



### CERTIFICACIÓN NÚMERO 20-51

La que suscribe, Secretaria del Senado Académico del Recinto Universitario de Mayagüez de la Universidad de Puerto Rico, **CERTIFICA** que, en la reunión extraordinaria celebrada en la sesión del viernes, 19 de junio de 2020, este organismo **APROBÓ** la **PROPUESTA PARA UNA REVISIÓN CURRICULAR EN EL PROGRAMA DE MAESTRÍA DE INGENIERÍA EN BIOINGENIERÍA (PLAN III)**.

La propuesta consiste en:


1. Reducir el número de créditos en cursos de bioingeniería de 15 a 12.
2. Reducir el número de créditos en cursos electivos (dentro o fuera de la especialidad de bioingeniería) de 6 a 3.

Con los cambios propuestos el número de créditos para completar el currículo se reduce de 37 a 31.

La justificación se basa en un intento de hacer el programa más atractivo para estudiantes prospectivos y facilitar que los estudiantes terminen el programa en un menor tiempo.

La propuesta forma parte de la 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 veintidós días del mes de junio del año dos mil veinte, en Mayagüez, Puerto Rico.

  
Jessica Pérez Crespo  
Secretaria



BVM

Anejo



30 abril 2020

Miembros del Senado Académico  
Recinto Universitario de Mayagüez

David Sotomayor Ramírez  
Presidente, Comité Asuntos Curriculares

### **Propuesta para una revisión curricular en el programa de Maestría de Ingeniería en Bioingeniería (Plan III)**

El Comité de Asuntos Curriculares recibió de la Facultad de Ingeniería el asunto mencionado en el epígrafe. La propuesta consiste en:

1. Reducir el número de créditos en cursos de bioingeniería de 15 a 12
2. Reducir el número de créditos en cursos electivos (dentro o fuera de la especialidad de bioingeniería) de 6 a 3.

Con los cambios propuestos el número de créditos para completar el currículum se reduce de 37 a 31. La justificación se basa en un intento de hacer el programa más atractivo para estudiantes prospectivos y facilitar que los estudiantes terminen el programa en un menor tiempo. Los proponentes entienden que la calidad del programa y el perfil del estudiante no se afectará.

Luego de evaluar los cambios solicitados, el Comité de Asuntos Curriculares recomienda al Senado Académico la aprobación de la Revisión Curricular.

Anejo

1. Propuesta para la revisión curricular

# Proposal for Reducing the Number of Credit-Hours of the Bioengineering Courses-Only (Plan III) Master of Engineering Program

Graduate Committee  
UPRM Bioengineering Graduate Program  
October, 2018

## Introduction

The Bioengineering Graduate Program was established in 2015 at the University of Puerto Rico - Mayagüez (UPRM), and offers three degrees: (1) Doctor of Philosophy (PhD), (2) Master of Science (MS-Plan I/Thesis) and (3) Master of Engineering (ME-Plan II/Project and ME-Plan III/Courses-Only). The program, managed by the Office of the Dean of Engineering, is a multidisciplinary effort of all departments within the College of Engineering, and of the departments of Chemistry, Biology and Mathematics from the College of Arts and Sciences.

## Objective and Motivation

The **objective** of this proposal is to reduce the number of credit-hours of the Bioengineering Courses-Only (Plan III) Master of Engineering program from 37 to 31 credit-hours. Given the multidisciplinary nature of the bioengineering field, the program attracts students not only from engineering backgrounds, but also those with diverse backgrounds in fields such as chemistry, biology, applied mathematics, physics and microbiology. For students with backgrounds outside of engineering, the ME Plan III is an outstanding and valuable opportunity to complement their academic backgrounds with engineering (as applied to biology and medicine) knowledge. The ME Plan III option is also of interest to working professionals that want to acquire or expand knowledge in bioengineering.

The **motivation** for the proposed reduction in credit hours is to make this program more **accessible** and **feasible** to students who are interested in bioengineering, are seeking further professional development, but are not necessarily interested in research. Under the proposed program changes, students will be able to complete the ME courses-only option in three semesters, instead of four. Students that graduate from a University of Puerto Rico (UPR) campus are allowed to apply up to 9 credit hours in courses at the 5000 level or above towards their graduate plans of study. Therefore, if the proposed changes are implemented, some UPR graduates would need 21 credit hours in graduate coursework to obtain their degree, which means that they could potentially obtain an ME degree in bioengineering in just one year. Eliminating 6 credit hours from the ME courses-only option will not change the program's overall quality. Nevertheless, this change will make this program more feasible for students since they will save money in tuition, housing costs, and potentially loss of income for the time they spend at school instead of being part of the labor force.

## Summary of Proposed Changes

Table 1 summarizes the proposed changes to the Bioengineering Courses-Only (Plan III) Master of Engineering Program. The proposed changes consist of reducing the number of credit-hours in bioengineering courses from 15 to 12, and of reducing the number of credit-hours in elective courses from 6 to 3. The other program components would remain unchanged. The modified ME

program will still be in compliance with current UPRM Graduate Studies regulations, does not alter the graduate profile (Table 2 presents the current graduate profile) and would also have a similar amount of credit-hours as other UPRM ME Plan III programs such as those in Electrical and Computer Engineering.

<b>Table 1. Summary of proposed changes to Bioengineering Courses-Only (Plan III) Master's of Engineering Program.</b>	
<b>Current credit-hour distribution (37 total)</b>	<b>Proposed credit-hour distribution (31 total)</b>
<ul style="list-style-type: none"> <li>• 9 credit-hours in core courses               <ul style="list-style-type: none"> <li>○ Principles of Biomedical Engineering (INME 6065)</li> <li>○ Principles of Computational Bioengineering (BING 6004)</li> <li>○ Molecular and Cellular Biology for Engineers (BING 6002)</li> </ul> </li> <li>• <b>15 credit-hours in bioengineering courses</b></li> <li>• 6 credit-hours in courses outside of bioengineering</li> <li>• <b>6 credit-hours in elective courses (either in bioengineering or outside)</b></li> <li>• 1 credit-hour in seminar (BING 8998)</li> </ul>	<ul style="list-style-type: none"> <li>• 9 credit-hours in core courses               <ul style="list-style-type: none"> <li>○ Principles of Biomedical Engineering (INME 6065)</li> <li>○ Principles of Computational Bioengineering (BING 6004)</li> <li>○ Molecular and Cellular Biology for Engineers (BING 6002)</li> </ul> </li> <li>• <b>12 credit-hours in bioengineering courses</b></li> <li>• 6 credit-hours in courses outside of bioengineering</li> <li>• <b>3 credit-hours in elective courses (either in bioengineering or outside)</b></li> <li>• 1 credit-hour in seminar (BING 8998)</li> </ul>

<b>Table 2. Graduate profile of the Bioengineering Master of Engineering Plan III (courses-only) option.</b>
<ul style="list-style-type: none"> <li>(a) In-depth knowledge in a specific area of bioengineering.</li> <li>(b) Breadth of knowledge in the core areas of bioengineering and supporting disciplines.</li> <li>(c) Ability to formulate a complex bioengineering problem and outline viable solution by integrating and applying basic principles of biology and engineering/physical sciences.</li> <li>(d) Ability to work in a multidisciplinary environment.</li> <li>(e) Ability to effectively communicate technical and scientific findings.</li> <li>(f) Awareness of ethical and social issues.</li> </ul>