CERTIFICACIÓN NÚMERO 24-91

La que suscribe, Secretaria del Senado Académico del Recinto Universitario de Mayagüez de la Universidad de Puerto Rico, **CERTIFICA** que, en la reunión ordinaria celebrada el martes, 17 de diciembre de 2024, este organismo **APROBÓ** la propuesta para la revisión curricular al **PROGRAMA DE DOCTORADO EN FILOSOFÍA EN AGRICULTURA TROPICAL DEL COLEGIO DE CIENCIAS AGRÍCOLAS.**

El número mínimo de créditos se mantiene en 57 (100%) distribuidos de la siguiente manera:

Actual	**Propuesto**
20 créditos (35%) para siete cursos básicos	6 créditos (11%) para siete cursos básicos
15 créditos (26%) para la investigación y tesis doctoral	15 créditos (26%) para la investigación y tesis doctoral
1 crédito (2%) por el seminario doctoral	1 crédito (2%) por el seminario doctoral
Un mínimo de 21 créditos (37%) en cursos electivos recomendados	Un mínimo de 35 créditos (61%) en cursos electivos recomendados

El informe forma parte de esta certificación.

Y para que así conste expido y remito la presente certificación a las autoridades universitarias correspondientes, bajo el Sello de la Universidad de Puerto Rico a los dieciocho días del mes de diciembre del año dos mil veinticuatro, en Mayagüez, Puerto Rico.

Carmen A. Negrón Moure

Carmen A. Negrón Moure
Secretaria

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Anejo

UPR - Mayagüez
Senado Académico, Junta Administrativa y Claustro

December 18, 2024

Modifications Doctorate in Philosophy in Tropical Agriculture

Following the approval of our PhD program in Tropical Agriculture under certification numbers 2019-2020-74 of the University of Puerto Rico Government Board and 2023-242, of the Board of Postsecondary Institutions, we have conducted a revision of its structure and admission requirements. Based on this review and to better align with our academic goals and the needs of our students, we propose the following modifications:

1. Course Distribution

Current Course Distribution	Proposed Course Distribution
The following are the course requirements for a doctoral degree program. The students must have a minimum of 57 credits (100%) distributed as follows: • 20 credits (35 %) for seven core courses • 15 credits (26 %) for the doctoral research and thesis • 1 credit (2 %) for the doctoral seminar • A minimum of 21 credits (37 %) in recommended elective courses	The following are the course requirements for a doctoral degree program. The students must have a minimum of 57 credits (100%) distributed as follows: • 6 credits (11 %) for two core courses • 15 credits (26 %) for the doctoral research and thesis • 1 credit (2 %) for the doctoral seminar • A minimum of 35 credits (61%) in recommended elective courses

This change will allow students and their committees more flexibility to choose the recommended electives according to their area of research and academic needs.

2. Core and Elective Courses

To reflect the above credit distribution modification, we propose the following changes:

Current Core Courses

Code	Number	Title	Credits	Contact hours
CIAG	8001	Analysis of Agriculture in the Caribbean Tropics	3	Three hours of lecture per week
CIAG	8005	Applied Statistical Models in Agricultural Research	3	Three hours of lecture per week
CIAN	8040	Environmental Interactions in Farm Animals	3	Two hours of lecture and one hour of discussion per week
HORT	8030	Methodology and Instrumentation Applied to Horticulture	3	Two hours of lecture and one three-hour laboratory per week
AGRO	6017	Advanced Agroclimatology	3	Two hours of lecture and one laboratory of three hours per week
CFIT	8009	Plant Breeding Laboratory and Field Techniques	3	One hour of lecture and three-hour laboratory per week
PROC	8007	Insect Ecology	2	Two hours of lecture and one laboratory of three hours per week
		Total Credits	**20**	

Proposed Core Courses

Code	Number	Title	Credits	Contact hours
CIAG	8001	Analysis of Agriculture in the Caribbean Tropics	3	Three hours of lecture per week
CIAG	8005	Applied Statistical Models in Agricultural Research	3	Three hours of lecture per week
		Total Credits:	**6**	

Proposed Elective Courses:

Code	Number	Title	Credits	Contact hours
CFIT	8007	Breeding for Biotic and Abiotic Stress in Plants	3	Three hours of lecture per week
CFIT	8009	Plant Breeding Laboratory and Field Techniques	2	One hour of lecture and three-hour laboratory per week
CIAN	8020	Non-ruminant farm animal nutrition	3	Three hours of lecture per week
CIAN	8025	Vitamin metabolism in animals	3	Three hours of lecture per week
CIAN	8040	Environmental Interactions in Farm Animals	3	Two hours of lecture and one hour of discussion per week
CIAN	8630	Animal Endocrinology	3	Two hours of lecture and one hour of discussion per week
HORT	8030	Methodology and Instrumentation Applied to Horticulture	3	Two hours of lecture and one three-hour laboratory per week
HORT	8040	Molecular Markers in Crops	3	Two hours of lecture and one three-hour laboratory per week
HORT	8040	Molecular Markers in Crops	3	One hour of lecture and three-hour laboratory per week
PROC	8006	Insect Behavior	3	Two hours of lecture and one laboratory of three hours per week
PROC	8007	Insect Ecology	3	Two hours of lecture and one laboratory of three hours per week
PROC	8016	Advanced Plant Bacteriology	3	Two hours of lecture and one laboratory of three hours per week
AGRO	6005	Use of Statistical Computer Packages in Biometry	2	Two hours of lecture per week
AGRO	6017	Advanced Agroclimatology	3	Two hours of lecture and one laboratory of three hours per week
AGRO	6300	Simulation of Agricultural Systems	3	Three hours of lecture per week

AGRO	6505	Advanced Soil Fertility	3	Three hours of lecture per week
AGRO	6600	Advanced Biometrics	3	Two hours of lecture and three hours of laboratory per week
AGRO	6604	Soil-Plant Relationships	3	Three hours of lecture per week
AGRO	6607	Soil Chemistry	3	Two hours of lecture and one three-hours laboratory per week
AGRO	6612	Management of Tropical Soils	3	Three hours of lecture per week
AGRO	6624	Soil Mineralogy	3	Two hours of lecture and one three-hours laboratory per week
CFIT	6009	Advanced Plant Genetics	3	Three hours of lecture per week
CFIT	6105	Plant Breeding Methods	3	Three hours of lecture per week
CFIT	6611	Advanced Plant Breeding	3	Three hours of lecture per week
CFIT	6644	Environmental Physiology	3	Two hours of lecture and one hour of seminar per week
CFIT	6645	Advances in Biological Nitrogen Fixation	3	Three hours of lecture per week
CIAN	6601	Advanced Animal Breeding	3	Three hours of lecture per week
CIAN	6604	Animal Nutrition	3	Two hours of lecture and one three hour laboratory per week
CIAN	6606	Experimental Nutrition	3	Two hours of lecture and one three hour laboratory per week
CIAN	6611	Ruminant Nutrition	3	Two hours of lecture and one three hour laboratory per week
CIAN	6617	Advanced Reproduction	3	Three hours of lecture per week

CIAN	6625	Animal Energy Metabolism	3	Three hours of lecture per week
CIAN	6626	Animal Protein Metabolism	3	Three hours of lecture per week
CIAN	6637	Neuroendocrine and Circulatory Physiology	3	Three hours of lecture per week
CIAN	6638	Renal, respiratory and Digestive Physiology	3	Three hours of lecture per week
CITA	6016	Sensory Properties of Food	3	Two hours of lecture and one three-hour laboratory per week
CITA	6017	Food Toxicology	3	Three hours of lecture per week
CITA	6615	Food Technology	3	Two hours of lecture and one three-hour laboratory per week
CITA/HORT	6007	Safety of Fruit and Vegetables Products	3	Two hours of lecture and one three-hour laboratory per week
CITA/HORT	6601	Food Processing I	3	Three hours of lecture per week
CITA/HORT	6603	Food Processing Laboratory I	1	One four-hour laboratory per week
ECAG	6601	Resources Economics	3	Three hours of lecture per week
ECAG	6604	Advanced Farm Management	3	Three hours of lecture per week
ECAG	6611	Economics of Agricultural Production	3	Three hours of lecture per week
ECAG	6631	Advanced Agricultural Marketing	3	Three hours of lecture per week
ECAG	6635	Global Agribusiness Marketing	3	Three hours of lecture per week
ECAG	6641	Agricultural Development	3	Three hours of lecture per week
ECAG	6650	Economics of Agricultural Policy	3	Three hours of lecture per week
ECAG	6654	Rural Sociology Problems	3	Three hours of lecture per week

ECAG	6660	Agricultural Prices	3	Three hours of lecture per week
ECAG	6665	Applied Econometrics I	3	Three hours of lecture per week
ECAG	6666	Applied Econometrics II	3	Three hours of lecture per week
EDAG	6601	Advanced Methods in Teaching Vocational Agriculture	3	Three hours of lecture per week
EDAG	6603	Evaluation	3	Three hours of lecture per week
EDAG	6608	Preparation of Teaching Material	3	Three hours of lecture per week
EDAG	6671	Program Planning	3	Three hours of lecture per week
EXAG	6603	Oral and Written Communication	3	One hour of lecture and two three-hour laboratory periods per week
EXAG	6610	Principles of Extension Teaching	3	Three hours of lecture per week
EXAG	6620	Extension Evaluation	3	Three hours of lecture per week
EXAG	6622	Program Development in Extension	3	Three hours of lecture per week
EXAG	6628	Advanced Seminar in Extension Problems	3	Three hours of lecture per week
HORT	6611	Advanced Plant propagation	3	Two hours of lecture and one three-hour laboratory per week
HORT	6616	Advanced Tropical Fruits	3	Three hours of lecture per week
HORT	6620	Production of Horticultural Crops in Protected Structures	3	Three hours of lecture per week
HORT	6650	Post-Harvest Physiology and Manipulation of Horticultural Crops	3	Two hours of lecture and one three-hour laboratory per week
HORT	6653	Physiology of fruit production	3	Three hours of lecture per week

HORT	6665	Plant Genetic Transformation	4	Three hours of lecture and one four-hour laboratory per week
HORT	6665	Plant Genetic Transformation	4	Three hours of lecture and one laboratory of three hours per week
HORT	6669	Growth regulators in horticulture	3	Two hours of lecture and one three-hour laboratory per week
PROC	6015	Molecular Aspects in Phytopathology	3	Three hours of lecture per week
PROC	6603	Methods of Research in Pathology	4	Two hour of lecture and two three-hour laboratories per week
PROC	6604	Diagnosis and Control of Plant Diseases	3	One hour of lecture and two laboratory of three hours per week
PROC	6606	Epidemiology of Plant Diseases	3	Two hour of lecture and one laboratory of three hours per week
PROC	6608	Advanced Tropical Phytopathology	4	Four hours of lecture per week
PROC	6609	Integrated Pest Management	3	Two hours of lecture and one laboratory of three hours per week
PROC	6625	Taxonomy and Morphology of Entomophagous Insects	4	Three hours of lecture and one laboratory of three hours per week
PROC	6630	Control of Phytoparasitic Nematodes	3	Two hours of lecture and one laboratory of three hours per week
PROC	6635	Tropical Agronematology	3	Two hours of lecture and one laboratory of three hours per week
PROC	6645	Biological Control: Concepts and Theories	3	Two hours of lecture and one laboratory of three hours per week

PROC	6650	Phytovirology	3	Two hours of lecture and one laboratory of three hours per week
BIOL	6015	Insect Morphology	4	Two hour of lecture and two four-hours laboratories per week
BIOL	6040	Biogeography	3	Three hours of lecture per week
BIOL	6637	Taxonomy and Morphology of Fungi	3	Two hour of lecture and one laboratory of three hours per week
BIOL	6705	Advanced Food Microbiology	3	Two hours of lecture and one three-hour laboratory per week
BIOL	6806	Biological Systematics	3	Three hours of lecture per week
INCI	6006	Groundwater Hydrology	3	Three hours of lecture per week
INCI	6008	Water Resources Systems	3	Three hours of lecture per week
QUIM	6215	Advanced Analytical Chemistry	3	Three hours of lecture per week
QUIM	6815	Plant Biochemistry	3	Three hours of lecture per week

3. Admission and Enrollment

Article 7.1. ***Requirements for admission to the proposed program and current norms for Admission***

A. The admission process will have the following steps:
1. A request for admission and other documentation required by the Office of Graduate Studies which will be submitted within the period established on the academic calendar.
2. The Office of Graduate Studies will send the documents to the Graduate Committee of the doctoral program.
3. The Graduate Committee of the doctoral program will evaluate the request for admission and submit a recommendation to the Dean of the Faculty for his/her decision
4. The Office of Graduate Studies will notify the applicant of the decision.

B. Among the factors to be considered for admission are the academic transcript, professional experience, personal qualities and goals of the applicant.

C. All admissions will be subject to the availability of an advisor and funds to support the

research.

D. A prospective student for this program may apply having a BS in Agricultural Sciences or similar discipline.

Current Admission Requirements with Master Degree	Requisitos de Admisión Actuales con Grado de Maestría	Proposed Admission Requirements with Master Degree
Have a master's degree in Sciences or its equivalent from an accredited higher education institution with specialization in Agriculture, Environmental Sciences, General Science, Chemistry or Biology	Poseer un título de maestría en Ciencias o su equivalente de una institución acreditada de educación superior con especialidad en Agricultura, Ciencias Ambientales, Ciencias Generales, Química o Biología	No change.
A minimum GPA of 3.25 is required for Science courses in the aforementioned disciplines and GPA of 3.00 in courses of other disciplines.* * See specific requirements for master's degrees at the College of Agricultural Sciences (CAS)	Se requiere un GPA mínimo de 3.25 para los cursos de Ciencias en las disciplinas antes mencionadas y un GPA de 3.00 en los cursos de otras disciplinas*. *ver requisitos específicos para maestrías en el CCA	No change.
The applicant must have at least 9 credits in courses related to Agricultural Sciences, such as: General Agriculture, Animal Sciences, Agronomy, Soil Sciences, Plant Sciences, Horticulture and Crop Protection.	El solicitante debe tener al menos 9 créditos en cursos relacionados con Ciencias Agrícolas, como: Agricultura General, Ciencias Animales, Agronomía, Ciencias del Suelo, Ciencias Vegetales, Horticultura y Protección de Cultivos.	No change.
In addition, applicants must have at least 3 credits in Biostatistics or equivalent courses.	Además, los solicitantes deberán tener al menos 3 créditos en Bioestadística o cursos equivalentes.	No change.
Students will be accepted with a maximum of 4 courses on deficiencies and will be encouraged to fulfill the deficiency requirements through professional improvement.	Se aceptarán estudiantes con un máximo de 4 cursos sobre deficiencias y se les alentará a cumplir con los requisitos de deficiencias a través de mejoramiento profesional.	No change.

Current Admission Requirements with Master Degree	Requisitos de Admisión Actuales con Grado de Maestría	Proposed Admission Requirements with Master Degree
Applicants must take the general Graduate Record Exam (GRE) and the "Examen de Admisión a Estudios de Posgrado" (EXADEP) taken within three years prior to the application to graduate school. The scores from verbal and quantitative parts of the exam will be considered.	Los solicitantes deberán tomar el Graduate Record Exam (GRE) general y el Examen de Admisión a Estudios de Posgrado (EXADEP) tomados dentro de los tres años anteriores a la solicitud a la escuela de posgrado. Se considerarán las puntuaciones de las partes verbal y cuantitativa del examen.	Requirements have been eliminated. **Justification:** EXADEP Exam was discontinued by ETS in 2020. (https://www.ets.org/exadep.html) GRE- It will not be used as a positioning tool. Other documents submitted by the student will be considered.
The applicant must submit a 2-page resume (CV) along with a short essay (maximum 1,000 words) indicating short and long-term goals. The essay must include the applicant's research experience, interests and the potential contribution of the research objectives to promote tropical agriculture.	El solicitante debe presentar un CV de 2 páginas junto con un ensayo breve (maximo 1.000 palabras) indicando objetivos a corto y largo plazo. El ensayo debe incluir la experiencia de investigación del solicitante, sus intereses y la posible contribución de los objetivos de investigación para fomentar la agricultura tropical.	No change.
It is expected that the applicant has adequate proficiency in Spanish and English, both orally and in writing.	Se espera que el solicitante tenga un dominio adecuado del idioma español e inglés, tanto en forma oral como escrita.	No change.
The Graduate Committee (GC) of the doctoral program will assess the outcome of this general requirement along with a face-to-face interview with the applicant.	El Comité de Posgrado (CG) del programa de doctorado evaluará el resultado de este requisito general junto con una entrevista cara a cara con el solicitante.	No change.
The GC may recommend conditional admission if not all requirements are met.	El CG puede recomendar la admisión condicional si no se cumplen todos los requisitos.	No change.

Upon successfully completing a minimum of 36 credits, doctoral students are required to take a written qualifying exam. Each student will be given two opportunities to pass this exam. Upon successful completion of the written qualifying exam, students must then undertake an oral candidacy exam to advance to doctoral candidacy status. Similarly, students will have two opportunities to pass this oral exam. To achieve doctoral candidacy, students must also prepare and successfully defend an original, publishable dissertation that contributes to their field of research.

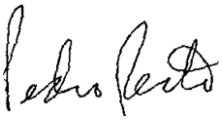
The expected completion time for the PhD degree varies by the student's entry qualifications: those entering with a master's degree are expected to complete their PhD within 3-4 years, whereas those entering with a bachelor's degree should aim to complete within 6-8 years.

Our proposed changes are driven by a commitment to maintaining the highest academic standards while responding dynamically to the evolving field of tropical agriculture. We believe these modifications will enhance our program's attractiveness and relevance to prospective students.

These modifications were approved by the Faculty Academic Affairs Committee and the Faculty of Agricultural Science. The changes will be effective immediately after approval.

The Curricular Affairs Committee recommends the approval of this curricular revision to UPRM's Academic Senate.

Respectfully,



Committee President