Republic of the Philippines
BATANGAS STATE UNIVERSITY
Pablo Borbon Main II,Alangilan Batangas
COLLEGE OF ENGINEERING, ARCHITECTURE & FINE ARTS
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CURRICULUM
Doctor of Philosophy in Electronics Engineering (PhD ECE)
Academic Year 2019-2020
References: Final Draft of CMO – PSG for graduate degree programs in Engineering, CMO No. 36 s. 1998

Curriculum Description

The Doctor of Philosophy (PhD) in Electronics Engineering (ECE) is a research degree that emphasizes the development of knowledge, skills and attitude necessary for the conduct of individual research at a level that will make a distinct contribution to the knowledge base of engineering. Further, this degree develops advanced research skills that will prepare one for a career in business, academia and research institutions, industry, public sector and other settings in which systematic and critical analytical skills are required. Graduates of this advanced program are expected to be able to produce creative solutions to existing and emerging complex engineering and engineering-rated problems in academia, industry and government.

Program Educational Objectives

The graduates of Doctor of Philosophy in Electronics Engineering after graduation shall:
1. Develop advanced research skills relevant to one's career in business, academia and research institutions, industry, public sector and other settings.
2. Exhibit a high degree of professionalism in the workplace.

Student Outcomes

Graduates of the Doctor of Philosophy in Electronics Engineering should have the ability to:

1. Demonstrate a comprehensive and broad understanding of electronics engineering principles and apply advanced knowledge on this specific discipline;
2. Analyze, synthesize, create and evaluate electronics engineering systems;
3. Design components, devices and systems to meet specified engineering needs under real – world constraints;
4. Communicate effectively technical knowledge, both orally and in writing, on complex engineering activities;
5. Function effectively as an individual, a team member, or as a leader in diverse work environments;
6. Contribute to the generation, dissemination and preservation of electronics engineering knowledge, methodologies, techniques, and processes;
7. Engage in professional development and life-long learning;
8. Conduct oneself within professional and ethical standards; and
9. Perform independent scientific research that results in creation of new knowledge in the electronics engineering discipline

DOCTOR OF PHILOSOPHY IN ELECTRONICS ENGINEERING CURRICULUM

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Classification/ Field/ Course	No. of Hours/Week		Credit Units
	Lec	Lab	
I. SPECIALIZATION COURSES	18	0	18
II. ELECTIVE COURSES	6	0	6
III. DISSERTATION	12	0	12
TOTAL	36	0	36

Specializations:

- Communications

- Control

- Artificial Intelligence

- Microelectronics

DOCTOR OF PHILOSOPHY IN ELECTRONICS ENGINEERING (PhD ECE)

COURSE OFFERINGS

All Subjects have 3 units of credit except for Dissertation with 6 units

Course Code	Course Title	No. of Hours		Unit/s
		Lec	Lab	
To be enrolled as bridging course for non-MS in engineering graduate				
GECE 600	DIRECTED STUDIES	3		3

	Specialization (18 units required)			
Course Code	Course Title	No. of Hours		Unit/s
		Lec	Lab	
GECE 501	LINEAR SYSTEMS THEORY	3		3
GECE 502	MODERN CONTROL THEORY AND APPLICATIONS	3		3
GECE 503	MANAGEMENT OF TECHNOLOGY	3		3
GECE 504	ADVANCED DIGITAL SIGNAL PROCESSING	3		3
GECE 505	ADVANCED ELECTROMAGNETIC THEORY	3		3
GECE 506	ANTENNAS AND RADIOWAVE PROPAGATION	3		3
GECE 510	DIGITAL CONTROL	3		3
GECE 512	NONLINEAR SYSTEMS	3		3
GECE 513	OPTIMAL CONTROL	3		3
GECE 515	ARTIFICIAL INTELLIGENCE FOR CYBER-PHYSICAL SYSTEM	3		3
GECE 517	MACHINE LEARNING	3		3
GECE 518	NEURAL NETWORKS	3		3
GECE 519	ADVANCED ANALOG IC DESIGN	3		3
GECE 520	ADVANCED DIGITAL IC DESIGN	3		3
GECE 521	MIXED-SIGNAL IC DESIGN	3		3

	Elective (6 units required)			
Course Code	Course Title	No. of Hours		Unit/s
		Lec	Lab	
GECE 507	OPTICAL FIBER COMMUNICATIONS	3		3
GECE 508	SPECIAL TOPICS IN COMMUNICATIONS	3		3
GECE 509	ADAPTIVE CONTROL	3		3
GECE 511	MULTIVARIABLE CONTROL SYSTEM	3		3
GECE 514	ADVANCED IMAGE PROCESSING	3		3
GECE 516	DATA MINING	3		3
GECE 522	SPECIAL TOPICS IN ELECTRONICS	3		3
GECE 523	SPECIAL TOPICS IN SYSTEMS AND CONTROL	3		3
GECE 524	FLAT ANTENNA DESIGN	3		3
GECE 525	NUMERICAL ELECTROMAGNETICS	3		3
GECE 526	HILBERT SPACE METHOD AND APPLICATIONS	3		3
GECE 527	ROBOTICS AND AUTOMATION	3		3
GECE 528	HIGH PERFORMANCE & PARALLEL COMPUTER ARCHITECTURES	3		3
GECE 529	HYPERSPECTRAL DATA PROCESSING	3		3
GECE 530	LOW POWER SYSTEM DESIGN	3		3
GECE 531	SYSTEM-ON-CHIP DESIGN	3		3

	Dissertation (12 units)			
Course Code	Course Title	No. of Hours		Unit/s
		Lec	Lab	
GECE 603	DISSERTATION 1	6		6
GECE 604	DISSERTATION 2	6		6

Any subject taken in excess of 18 units from the specialization courses can be credited as an elective course.