engineering Mathematics for ECE		3	3	Math 4
EE 224	Circuits 2		3	3	EE 214
ECE 224	Electronics 2: Electronic Circuit Analysis and Design		3	3	ECE 214
ECE 244	Communications 1: Principles of Communication System		3	3	ECE 224
ECE 264	Electromagnetics		4	0	Math 4
BES 6	Engineering Management		2	0	
PE 4	Sports (PATHFit 4)		2	0	PE 3

TOTAL 24

Third Year - 1st Semester

Course Code	Subject Description	Grade	Units		Pre-Re/Co-Re
			Lec	Lab	
GE 8	Ethics		3	0	
ECE 374	Digital Electronics 1: Logic Circuits and Switching Theory		3	3	ECE 214
ECE 314	Electronics 3: Electronic Systems and Design		3	3	ECE 224
ECE 354	Signals, Spectra, Signal Processing		3	3	Math 5
ECE 334	Communications 2: Modulation and Coding Techniques		3	3	ECE 244
GEC Elec 1	Living in the IT Era		3	0	

TOTAL 22

Third Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Pre-Re./Co-Re.
			Lec	Lab	
BES 5	Technopreneurship 101		3	0	
GEC Elec 2	The Entrepreneurial Mind		3	0	
ECE 344	Communications 4: Transmission Media, Antenna System & Design		3	3	ECE 334
ECE 324	Communications 3: Data Communications		3	3	ECE 334
ECE 364	Digital Electronics 2: Microprocessor, Microcontroller Systems and Design		3	3	ECE 374
ECE 384	Feedback and Control Systems		3	3	Math 5

TOTAL 22

Third Year - Summer

Course Code	Subject Description	Grade	Units		Pre-Re/Co-Re
			Lec	Lab	
	On the Job Training (240 hours)		3	0	3rd Year Standing

TOTAL 3

Fourth Year - 1st Semester

Course Code	Subject Description	Grade	Units		Pre-Re/Co-Re
			Lec	Lab	
RES 1	Methods of Research		3	0	4th Year Standing
ECE DESIGN 1	Design 1/Capstone Project 1		0	3	4th Year Standing
ECE 414	ECE Elective 1		3	3	
AC 2	Environmental Science & Engineering		3	0	
GE 6	Art Appreciation		3	0	
RIZAL	Life and Works of Rizal		3	0	
ECE CORR 1	ECE Correlational Course 1		3	0	

TOTAL 20

Fourth Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Pre-Re./Co-Re.
			Lec	Lab	
ECE 421	Seminars/Colloquium		0	3	4th Year Standing
ECE DESIGN 2	Design 2/Capstone Project 2		0	3	ECE Design 1
GE 3	The Contemporary World		3	0	
GE 2	Readings in Philippine History		3	0	
ELEC 2	ECE Elective 2		3	3	
ELEC 3	ECE Elective 3		3	3	
ECE CORR 2	ECE Correlational Course 2		3	0	
GEC Elec 3	Indigenous Creative Crafts		3	0	

TOTAL 22

Note: Total Number of Units to Finish the Course - 195 Units

Curriculum Checklist

SY 2020-2021

First Year - 1st Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re/Co-Re
			Lec	Lab		
B1	Engineering Algebra		3	0	3	
B2	Engineering Trigonometry		3	0	3	
B3	Solid Mensuration		3	0	3	
B4	Analytic Geometry		3	0	3	
ChemE	Chemistry for Engineers		3	3	4	
GE 4	Mathematics in the Modern World		3	0	3	
BES 2	Computer-Aided Drafting		0	3	1	
GE 1	Understanding the Self		3	0	3	
PE 1	Physical Fitness and Gymnastics		2	0	2	
NSTP 1	National Service Training Program 1		3	0	3	
ECE Tech 1	ECE Technology 1		0	3	1	
	TOTAL		**29**		29	

First Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re./Co-Re.
			Lec	Lab		
MATH 1	Calculus 1		3	0	3	B1, B2, B3, B4
MATH 3	Engineering Data Analysis		3	0	3	
AC 1	Materials Science and Engineering		3	0	3	ChemE
CpE 2	Computer Programming		0	6	2	
GE 7	Science, Technology and Society		3	0	3	
PE 2	Rhythmic Activities		2	0	2	PE 1
NSTP 2	National Service Training Program 2		3	0	3	NSTP 1
ECE Tech 2	ECE Technology 2		0	3	1	ECE Tech 1
	TOTAL		**20**		20	

First Year - Summer

Course Code	Subject Description	Grade	Units		Units	Pre-Re/Co-Re
			Lec	Lab		
Math 2	Calculus 2		3	0	3	Math 1
PhysE 1	Physics for Engineers 1		3	3	4	
Phys 2	Physics 2		3	3	4	co-req PhysE 1
	TOTAL		**11**		11	

Second Year - 1st Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re/Co-Re
			Lec	Lab		
MATH 4	Differential Equations		3	0	3	Math 2
EE 214	Circuits 1		3	3	4	Phys 2
ECE 214	Electronics 1: Electronic Devices and Circuits		3	3	4	co-req EE 214
ECE 213	ECE Laws, Contracts, Ethics, Standards and Safety		3	0	3	
GE 5	Purposive Communication		3	0	3	
BES 4	Engineering Economics		3	0	3	
PE 3	Individual/Group Games & Sports		2	0	2	PE 3
	TOTAL		**22**		22	

Second Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re./Co-Re.
			Lec	Lab		
MATH 5	Advanced Engineering Mathematics for ECE		3	3	4	Math 4
EE 224	Circuits 2		3	3	4	EE 214
ECE 224	Electronics 2: Electronic Circuit Analysis and Design		3	3	4	ECE 214
ECE 244	Communications 1: Principles of Communication System		3	3	4	co-req ECE 224
ECE 264	Electromagnetics		4	0	4	Math 4
BES 6	Engineering Management		2	0	2	
PE 4	Recreational Activities		2	0	2	
	TOTAL		**24**		24	

Third Year - 1st Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re/Co-Re
			Lec	Lab		
GE 8	Ethics		3	0	3	
ECE 374	Digital Electronics 1: Logic Circuits and Switching Theory		3	3	4	ECE 214
ECE 314	Electronics 3: Electronic Systems and Design		3	3	4	ECE 224
ECE 354	Signals, Spectra, Signal Processing		3	3	4	Math 5
ECE 334	Communications 2: Modulation and Coding Techniques		3	3	4	ECE 244
GEC Elec 1	Living in the IT Era		3	0	3	
	TOTAL		**22**		22	

Third Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re./Co-Re.
			Lec	Lab		
BES 5	Technopreneurship 101		3	0	3	
GEC Elec 2	The Entrepreneurial Mind		3	0	3	
ECE 324	**Communications 3: Transmission Media, Antenna System & Design**		**3**	**3**	**4**	**ECE 374**
ECE 344	**Communications 4: Data Communications**		**3**	**3**	**4**	**ECE 374**
ECE 364	**Digital Electronics 2: Microprocessor, Microcontroller Systems and**		**3**	**3**	**4**	**ECE 314**
ECE 384	Feedback and Control Systems		3	3	4	
	TOTAL		**22**		22	

Third Year - Summer

Course Code	Subject Description	Grade	Units		Units	Pre-Re/Co-Re
			Lec	Lab		
	On the Job Training (240 hours)		**3**	0	3	3rd Year Standing
	TOTAL		**3**		3	

Fourth Year - 1st Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re/Co-Re
			Lec	Lab		
RES 1	Methods of Research		3	0	3	4th Year Standing
ECE DESIGN 1	Design 1/Capstone Project 1		0	3	1	4th Year Standing
ECE 414	ECE Elective 1		3	3	4	
AC 2	Environmental Science & Engineering		3	0	3	
GE 6	Art Appreciation		3	0	3	
RIZAL	Life and Works of Rizal		3	0	3	
ECE CORR 1	ECE Correlational Course 1		3	0	3	
	TOTAL		**20**		20	

Fourth Year - 2nd Semester

Course Code	Subject Description	Grade	Units		Units	Pre-Re./Co-Re.
			Lec	Lab		
ECE 421	Seminars/Colloquium		0	3	1	4th Year Standing
ECE DESIGN 2	Design 2/Capstone Project 2		0	3	1	ECE Design 1
GE 3	The Contemporary World		3	0	3	
GE 2	Readings in Philippine History		3	0	3	
ELEC 2	ECE Elective 2		3	3	4	
ELEC 3	ECE Elective 3		3	3	4	
ECE CORR 2	ECE Correlational Course 2		3	0	3	
GEC Elec 3	Indigenous Creative Crafts		3	0	3	
	TOTAL		**22**		22	

Note: Total Number of Units to Finish the Course - 195 Units

Program Educational Objectives

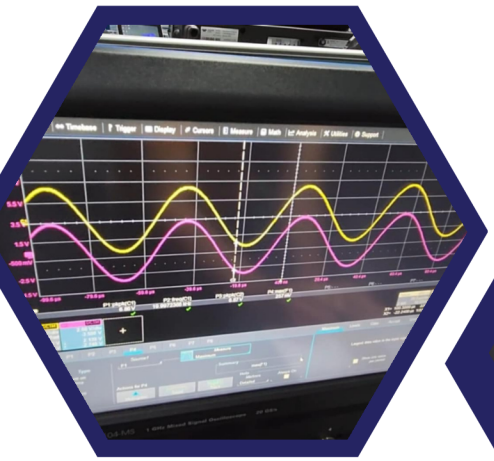
1 Graduates will pass the licensure examination for electronics engineers.

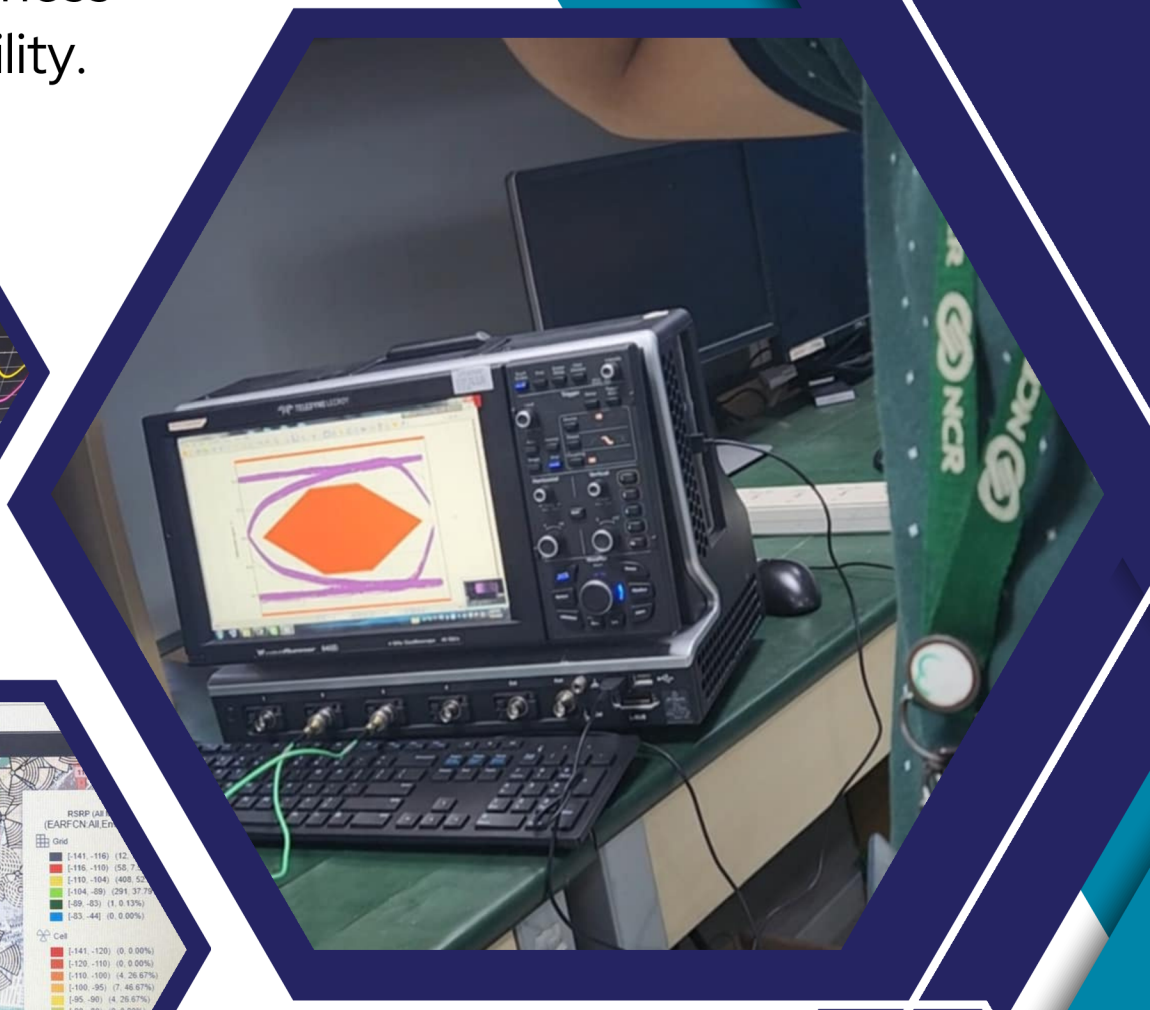
Graduates will achieve a high level of technical expertise so that they are able to succeed in positions in electronics engineering practice of research, and in other fields they choose to pursue.

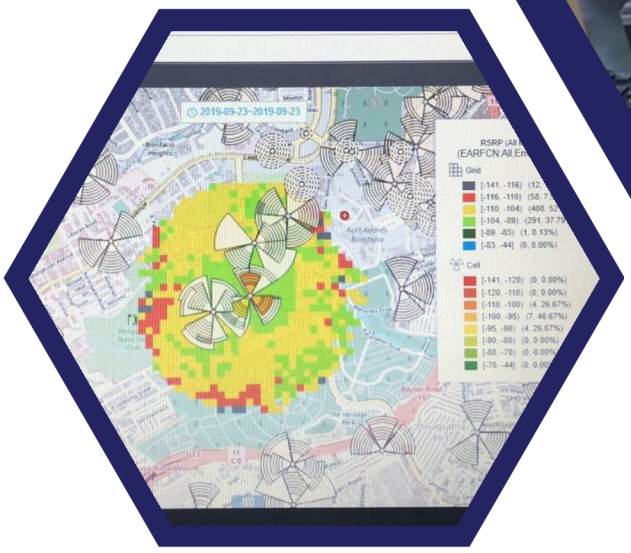
2

3

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







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

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

5

6 Graduates will fulfill values, professional and ethical responsibilities in the practice of electronics engineering, including social, environmental and economical consideration.

7 Graduates will be leaders, both in their chosen profession and in other activities.

- Apply knowledge of mathematics and sciences to solve electronics engineering problems.
- Design and conduct experiments, as well as to analyze and interpret data.
- Design a system, component, or process to meet desired needs within realistic constraints, in accordance with standards.
- Function in multi-disciplinary and multi-cultural teams.
- An ability to recognize, formulates, and solves engineering problems.
- Understand professional, social, and ethical responsibility.
- Communicate effectively electronics engineering activities with the engineering community and with society at large.
- Understanding the impact of electronics engineering solutions in a global, economic, environmental, and societal context.
- Recognize the need for and engage in life-long learning.
- Know contemporary issues.
- Use techniques, skills, and modern engineering tools necessary for electronics engineering practice.
- Know and understand engineering and management principles as a member and leader of a team, and to manage projects in a multidisciplinary environment.
- Understand at least one specialized field of electronics engineering practice.

Program Outcomes

IECEP Gallery 2024

photos from JIECEP NwSSU & BSECE alumni