Decanato de Estudios Graduados e Investigación
Recinto de Río Piedras
Universidad de Puerto Rico

Ciclo 1 del Plan de Evaluación

Facultad de Ciencias Naturales

Programa Graduado de Biología
Maestría
Doctoral
Doctoral Inter Recinto

Formulario para el Auto-estudio

Años que comprende la evaluación: 2009-2015

Miembros del Comité de Auto-estudio

Dr. A. Valance Washington	Dr. Miguel Acevedo
Coordinador/a del Comité	Profesor/a
Dr. Ricardo Betancur	Edgardo López
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Presentado y aprobado en Facultad en

Dr. Carlos I. González Vargas	Dr. Tugrul Giray
Firma Decano	Firma Director/a

UNIVERSIDAD DE PUERTO RICO
DECANATO DE ESTUDIOS GRADUADOS E INVESTIGACIÓN

Plan de Evaluación de los Programas Graduados
Formulario para el Auto-estudio

Introducción

El Plan de Evaluación de los Programas Graduados es un modelo sistemático que se ha elaborado para dirigir y encauzar una cultura de auto-reflexión entre los programas, que conduzca a la excelencia académica e investigativa. Su propósito es facilitarle los medios a cada programa para que pueda identificar sus fortalezas, reconocer aquellas áreas que ameritan atención y desarrollar estrategias que lo dirijan hacia su máximo nivel de desempeño. El Plan de Evaluación de Programas Graduados integra el Avalúo del Aprendizaje Estudiantil, el Auto-estudio, la Evaluación de los Centros de Investigación adscritos a programas y demás procesos de auto reflexión, que pudieran darse durante el transcurso de cada ciclo de evaluación. En este sentido, el proceso de Evaluación es uno de reflexión y transformación continua.

El Auto-estudio de un programa es un ejercicio de evaluación sumativa, pues constituye el agregado final del Plan de Evaluación de los Programas Graduados. Sin embargo, incluye también aspectos formativos, como el avalúo del aprendizaje estudiantil. El Auto-estudio viabiliza la organización de la información proveniente de distintas fuentes, de acuerdo a los componentes de los programas graduados, a mencionar: los fundamentos; el currículo y experiencias co-curriculares; los profesores/investigadores; los estudiantes y egresados; los recursos esenciales para la docencia, la investigación y la creación; la gerencia, planificación y desarrollo del programa; y el avalúo del aprendizaje estudiantil. Las recomendaciones que surjan del Auto-estudio darán origen al Plan de Desarrollo del Programa para los siguientes cinco años.

Los programas deben guardar la información que generen en sus respectivos archivos (impresos y digitalizados) y compartir sus hallazgos con el DEGI, lo cual, a su vez, permitirá tanto a los programas como al DEGI hacer estudios longitudinales y transversales de la situación del programa graduado. Esto facilitará la planificación estratégica y proveerá un servicio adecuado a las necesidades de los programas.

El formulario que encontrará en las siguientes páginas se desarrolló para posibilitarle al programa el acopio y la organización de los datos específicos que el Auto-estudio requiere. La información solicitada ayudará al Comité de Auto-estudio a realizar un análisis profundo del estado del programa y a validar sus conclusiones. Por esta razón, es indispensable que los datos requeridos en las tablas sean completados en su totalidad. Si el programa lo cree conveniente, puede sustituir, con la debida justificación, aquellas fuentes de datos que sean inasequibles, o incluir datos adicionales a los solicitados.

Al final de cada sección de este formulario hay una serie de preguntas que guiarán al programa a deliberar preliminarmente sobre la información provista. Una vez cumplimentado el formulario, los programas elaborarán un narrativo de unas **quince a veinte páginas**, que presentará una evaluación ponderada de las fortalezas y debilidades del programa. La reflexión final deberá aludir a la manera en que la relación entre las partes influencia el conjunto, o sea, la forma en que los distintos aspectos evaluados facilitan o entorpecen la consecución de la misión y las metas del programa. Un resumen ejecutivo de dos páginas acerca de dicha reflexión final se presentará como apertura del informe. El formulario del Auto-estudio cumplimentado se adjuntará como apéndice del informe.

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Table of Contents

Resumen Ejecutivo

El resumen ejecutivo resaltará los aspectos más sobresalientes de la reflexión contenida en el narrativo del informe. El mismo constará de **dos páginas** y se presentará como apertura del informe del Auto-estudio. Las siguientes preguntas sirven de guía para realizar el resumen ejecutivo:

> ¿Cuáles son las principales fortalezas y debilidades del Programa? ¿Cuáles son las principales situaciones que dificultan la consecución de la misión, las metas y los objetivos del Programa y por qué? ¿Qué se propone hacer el Programa para superar las situaciones encontradas?

SELF EVALUATION REPORT
INTERCAMPUS DOCTORAL PROGRAM IN BIOLOGY
UNIVERSITY OF PUERTO RICO

Self-evaluation committee consisting of Professors Tugrul Giray, Valance Washington, Miguel Acevedo, Ricardo Betancur, and Gary Toranzos as well as student representative Edgardo Lopez met with the purpose of evaluating the Biology Graduate Program. This report is based on information gathered from meetings with students, faculty, and a thorough analysis of existing reports and data from the Decanato de Ciencias Naturales and the Biology Department; several administrators participated as well.

EXECUTIVE SUMMARY

Mission: A university community, with a marked doctoral character and endowed with first rate resources, dedicated to research, creation, and the dissemination of knowledge; committed to the integral formation of the student and lifelong learning; and recognized for the excellence of its contribution of the development and intellectual enrichment of the Puerto Rican, Caribbean and world society.

I. Vision and mission: The Biology Graduate Program consists of a Master's Program in Biology and an Intercampus Doctoral Program. The doctoral character and access to first rate resources, in and outside the program, a program community dedicated to research, creation, and dissemination of knowledge, committed to the integral formation of the students and faculty alike, and recognized for excellence of its contribution to the development and intellectual enrichment of Puerto Rican, Caribbean and World society makes the program on target with the Vision University 2016. The Biology Department in general, has recently enunciated their vision, and this includes the Graduate Program:

"To be in the top 100 Biology programs in the world. " This requires work of excellence in the well-defined mission of the Graduate Program

II. Academic Program: The Biology Graduate Program wants a simple profile in new students: science background, capacity, and track record. These individuals of great potential are trained and develop into the clear profile of a Biology Graduate Program Alumnus. The requirements of admission are few and flexible to include as many interested students with great potential. We feel the admission process can be further improved by analyses of data on admissions and statistics on graduates of the program.

Once in the program both MS and PhD students follow a clearly defined program with specific credit

requirements, curriculum order, and research and professional training with specific milestones. The program is continuously receiving feedback from faculty, students, and the general academic and professional community and making adjustments. This could be witnessed in comparison of 2006 and 2016 self-evaluation reports. Currently publication of thesis work is becoming a requirement and submission of the work for publication is not sufficient. Similarly, graduate program regulations have recently been reviewed and modified in alignment with changes at the University level represented by Certificate 38. These changes are presented within the self-evaluation document for approval at the University level. Specifically:

- Credits to be transferred from previous studies:
- Thesis requirement in MS
- Thesis requirement in PhD

III. Faculty: The program continues to attract excellent faculty as full time tenure-track members of the Biology Department (26). In addition, in the Intercampus Doctoral Program over 60 laboratories are open to new students. Adjunct Faculty (5) and Associate Research Professors (10) represent additional, valuable faculty resources for the program. These faculty are highly productive with a rate of grant funded faculty at near 100%, and publications at around 4 per year for each faculty member.

The number of tenured or tenure track faculty is in flux with a large turn-over rate. Since 2006 Ingi Agnarson, Tomas Hrbek, Zomary Flores, Jose Luis Agosto, A. Valance Washington, Miguel Acevedo, Ricardo Betancur has been hired but we lost to other universities or to retirement Ingi Agnarson, Tomas Hrbek, Sandra Pena, Maria Gloria Dominguez, Irving Vega, Migdalisel Colon, Eduardo Rosa Molinar. This is partly related to the economic situation Puerto Rico is going through. In comparison to 15 years ago, we currently have fewer faculty at the Department of Biology (30 vs 23). However, the University Campus administration has supported the program and we are currently recruiting 5 more faculty lines, 4 will be integral part of the Biology Graduate Program. We also recently re-assigned as research and graduate program faculty Dr. Patricia Burrowes to recognize her contribution to the Graduate Program. The faculty attrition also has been remedied to some extent by Natural Sciences Deanship efforts, and 2 most recent faculty lines were re-purposed from other programs to Department of Biology, resulting in hire of Dr.s Betancur and Acevedo. In this category, the Department, Graduate Program, Personnel Committee, the Dean of Natural Sciences are in agreement that an additional 4 faculty lines would be needed in the near future to support the Graduate Program and the double duty of the faculty in the undergraduate education.

Mechanisms to reduce turn-over are required, should the new hiring be effective, and further hiring not be needed beyond retirement related or strategic growth related hires. These mechanisms could include incentives based on research and graduate mentoring performance. Current teaching load of graduate program faculty many times exceeds their contractually specified 3 credits per semester or 6 credits over the year. For instance, Dr. Valance Washington is currently teaching 9 credits with a full research and mentorship load of 9 credits, and 3 credits for administering the Biology Graduate Program. Dr. Giray, in addition to the 12 credits of Biology Department directorship duties assumed 4 credits of teaching, both at graduate and undergraduate level. These are only few examples, and the situation is similar for many of our faculty. This commitment from the faculty is impressive, however it could impact research and mentoring duties in the long run, the number one priority of the Vision University 2016. Honoring contractually determined teaching and research loads, incentives for research and mentoring performance, competitive internal funding (for start-up, matching funds, new initiatives), flexibility in time allocation (e.g. certain graduate courses require 6 credit time and effort within one semester), support for special interdisciplinary program or courses all have little or no additional cost, and make the academic environment much more competitive in comparison to peer institutions and productive for the faculty in the program.

IV. Students: In comparison to ten years ago, 2006, currently there are approximately 10% more

graduate students in the program (ca. 110 then to 121 today). Considering the flux in faculty associated with the program, this is a significant increase. There have been two directed recruitment efforts: students from Haiti and from Dominican Republic have been targeted through University-wide efforts. For the last two years, local recruitment efforts have been performed through the Dean of Graduate Studies at the College of Natural Sciences. The report highlights importance of pool of applicants, since rigor of selecting new students depend on this pool, with a 9 to 13 student accepted yearly to the program. This year there are 52 applications for the January and August application cycles, increasing the competition for the ~10 spots we are recruiting for.

Another change in the graduate student profile has been an increase in domestic students. When in the past the ratio of international to national students was more close to 50:50, now there are 3 times more domestic students. This may indicate the effective freeze in graduate student support on the University of Puerto Rico, Rio Piedras campus for over 15 years. The extent of the freeze is such that we cannot call the graduate student support a "salary" as in 2000-2006, but a "stipend". The amounts are ~$800 per month for MS students, and ~1000 per month for Ph.D. students. These amounts were comparable to amounts offered in 1990 in other Universities in the US, and currently these are lower in comparison to many universities in Latin America. Current support level in Federal grants is $1500(MS) to $2000(PhD) per month for a full time graduate student who is expected to dedicate ~20 hrs to research activities and other time to studies. The graduate program faculty has been successful in obtaining Federal grants for training graduate students however, for international students, and for professional training in teaching, or for internal grants to start new initiatives, the graduate student support/pay should be scaled to match requirements from regulatory bodies such as the HSD, Immigration offices, and funding levels of Federal grants at the least. The mismatch results in pay inequality for equal work. An action at the level of the campus can correct the problem. Should the cost be kept equal, we would be able to support fewer students until additional funding is identified. We evaluate fewer, more competitive, adequately supported students to be a better option than continuing with an untenable support structure that influences recruitment, services, and dedication of students.

V. Infrastructure and funding: The budget of the Graduate Program in Biology has been constant, and assigned from the Rector's office. Because of changing costs, this amount has to be supplemented at ever greater rate through other means. One supplement is funds brought by faculty in individual competitive grants, or program grants. In addition, the director of the graduate program placed requests for funds for Research Assistantships or research workshops to Vice President of Research and Technology. These requests resulted in $40K additional funds per year in past years. In 2015-2016 these funds were requested at $75K, approved by the Vice President, however not approved at the Finance Office due to current economic situation.

The infrastructure for teaching is available and in good condition. Research infrastructure is variable, and based on location, support level of the graduate mentor. Common facilities exist and mechanisms of self-sustainability have worked in certain instances such as the MCC, and SGF. Similar initiatives, and summer laboratory offers that also strengthen facilities are required.

Molecular Sciences Building provides a great opportunity for training in modern research facilities and on cutting edge techniques for all graduate students through different mechanisms. Molecular Sciences Building could provide further support and act as a recruitment magnet for the Department of Biology. Campus could use more funds to bring the JGD, Biology Faculty Laboratories and Graduate Program Building to a level comparable to MSB. This is possible because MSB provides a structure available for continued research without inverting additional funds, and JGD could be renovated in phases to complement and extend the MSB idea of cutting edge facilities for innovation and modular laboratories. An example of this has been the improved, renovated Animal Facilities at JGD.

Current seed funds for faculty are at levels that provide the minimum to establish a functioning research group. We have not lost opportunity to recruit faculty because of lack of seed funds commitment to date. This is largely because starting in 2003, through an NSF-CREST initiative, new faculty were recruited with multi-year commitments reaching $200K in seed funds. The campus had maintained and should maintain this level and in specific cases be prepared to increase the seed funds

to recruit top talent. Strategic partnership with PR STRT could provide for greater seed funds (up to $900K per faculty). In such a situation, the 200K from campus could be inverted to infrastructure at JGD building, making sure to increase PR square footage for cutting edge research that could support technology and science based innovation.

Narrativo del Informe

La reflexión final se redactará una vez se hayan cumplimentado todas las secciones de este formulario. Debe explicar la situación actual de cada una de las áreas evaluadas y justificar sus conclusiones. El narrativo habrá de aludir además a la manera en que las fortalezas y debilidades de cada parte afectan el conjunto, o sea, la forma en que los distintos aspectos evaluados facilitan o entorpecen la consecución de la misión y las metas del Programa. El mismo deberá ser de una extensión de unas **quince a veinte páginas**. Las siguientes preguntas sirven de guía para realizar el narrativo:

> ¿Es la información obtenida suficiente y adecuada para poder llegar a conclusiones acerca del estado de situación del Programa? ¿Cuáles son las fortalezas y debilidades de cada área? ¿En qué manera el diseño del Programa, su implantación y los resultados obtenidos (aprendizaje estudiantil, investigación generada, entre otros factores) se relacionan? ¿Qué posibles relaciones causales se pueden identificar partiendo de la información obtenida? ¿Podría indicar en qué forma y medida las fortalezas y debilidades de cada área pudieran estar afectando el cumplimiento con la misión del Programa?
>
> A la luz de los resultados obtenidos, haga las recomendaciones pertinentes para mejorar las áreas de fortaleza, corregir los problemas detectados y atender las necesidades identificadas.

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This committee recognizes that the main strength of the Program has been the complete dedication of the faculty and its graduate students. We are also fortunate to have good support for the daily running of this program. The faculty has shown to be well trained, industrious, entrepreneurial and especially resilient in seeking extramural funds for research and for support of undergraduate and graduate training. We could argue that it is because of the resilience of the faculty and support staff that we have had such a successful program so far. For years, the Department of Biology has fought many administrative barriers, many of which have been insurmountable.

The success of the program has also been helped by the level of funding from federal minority oriented programs has been key and the programs in charge of this cannot be ignored; these include RISE, NSF-CREST, since this funding has been key for many of our graduate students allowing them to focus solely on their research and as a result, many have graduated with several publications in high-profile journals, and are the best ambassadors for our Graduate Program. The Graduate Program would greatly benefit from more of these types of group grants.

The faculty has been very supportive of the Graduate Program, and within the Department of Biology, Faculty need to meet several criteria in order to be part of the Graduate Program. Some of the criteria include the ability to publish regularly, to train and mentor graduate students, and to be active in research. Success in securing extramural funding is also taken into consideration. The Graduate Faculty have been very active in all these areas, and a metric of this is the high number of publications (>280/5years) as well as the number of graduates (both M.S. and Ph.D.: ` 15-20 year) Although external funding could be higher, the amount of research grants is limited by the ad-hoc assistance given by the Institution.

Previously, there was a person iu charge of assisting investigators finding funding sources and helping them with the grant proposals (Dr. Sheila Ward); this was shown to be highly successful, resulting in several large grants being awarded to faculty within Natural Sciences; this would be highly helpful to our Graduate Program as well.

Faculty numbers have been on the decrease in the last few years (going from 30 to 23 full-time equivalents). Some faculty have retired, but several Assistant and Associate Professors have left our Institution because of better offers at state-side institutions, and these positions have been frozen by the University of Puerto Rico, adding salt to the wound. All this has lead to a bleed in research leaving gaping holes in certain areas of teaching and research. For example, there is only one molecular biologist in the department, and this is a key area in terms of training our graduate students. The hiring of at least one more to cover the needs is absolutely necessary. Other fields face similar situations as well. In order for the Graduate Program to expand and improve in certain areas, there is a need for a critical mass of researchers at the department; not only is this being jeopardized by freezing hires and retirements, but its future may also be threatened by the needs in other departments of our institution, such as the Biomolecular Research Center, where several of our faculty are currently participating.

Graduate Students numbers have been increasing, not only in quantity, but also in productivity, as shown by the number of publications. The number of international students may also be on the rise(~46). However, one of the main problems with international students is funding for their stipends. Most Federal grants do not allow for the support of foreign students, therefore many end-up working as Teaching Assistants for several years, which interferes with their research and productivity and publications. This is something the Graduate Program needs to work on, since the trend suggests that the number of international students will continue rising in the near future.

The Program does not have a formal recruitment plan. This has been done *ad hoc* in the past, relying of individual professors to share information on our program whilst at scientific conferences. This is a very non-effective manner of recruitment; we need to have a formal plan in order to recruit not only at conferences, but to also have a short-term, a mid-term, and long-term plans. This may become even more important as many universities in Latin America are improving their own graduate programs and our international student community may decrease as a result. The Program needs to also have a mid-term and long-term plan to increase stipends for graduate students. **Although this is not a policy that can be changed at the Department of Biology level, it is in the interest of all Graduate Programs at the University of Puerto Rico to work towards a more realistic stipend that has remained at 1980's levels.** In just this last years class we 30% of the students choose other institutions because of funding/stipend levels. It should be realized that the low stipend levels actually works against the recruitment of new talented graduate students, since our Institution cannot compete with state-side universities in terms of the stipends.

The Faculty, and even the student body suffer from low morale and face constant frustrations, since many of the problems are beyond the ability of this Program to solve them. The constant cutting of funds to the Department makes increasingly more difficult to grow towards a Research Intensive University. The hiring freeze makes it impossible to have course offerings from year to year, and although many courses are described in our catalogue, many of them cannot be offered because of the lack of professors in those areas. All of this results in student frustration since in many cases they end up taking courses just to meet the minimum number of credits rather than being able to take courses in specific areas of expertise they desire to obtain. There can be no course planning beyond the immediate semester under these circumstances.

In addition to the poor offering of courses, the physical conditions of many of the buildings and research laboratories are in dire need of repairs. Although many have recently been improved and have very impressive state-of-the-art conditions, many suffer from regular floods as a result of the need to fix the roof of the building, especially in the Julio Garcia Diaz Building and Facundo Bueso Buildings.

It has been pointed out in other reports that the many institutional barriers are very demoralizing and actually undercutting the program's effectiveness. The remaining faculty are committed to the excellence of the program, but do not see their efforts go beyond the individual recognition by peers in their individual expertise, since there are really no cohesive efforts. This Graduate Program has all the potential to become a leader in different areas of research, but this is difficult to do without a clear effort to agglutinate efforts.

RECOMMENDATIONS

A. General Overview

The Graduate Program has been ongoing for the last several decades and has become stronger as time goes by. The University Administration and members of the faculty have come to accept the model of a "University" (by definition an institution of higher learning where research is carried out), and many have come to embrace the inclusion of research by faculty and graduate students (in those programs that offer post-baccalaureate degrees). Additionally, the Graduate Program in Biology is one of the most productive in terms of number of students completing their advanced degrees and the number of publications in peer-reviewed journals. It should be pointed out that most publications coming out of the Biology Graduate Program include both graduate and undergraduate students. It should also be stressed that the Biology Program serves as a model for the rest of the Institution in terms of its productivity. For instance, Research Gate currently ranks our Department second in productivity, after the Chemistry Department. See https://www.researchgate.net/institution/University_of_Puerto_Rico_at_Rio_Piedras/departments. Note that many of our most productive faculty have not yet created Research Gate profiles, suggesting that these numbers are substantially underestimated.

However, it is clear that most efforts are still at the individual level. There are a few group grants, but that is the exemption rather than the rule. An increase in interaction between faculty is absolutely necessary. A few efforts have been made to increase the level of interaction. Additionally, previous administrations (of the Biology Department) have pushed the idea of a yearly retreat, where the strengths and weaknesses of the Department and Faculty are discussed. The Department held a SWOT Analyses Workshop last year. This is a great start, however, a more proactive approach should be taken to increase the participation of faculty. If interaction between faculty within the Department is difficult, interactions with other Departments and other Campuses is very sketchy at best. There is a lack of communication between Departments and Campuses, and this should be made a priority for the coming years. An example of the few interactions faculty have within the Department are the weekly seminars; this is in fact a good possible forum for the interaction, but a more dynamic model needs to be started. Having the weekly seminar may not be enough, and especially a seminar given by outside scientists, rather than by members of the faculty and Graduate students. We seem to be more aware of what other people outside the institution are doing than what our next-door colleagues are involved in, in terms of research.

There is great potential in the Graduate Program and the faculty and student bodies are also highly international. This is a unique opportunity for more interactions at both the social and the scientific levels. As things currently stand, all faculty seem to be on their own island fighting their own battles without realizing that collaborations may result in grants that will be highly beneficial for the Department.

Previous self-study reports have emphasized that having an ongoing Inter-Campus Ph.D. Program is a very desirable approach, an effort that has also been acknowledged by NSF and NIH. All of this has resulted in large, successful grants in the past. However, more efforts need to be made, and the Administration, and more specifically the College of Natural Sciences and their counterparts at other campuses and institutions, should serve as the agglutinating bodies responsible for a more fluid

interaction. This has to be a concerted yearly effort, and cannot be left to the whims of each administrator. In order to be able to forge better interactions, this should become the rule rather than the exception. As it currently stands, the program has been going on with little change since its inception; although the possible modernization of the program is dependent on the facilities (library, equipment, highly trained technicians), and we have many of those facilities, in many cases these are limited in their scope. The Sequencing Facilities have been of great help to all researchers, and it is a great example of how the facilities are always growing and offering the latest in methodology. However, other facilities, such as the Microscopy Facility, are rather limited, and in fact it is no longer lending services because of breakdown of the electron microscopes. If the Program is to grow, services need to be available at all times, and also not be limited by the different priorities administrators have.

Previous self-study reports have also indicated that this Institution has the potential to be a top-tier university in the Caribbean, and Latin America overall, and although the UPR is currently the U.S.-based Institution that graduates the highest number of Hispanic Doctoral students], we should not simply rely on this, since the needs are increasing and the number of Hispanic Ph.D. students are a hot commodity at mainland Institutions.

B. Suggestions for Improvement

1. University Administration (DEGI and above)

a. The Office of Sponsored Programs has been created, following previous reports. Grant management procedures have also improved, although more needs to be done. The office of Sponsored Programs should be more proactive, together with the College of Natural Sciences, in order to provide not only help with investigator-initiated grants, but to actually have dedicated personnel that continuously seek for for opportunities. A previous effort had been made along these lines. Dr. Sheila Ward, the person previously in charge at the College of Natural Sciences, was very successful in obtaining several large grants. Dr. Ward was actively involved in all aspects of grant seeking, from finding opportunities to providing help with writing. Rehiring this person would be of great benefit to the College of Natural Sciences. The setting-up of the Centro para la Excelencia Academica (CEA, Deanship of Academic Affairs) has also been a very successful effort. We hope these type of efforts are not transient, and that all such programs are carried out in a coordinated fashion for the maximum effect on the improving the Graduate Programs.

b. Open lines of communication. Although the weekly Bionoticias Newsletter has been highly successful in letting people know what is going on in the Department, this is still dependent on whether the investigators want to share information. This needs to become a more proactive Newsletter, and perhaps a College-level Newsletter. It also needs to be published online, so that news, events, and achievements of our Department can be seen by outside researchers (from other institutions) that are not in the email list.

c. Improve the library at all levels. It is of great concern that the main science library does not have subscriptions to some of the most common journals (e.g., Science, Nature).

d. Improve Teaching Assistantship stipends. The stipends are still at the 1980's levels, regardless of inflation. It should be realized that we are in fact losing competitiveness, since our best students are accepted at other institutions state-side with stipends that are double or triple what we offer our Graduate Students. A better stipend will also make it easier to recruit students from other geographical areas, and from the rest of Latin America.

Along these lines, it should also be noted that because UPR-RP is not part of the world top 500 universities in Shangai ranking (http://www.shanghairanking.com), many students from Latin America that obtain Fulbright fellowships to study abroad cannot join our institution. It is a policy of Fulbright to only provide fellowships for students joining universities listed in the Shangai ranking.

e. Set up a financial structure that supports postdoctoral fellows which would include potential

university funding. However, we should make it easy as possible for our PI/professors to support postdocs off of their grants. Cut on the direct financial benefits from salary perks and transfer that into increased pay for the postdoctoral fellow in lieu of increases publication rates and the free hands on training given by them to the students.

e. Set up yearly workshops on ethics in research, with invited speakers.

2. Biology Intercampus Doctoral Program

a. A budget to provide resources for seminars, retreats, etc., should be available. Conjoint seminars should be offered, as would possible team-taught courses between faculty from the different Campuses.

b. Open up the lines of communication between faculty members at the participation institutions. Although Program Faculty meetings are held often, they are usually short meetings that focus on prospective students and travel grants. A more concerted effort should be made to discuss other topics, such as new courses, arranging for team-taught courses, and seminars to be offered.

c. Have regular discussions as to how to better use all facilities for the benefit of all participating campuses. Have regular meetings as to better guide students to participate in their required Rotation courses taking into consideration both campuses.

d. Although Course Tracks have been designed at the Department level for students to better focus on their desired areas of expertise, these have not been possible because of several faculty have left our institution. This could be better designed at the level of both campuses, since many courses are taught and could serve as "core courses" for all students.

e. Hire new faculty (there are currently efforts to hire 5 new faculty) to cover those who have left or those who are retiring. Without these hires, the Department Graduate Program is bound to fail. Additionally, all new hires should be made according to the strict needs of the department first and foremost. The needs of other programs/initiatives, should be considered secondary to the Departmental needs.

3. Department of Biology

a. Improve the manner graduate course offerings are done. Have a solid plan as to what courses will be taught at least two years in advance. Eliminate the ad-hoc approach to graduate course teaching and offerings. Increase the offerings by including what other courses are being taught at participating institutions, or other Departments.

b. Focus on strengths and critical masses of faculty for writing grants. Realize that not all students will be research clones of the professors (faculty members at some institution), but rather that students have different strengths and desires for after graduation. This will make the transition easier for the students once they graduate. It is a fact that many of our Doctoral students will work in industry, or simply teaching at two-year of four-year institutions. We should be aware of this and actually help the student reach his/her goal.

c. Work on improving the stipends for all graduate students to bring them up to XXI Century levels, and take inflation into account.

III. SPECIFIC COMMENTS BY EVALUATION AREA

The overreaching question that arises from the evaluation of the last program evaluation is "**Is this evaluation read by concerned and empowered parties?**" As we were unable to obtain the 2010 version of this report, it is amazing how similar were the concerns in 2006. None of the concerns have been addressed from that year (or they were addressed and then resurfaced) and there are new ones that have risen. At the forefront of those that have risen are the lack of professors in the department and the impending challenge of receiving proper compensation for expending the effort to obtain federal grants. These two problems set a foundation for a series of related problems.

The amount of full time professors in the department has dropped from 38 six years ago to the present 26 is probably the gravest situation we currently face. Coupled with this problem is the high turnover rate of professors, which leads to major issues related to class planning each semester. The loss of one to two professors yearly, causing the total number of professor to dwindle, makes it impossible to plan for courses. This generates frustration for both students and professors regarding course availability and planning. A simple review of the amount of courses available in the Department makes it evident that there are not enough teachers to cover the proposed classes. Over the last 3 years we have had an exodus of three faculty, two of which were part of the Graduate program. It is impossible to cover those holes in the program if the loses are not being replaced. Either the professors need to teach more or fewer courses can be offered. We suffer from both. The other side of the picture is equally daunting. The question is, why are we losing professors? What is happening here that would make a professor seek employment elsewhere or be allowed to be enticed away from UPR? Those reasons need to be explored to avoid running an expensive professor training program for other universities to benefit from it.

One of the reasons that professors leave is for better resources and systems of compensation. While UPR has great infrastructure (i.e. buildings), they are lacking in maintenance and upgrade. Right now the University is threatening to remove current levels of compensation, which has spawned large efforts on the professor's behalf to maintain compensation at current levels. Time and Effort is wasted that could be better put toward research.

With the shortage of professors, we are now beginning to see divisions within the department as we try to cover all the things that need to be covered (classes, recruitment, service to tbe university against a backdrop of research that most continuously advance). While we are not replacing our professors, we are still expanding. We have recently constructed a new building for the molecular sciences. This building is a long-planned resource very much needed if Puerto Rico aims to continue producing competent molecular scientists. However, stretching the thin layer of professors to cover the needs here in the university and the new building is an unforeseen challenge that needs to be addressed. The students and personal to man all three structures (the two biology sites on campus and the new building in Cupey) also stretches these resources as well. Administrative support is definitely needed.

B. Specific Comments

(i) Program Foundations/Basics. The PhD Intercampus Program in Biology is designed to enable a PhD program in biology and to foster interactions between Biology at UPR-RP and the Medical School (RCM). Both parties are benefiting from this arrangement and are happy to see it continue. Some concerns are a lack of coordination of course offerings between the two campuses, administrative difficulties for students in ensuring courses taken at RCM are properly credited, and ways to credit and evaluate faculty for activities in the integrated program. This problem has been steadily decrease as more students have become aware of the course offerings in RCM and have sought out those courses. Attention to these types of issues would foster further growth of the Intercampus nature of the program.

The present report is an evaluation of the Ph.D. program, but it is important to note that Biology has a strong, active M.Sc. program. Many MSc programs have disappeared in the United States, so there is a need to retain this productive one.

(ii) Students/Alumni. While students are often accepted in the program with low GRE scores – particularly those from Latin American countries who are unfamiliar with the exam type and/or have limited English proficiency – faculty are in general satisfied with the quality of the student pool, and the GRE does not seem to be a good metric for success or failure. Alumni appear to be fully employed, with many going into teaching positions at local institutions, the private sector, and a handful into postdoc positions at some of the best research universities.

Communication with alumni is lacking. If the Program is to redefine its mission to serve as a key provider of manpower to the impending economy of knowledge, then many more students would need to follow the research track into postdocs. This type of information will most certainly be needed if the Program is to transition to a higher level of federal funding and excellence.

(iii) Professors/Researchers. Strong research focus. As in any program, there is a broad range here from exceptional researchers to less active, from faculty highly involved in the affairs of the program and student mentoring to others with little involvement. There are 23 Graduate Faculty. An additional 20 -25 faculty from medical sciences are involved. There are about 120 full-time graduate students, 44 in MSc and the remainder in the PhD program. If about 23 faculty are active as graduate supervisors, there are an average of 5.75 graduate students/supervisor. This ratio has alarmingly increased in recent years, with a growing student body followed by a substantial decline in the number of permanent faculty. For example, the student/supervisor ratio was 2.5 in 2006.

The fact that a great proportion of faculty is primarily funded through minority incentive grants means that they are not yet at the top of their professional disciplines. In a sense, this is true, although it is a difficult time to alter the sources of grants. Researchers at most universities are bemoaning the difficulties in getting renewal, much less new, grants from NIH or NSF. Funding levels are at 5% for some panels, so even an excellent rating does not guarantee funding. The prospects for the immediate future are not auspicious. Consequently, faculty in the Program should continue to take advantage of its special funding situation. As long as these avenues exist, it will be difficult to convince researchers to put a maximal effort to get their own research grant. Strong institutional incentives and commitments are needed to transition to a more competitive category of research funding. Programs for intramural funding exist (e.g., FIPI), but these are largely limited to junior faculty. The shared laboratory research facilities are excellent in most cases and are sufficient to support a substantially larger group of researchers. However, research infrastructure faces substantial maintenance problems. The new Molecular Science Research Building (MSRB) – shared between UPR-RP and RCM – offers state-of-the-art facilities for molecular work, microscopy, and proteomics for faculty and students. However, there's a concern that the building is funneling a large amount of indirect costs (previously assigned to Ciencias Naturales) to benefit a small elite of faculty that have research laboratory spaces in the MSRB.

(iv) Curriculum. The menu of courses is broad and largely adequate. The student handbook and flow chart lay out a clear path. Nevertheless, there are student complaints that the selection varies from semester to semester and suitable courses are not always available. With the exception of the high number of required courses (42 credits), the curriculum is fairly standard. In other institutions, there are frequently alternative ways to satisfy credit requirements without formal didactic courses. These include credit for preparation and passing of the PhD Qualifier Exam, thesis research, and more informal weekly sessions requiring presentations and participation. Some of these options at UPR-RP are lacking; implementing them would reduce the demand on courses and ameliorate student complaints.

Additionally, the Program should consider accepting relevant courses from other programs (e.g., Chemistry, Mathematics, Computer Science) or transfer courses from other institutions. The number of course credits is not only high for the PhD program but also for the undergraduate degree. Many universities require 120 credits for a Bachelors degree as compared to the 137 at UPR. The credit load for

the Bachelors degree impinges significantly on the PhD program as it reduces professorial time available for research and graduate training. It is not uncommon for undergraduate courses to be accepted as graduate credit if additional work is done above and beyond that required for the undergraduate student. This practice should be considered as another alternative for expanding the graduate course menu. The lack of long-range planning for course offerings is noted by both students and faculty. Given t-4he authority, selected faculty members from broadly defined areas of expertise (e.g., Ecology/Evolution and Cell/Molecular Biology), could lay out a two-year plan of course offerings.

(v) Research/ Creative Activity. Our program is still a multi-disciplinary program with many areas of expertise. Our faculty has been very productive, which is exemplified by publications in high impaet journals such as Science, PNAS, Proceedings of the Royal Society, Ecology Letters, and Genome Research . In the past five years we have seen more faculty undertaking interdisciplinary collaborations particularly with faculty in the mathematics and computer sciences Departments.

(vi) Academic Administration/ Fiscal Autonomy. The Program Director and Steering Committee members are highly qualified. Yet, unresolved problems at higher levels of University administration and inefficient centralizations are still a barrier for progress. For instanee, even though our government is actively promoting our graduate programs to recruit international students, the DEGI admissions website does not allow applicants to pay the application fee. This problem has remained for many years. The program's budget remains minimal.

(vii) Essential resources for teaching, research and creation.

(a) *Student funding:* All students are funded throughout their entire training through multiple mechanisms including TA, fellowships, grants to their PIs and grants directly to them. Fellowships from DEGI have been a great help. Even though all students are funded, the Department does not guarantee funding in the student's acceptance letter, which sometimes creates confusion and anxiety as the students do not know where the funding for their next year is going to come from. Probably the biggest challenge to recruit and maintain students in our Department are student TA salaries. Currently, salaries for master's students are $800/month and $1000 for PhD students (holding an M.S., otherwise the pay is at the B.S. Level). These salaries are very low compared to other institutions in the US and South Americea. **More over, they are below the threshold of poverty identified by the US Census Bureau in 2012 for a single person of $11,720.** In addition to these low wages, the cost of living in Puerto Rico is increasing due to the new tax policies as consequence of the government fiscal plan. There is adequate support for students to travel to scientific meetings and courses such as OTS.

(b) Library: The library has a large collection of journals and old books. Even though the library has an adequate collection of classic books, the book collection is outdated and lacks many (if not most) of the most current references. Most biologists obtain their information electronically via PDFs of journal articles; however, the online subscriptions are very limited. Our library system does not provide electronic access to the most important scientific journals in our field: Nature, Science and the Proceedings of the Royal Society. The number of electronie journal subscriptions was planned to increase following the two previous self-studies; yet, the improvement has been insignificant. Students comment on the limited availability of electronic resources and many have to rely on their colleagues in other institutions to get access to some journals.

(c) Shared laboratory research facilities: The Biology Department provides adequate shared equipment for researchers including DNA sequencing facilities, tissue culture, confocal microscopy, and microarray analysis. Much of the staff that

maintains and trains students on the use of these shared facilities is currently funded through external grants. The new molecular sciences building also has state of the art facilities and instrumentation. It remains unclear the mechanisms by which students and researchers that do not conduct research in this facility can get aecess to their resources.

(d) Field research facilities: El Verde Field station provides a great opportunity to conduct research. In the last year new laboratory facilities were constructed.

(e) Research laboratories: Recent renovations were made to some labs in the Facundo Bueso building, but much is still left to do. The Julio García Díaz building and Natural Sciences Building Phase I are in evident decay. Renovations should be budgeted for the next few years. As we know the structural problems in buildings get exponentially worse with time.

(vii) Institutional climate/ Perception of the program. Below we divide the answer to the question about the "institutional climate" in two sections. First (a) we discuss the operations of the Intercampus PhD program and the relationship with the new molecular sciences building, and second, (b) we discuss the relationship of the Department of Biology and the Graduate Program with the administrative part of the University.

(a) The intercampus program is still fulfilling an important mission, but still it can be improved to reach its maximum potential. We need to improve communications and interactions between the RCM and UPRRP faculty. It will be great if researchers from the RCM participated in the seminars at UPRRP and vice-versa. Same thing applies to activities in the new molecular science building. There is some concern among researchers in our Department about the amount of resources that are being deviated to the molecular sciences building while the JGD, Facundo Bueso and Natural Sciences Phase I buildings are in evident decay. We should take this opportunity to improve coordination between researchers in UPRRP, RCM and the molecular sciences building. An important goal for the next five years should include catalyze collaborations between RCM, the Department of Biology, researchers at the Biomolecular Sciences building and other Departments at UPRRP.

(b) We can argue that one of the most demoralizing aspects of our program is the relationship with the administrative parts of the UPRRP. Administrative processes are archaic, slow and take away valuable time of the researchers and students, which would have been better invested in creative work. Unfortunately, fixing this central issue is beyond the capacities of the Graduate Program and the Biology Department. Most of the issues rely on the inefficient centralized system that has remained relatively unchanged in the last 15 years.

Our graduate program and the Biology Department remains the blueprint for an internationally recognized graduate program. Our Department generates large amounts of external funding for equipment, renovation and graduate student support. Our students and faculty are actively publishing in international journals, as well as high impact and open access journals. After graduation, our students find positions academia, research and industry.

Five year plan:

What we have learned from comparing the 2006 audioestudio to this year's versions is that we must depend on ourselves to improve our situation. The problems described in our autoestudio, which is not very different that other departments around the United States have faced, have been compounded by the financial situation of the nation. We have derived a plan of the events and changes that need to happen in our department for us to reach our goals of entering the top 100 departments, and make us as a department self-sufficient. It is conceivable that to become a top 100 department we must first strengthen our infrastructure and then begin to grow. It begins by tightening our belt.

Dean/department head - Should be responsible for grants regarding infrastructure. They should plan to submit two of these grants a year with the help of the professors in the department. That team should rotate, always incorporating younger members of the faculty that have earned tenure. Work with DEGI to facilitate a structured postdoctoral program that facilitates the hiring and maximum payment of postdocs from grants

Professors – Need to increase the amount of grants that they submit and broaden the amount of agencies that we submit to until their portfolios are developed. Developed portfolios suggest that the professor has matured in his/her field and it is relatively easily obtain funds compared to when the professor started off. We should have mandatory grant writing for new professors that will guide them through their first steps, first grant submissions and resubmission. This in the grant class per se is taught by the new professor mentors and the class meets on average once a week for 40 weeks. These teachings include orientation with the internal submission policies and an introduction to presupuesto. New professors should also be guided in choosing which conferences to go to in their first year.

Quantity vs Quality. While many of our professors have stellar publication records, the question of if they have produced their seminal work, the work that defined them as scientist. We need to produce more grown breaking research from our ranks. This brings both grants and higher quality of students to the university.

Students – We need to recruit more competitive students, intensify their training, and increase our expectations of them. We need to evaluate our current students, to understand the profile of these students and compare our students to their application packet. From this we hope to find the characteristics that have provided us with the most successful graduate students and implement these standards into the application process. Perhaps all Master's students need to be considered potential candidates for PhD program

We need to evaluate how to increase the student stipend with the resources that we already have. Part of this process is getting quicker handle on how many students we can accept each year and which parameters are the best determinants of this number. Currently we look at students graduated as a number to replace and this number is based on 120 as a full program. We may need to consider lowering that number so that we can increase stipends. We have evaluated that possibly and it remains an attractive strategy.

Presently, we expect one paper to graduate. In other universities, request two or three. We need to move in that direction. In order for us as a department to sustain any sort of growth as a department, students need to have had accepted at least 2 preferably 3 papers. This does a few things. It shows the granting agencies production from the university. It makes these agencies more likely to continue to support funding for UPR. This teaches our students standards. The standards that are necessary to survive at any top 100 school. We don't want students to leave the university and not understand what is necessary to successfully compete as a post-doc.

Yr1

Evaluate current graduate program and students. Identify the critical elements that define how we choose our students

Develop a formula for knowing how many students we accept each year and rules for when to make exceptions.

Hire the 5 professors for the program. Make sure that they receive proper startup funds and enroll them into a grant writing program taught by the department starting at 6 months' time in the department

Dean's office apply for at least one infrastructure grant.

Yr2

Apply the principles developed in year one to the graduate program. Reduce the amount of students accepted, and accept only the best.

Institute an increase in the amount of publication expected from each student and require that

they submit a grant and a resubmission in their 2nd and 3rd years of studies
Increase the amount of stipend to the student. This should be doable because less students have been accepted
Continue the classes for grant writing and submission with the new professors
Established professors are increase grant submission output.

Yr3 & 4

Continue implementing the policies above and take meticulous statistics that will help us evaluate progress and holes in our plan

Yr5

Evaluate progress in the department. The ultimate measures are how many ranks we decreased toward to the top 100 and how close are we to self sufficiency

I- Fundamentos del Programa

A. Acreditación

Si su Programa es susceptible de recibir acreditación profesional conteste las preguntas de esta sección. Si no, pase a la sección siguiente (Trasfondo, I.B).

1. **¿Cuál es el nombre completo de la agencia acreditadora?** Si tiene más de una, menciónelas todas._____

Comienzo del proceso[2]	Última visita	Acreditación
Mes/Año	*Mes/Año*	☐ La obtuvimos de *Mes/Año* a *Mes/Año* ☐ No la obtuvimos

2. **Mencione cuáles fueron los señalamientos** (si alguno)

3. **Si el Programa se puede acreditar, pero no ha realizado las gestiones para solicitar la acreditación, explique cuáles han sido los impedimentos para tramitarla.**

[2] Para los que están gestionando su acreditación por primera vez.

B. Trasfondo

1. **Provea una descripción actual del Programa que incluya:**

   a. Cómo se articula la investigación (de acuerdo a los intereses de los profesores, a través de centros de investigación o mediante líneas de investigación establecidas).
   b. Los principios que lo rigen y sus corrientes de pensamiento principales.
   c. Su contexto, compromiso con las necesidades sociales, relación con organizaciones o centros de servicio, ya sean en PR o en el exterior.

The Graduate Program in Biology represents the integrative biology perspective. As a result, research within the Department of Biology covers much of the breadth of the field, from molecules and cells to ecosystems and landscapes, applied to basic science, and science education. Our strategies are designed to facilitate our goal to achieve creative and productive research that will contribute to the advancement of Biology. These contributions ultimately serve the society in making best informed decisions in issues related to life sciences, extending from medical to environmental issues. Our major research areas and their intersections are the following:

Research Thrust Areas

Cellular and Molecular -- The Biology Department has identified the area of Cellular/Molecular Biology as an area for future growth. Presently, researchers in this area are interested in various aspects of gene expression, including the identification and characterization of genes and their products associated with particular biological processes a well as the mechanisms that regulate mRNA and protein levels. Others use molecular biological techniques for population analyses, species characterization, and applications to microbial and ecological studies. Investigators share common equipment facilities such as cell tissue culture, microarrays, confocal microscope, gene sequencing and genomics, proteomics among others. This group has strong interactions with other scientists on the island particularly with those in the Basic Science departments at the University of Puerto Medical School and with colleagues on the mainland. Students trained in this area are well prepared to participate in the emerging biotech industry of Puerto Rico.

Behavior -- Behavioral studies are concerned with what animals do in their environment, and are therefore a link between the nervous system and the ecosystem. Some of our faculty members dissect brain mechanisms of behavior while others investigate behavioral components using traditional model organisms. Integrative studies extending from field observations to molecular mechanisms of behavior are carried out on non-traditional model organisms. Increasingly all behavioral work in the department is been examined in an evolutionary context. Behavioral researchers in our department are part of a broader network in Puerto Rico that includes scientists at the Institute of Neurobiology and Caribbean Primate Center.

Development -- Several investigators in the Department of Biology share a common interest in studying developmental processes, in particular the identification of genes and proteins that affect development. Other areas of interest include the embryogenesis and regeneration of the muscular and nervous systems, the genetics of aging and studies on differential gene expression during development.

Neuroscience -- The Biology Department has an active group of researchers with interests in the field of Neuroscience. The group encompasses all aspects of the neurosciences, from the molecular to the organismal level. Particular strengths are in areas of ion channel molecular structure-function relationships, developmental neuroscience and studies in higher brain functions such as learning and drug addiction. Investigators share common equipment facilities such as, animal care facilities, cell culture, microarrays, confocal microscope, gene sequencing among others. Similarly, they have joined efforts to successfully obtain funding from NSF and NIH. The neuroscience group in the Biology Department maintains strong interactions with other scientists on the island (particularly with those at the Institute of Neurobiology and in the basic science departments of the University of Puerto Rico Medical Sciences campus) and on the mainland

Microbiology -- The Department of Biology has a dynamic group of researchers examining the impact of soil use in the tropics on the soil microbiota and microbial quality of tropical waters, ecological and evolutionary interactions between mycorrhizal fungi and orchids, the microbial composition of specialized foregut structures in animals, and the genetic variability of gastric Helicobacter pylori strains. Collaborations with colleagues in other thrust areas, EPA scientists, and microbiologists at UPR-Mayaguez and the UPR-Medical Sciences campuses add depth and breadth to these research programs.

Ecology, Systematics and Conservation -- We have a diverse group of researchers addressing basic ecological, systematic and evolutionary issues concerning patterns and processes in aquatic, marine, and terrestrial tropical ecosystems with emphasis on the Neotropics. Ecologists work at population, community, ecosystem and landscape levels utilizing methodologies from global information systems to molecular techniques. The basic concepts are applied to create solutions for tropical forestry, conservation, restoration and bioremediation. Systematists employ traditional, phylogenetic and molecular techniques to examine taxonomic, evolutionary and phylogeographic problems in microbial, fungal, zoological and botanical systems. These studies are enhanced by close collaborations with scientists at UPR's Institute of Tropical Ecosystem Studies, the USDA's International Institute of Tropical Forestry and Wood Products Laboratory.

Evolution and Genetics -- Lying at the intersection of all biological disciplines, including all those listed above, are evolution and genetics. Our faculty members study the patterns of evolution from the perspectives of history, diversity and geography. Some study the processes of evolution from ecological, developmental and genetical viewpoints. Others examine the causes and consequences of gene expression to ask basic questions of natural systems while our molecular biologists

integrate genetics in their studies of biomedical issues. Methods of study run the gamut from morphological to molecular, using traditional to novel systems while asking basic to applied questions. Considerable cross-collaborations occur with the ecology, systematics and conservation thrust area.

Science Education -- The Department of Biology has been enthusiastic about incorporating research into education, in keeping with the mission of the Department and the University. Several professors in our Department have been investigating how to increase student's conceptual understanding of biological concepts, and how to motivate them to participate in scientific research. One example is the Seamless Biology Classroom in which conference and laboratory instruction in Zoology and Botany are fully integrated.

Future Directions

The operational model for the Department of Biology has been to maintain a balance among disciplines. To a large extent, the direction the Department takes is guided by the needs of both the undergraduate and graduate curricula yet much dialogue has centered on achieving a "critical mass" of investigators in a particular discipline. This is not just recasting the standard arguments to gain more colleagues in a particular area, but it is a real issue given the increasing need for multidisciplinary studies which necessitates collaboration among a group of researchers who have expertise in a diversity of techniques and sub-disciplines.

For the Department of Biology to remain at the vanguard of biological exploration and enhance the research status of the University, we will remain flexible in our approach to research as our strengths and weaknesses ebb and flow with the shifts in personnel that occur within the Department, Natural Sciences Faculty, and the local academic community. With constant changes in the manner by which the sciences are conducted and communicated on the global scale, the Department must be vigilant and responsive on a regular basis.

2. **Desarrolle brevemente la historia del Programa y tome en consideración los siguientes puntos:**

   a. La fecha y contexto en el que fue creado el Programa.

   b. Sus logros más sobresalientes.
   c. Los cambios significativos que pudiera haber sufrido desde su creación y a qué respondieron dichos cambios. (Por ejemplo, revisión curricular, creación o eliminación de concentraciones, ofrecimiento de PhD, etc.).
   d. Cómo ha atendido las necesidades sociales, profesionales e institucionales a las que responde el Programa.

The Intercampus Ph.D. Program in Biology was created in 1980. Original funding for the Program was obtained from the National Science Foundation by a proposal submitted from the Resource center for Science and Engineering. These funds ended in 1993 when an annual budget of$ 50,000 was then provided by the UPR administration. Funding has been decreased in recent years due to UPR budget crisis. Originally the program participants were the Department of Biology at UPR-RP and the basic science departments at the Medical School Campsu (RCM). In recent years the number of participants has increased with the inclusion of the researchers from the Institute of Tropical Ecosystem Studies. Up to present the program has graduated over 100 Ph.D.s and is the only Ph.D. in Biology in the island. Our graduates form a large fraction of professors at other island UPR campuses and in private institutions.

1. ¿Son los **requisitos de admisión** adecuados para identificar a los candidatos idóneos para el programa? ¿Conoce cuál es el valor predictivo de dichos requisitos para pronosticar la retención y el desempeño óptimo de los estudiantes en el programa?

   The selectivity of the program varies widely and depends mainly on the pool of applicants for a particular year. It appears that 9-13 students are admitted yearly from the application pool. For those students admitted, the program is highly attractive since most of them enroll. This might be dueto the fact that most students that apply to the Program are really interested in the Program, either due to interest working with a particular investigator, availability of fellowships or other funding source or because of geographical limitations that limits their studies to the island.

2. ¿Cuán laxos o exigentes son los requisitos de admisión de su Programa?

   Our experience is that our requirements are similar to other programs. For example, many of the students accepted into our program are also accepted in other Universities (This year, at Virgiuia Tech., Michigan State, Rutgers University, and both the Mayaguez Campus and the Basic ScienceCampus at the UPR-Medical School). Our program is stricter than the Basic Science Dept. at the Medical School in terms of research experience and GPA (several students that were only admitted to our MS program because of lack of competitiveness for the Ph.D. were accepted in the Ph.D. Programs at UPR-Medical Campus). In terms of GRE, and dueto the problems faced
   by Spanish-speaking students, our program is more lenient than stateside Universities. We accept student whose GRE might not be deemed competitive, but we are conscious of the fact that Spanish is not their first language and they are handicapped when taking the GRE.

3. ¿Es la preparación de los estudiantes que cumplen con estos requisitos de admisión adecuada para cumplir con el nivel de exigencia del Programa?

   Students that are accepted into the Program have shown they have the potential to acquire the Profile presented previously within a few years of participating in the Program activities.

4. ¿Requiere el Programa poseer un bachillerato en la misma disciplina de estudios del Programa para cursar estudios graduados?

   X Sí. ¿Parten los cursos iniciales de la premisa de que se necesita poseer un bachillerato para tomarlos o, por el contrario, redundan en conocimientos que ya se deberían haber adquirido?

   No. ¿Se encuentra el currículo sobrecargado de cursos y/o **requisitos de graduación** para compensar la falta de un bachillerato en la disciplina?

5. ¿Existe algún curso (e. g. estadística o curso especializado) que el estudiante deba poseer como **pre-requisito** para poder cursar estudios graduados en su Programa?

   X Sí. ¿Siguen siendo necesarios estos **pre-requisitos**? ☐ No

   Calculs, Physics, Chemistry, Organic Chemistry, Statistics

C. Requisitos de Graduación

Marque con una (X) todos los requisitos de graduación que exija su Programa.

Tabla 2.4.E

Requisitos de Graduación	Programa bajo evaluación
Indice Académico Mínimo	3.0
Créditos requeridos	60
Examen de grado	X
Examen de Candidatura	X
Proyecto de Investigación	X
Tesis/Disertación	X
Práctica	N/A
Residencia[14]	N/A
Internado	N/A
Otros	N/A

Visión, Misión, Metas y Objetivos del Programa

Llene la tabla con los fundamentos filosóficos (**Visión**[3] y **Misión**[4]) y programáticos (**Metas**[5] y **Objetivos**[6]) que el Programa posee. Los espacios provistos en la tabla sugieren la secuencia de la información requerida. De la visión, se desprende la misión, y de ésta última, las metas y los objetivos. Ajuste la tabla para adaptarla a la cantidad de metas y objetivos que su Programa posea. No intente arreglar o desarrollar los fundamentos durante el proceso de evaluación; de estos requerir algún ajuste, el ejercicio de revisión deberá formar parte del Plan de Desarrollo.

Tabla 1.1.C: Visión, Misión, Metas y Objetivos del Programa
(Ejemplo provisto en el Apéndice 1)

Visión[3]: N/A	
Misión[4]: To prepare Masters and Doctoral students in specialized biological areas (primarily in the Cell and Molecular Biology, Ecology, Systematics, Evolution, Genetics, Neurobiology and Behavior, Microbiology and Developmental Biology sciences) with a double focus in fundamental and applied sciences, to solve immediate and emerging biological problems, particularly, but not exclusively, of the tropics, using interdisciplinary approaches.	
Metas[5]	**Objetivos**[6]
☐ To offer a sound and innovative curriculum in the Biological sciences, in both fundamental (i.e., knowledge generation) and applied {i.e., problems solving) fields that facilitates students' development of a firm theoretical basis and practical research and professional capabilities).	☐ To offer specialized courses in Cell and Molecular Biology, Ecology, Systematics, Evolution, Genetics, Neurobiology and Behavior, Microbiology and Developmental Biology.
	☐ To maintain a novel course offering by appointing curriculum revisions at regular intervals, by periodically updating available courses and by creating new courses as new issues arise and shifts in disciplines take QJace. To advice and collaborate with the departmental personnel committee in the development of a faculty recruitment plan. To advice and collaborate with the departmental personnel committee in the creation of a plan for professional development to keep our faculty abreast of the latest innovations in the areas of Cell and Molecular Biology, Ecology, Systematics, Evolution, Genetics, Neurobiology and Behavior, Microbiology and Developmental Biology. To evaluate faculty performance periodically so that a high standard is maintained in terms of research productivity, student mentorship and teaching accomplishments.
☐ To create and maintain a core faculty of participants representing a broad spectrum of disciplines.	☐ To advice and collaborate with the departmental chair and departmental committees in decision pertaining to space allocations and use, recruitment and selection of administrative personnel, and faculty course load and release time.
☐ To provide and maintain an appropriate physical infrastructure and administrative organization necessary for all academic, administrative and research activities of the program.	☐ To develop and sustain firm alliances with the other national and international institutions and government agencies.
	☐ To support student participation at national and international professional and scientific meetings as well as in courses offered by OTS and other organizations.

3 La visión es una imagen clara o planteamiento escrito de cómo se espera que luzca el programa en un punto futuro en el tiempo. Esta imagen dota al programa de un sentido de dirección; precisa hacia dónde se encamina en términos de planificación estratégica.

4 La misión es una afirmación que presenta cuál es la función del programa, su razón de ser, su enfoque académico (investigativo y/o profesional), sus áreas de especialización y aquella particularidad que hace al programa único. Esta afirmación sienta las bases del diseño curricular, estableciendo las líneas de investigación y las áreas de servicio. Define la relación de la capacitación de estudiantes con la producción de conocimiento y el servicio a la comunidad. Además, sugiere la estructura y orienta el funcionamiento del programa.

5 Las metas del programa son enunciados que exponen en términos amplios las responsabilidades que tiene el programa para lograr el desempeño de su misión, su función principal: capacitar estudiantes. Las metas establecen los propósitos de los cuales se desprenden los componentes programáticos y gerenciales del programa. Estas contienen de forma implícita o explícita un indicador de logro. Cada meta se operacionaliza mediante una cantidad de objetivos.

6 Los objetivos del programa son enunciados operacionales que pormenorizan las responsabilidades mencionadas en las metas del programa. Los mismos proveen criterios e información medible (cualitativa y/o cuantitativa) mediante la cual se puede planificar, determinar el progreso y facilitar la futura evaluación del programa. De los objetivos del programa se derivan los indicadores de logro, parámetros usualmente cuantitativos contra los cuales se mide la ejecutoria de los distintos componentes del programa.

1. ¿Cómo responde el Perfil de los Profesores a las necesidades y aspiraciones del Programa en términos de especialización, internacionalización y desarrollo de la labor investigativa?

   No, the Graduate Biology Program at UPR-RP has severa! sub-specialties within the Program. Among these are: Ecology, Molecular and Cellular Biology, Evolution and Genetics and Neurobiology.
   At the moment, the Program lacks a critica! mass of investigators particularly in the area of Molecular and Cellular Biology. Although it has been established as a top priority in the Strategic Plan of the Graduate Program, administrative and infrastruéture problems have delayed the recruitment of additional researchers in this area.

1. ¿Qué incentivos provistos por el Programa, la Facultad o el Recinto usan los profesores y estudiantes del Programa para la investigación?

   FIPI (Intramural funds from the Dean of Graduate Studies and research) Release time, Graduate student fellowships and RAs, teaching assistantships, summer salaries, faculty promotion.

2. ¿Considera que la cantidad y tipo de incentivo que el Programa ofrece a los profesores es suficiente para fomentar la investigación en su Programa? S☐ ☒No (Por favor explique)

   There are opportunities to obtain intramural funding (e.g., FIPI) for preliminary data collection, which can ultimately help research faculty securing larger extramural grants. But these are mostly limited to junior professors and the funds provided are low ($15,000 for two years). Also, there are no salary raises associated with productivity as implemented by research universities in the mainland.

3. ¿Considera que la cantidad de ayudantías de cátedra o investigación es suficiente para satisfacer con las necesidades del Programa? S☐ X ☒No (Por favor explique)

   This type of assistantship is the only way to fund international students, thus limiting the number of international students we can accept.

4. ¿Es adecuado el apoyo institucional brindado mediante ayudantías, fondos para viajes, etc. para el desarrollo de la investigación y labor creativa en el Programa?

   Need a better commitment from higher administration. Better start-up package, improve infrastructure and solve infrastructure problems, reduce teachin load, mentorin program.

5. ¿Qué gestiones realiza el Programa para allegar más fondos externos para sus investigaciones?

   Program has little inherence into the funding situation. This is mostly managed by individual investigators or by higher university administrator (Dean, Research Vicepresident)

1. ¿Qué reflejan los datos de la tabla anterior en cuanto a la investigación estudiantil a lo largo de estos años?

   Program promotes student travel and presentation of research. Most funds of the Program are used toward these goals. In addition, most students have travel funds from their fellowships or obtain funding for travel to meetings from various deanships or other programs.

a. Análisis

Responda las siguientes preguntas tomando como referencia la información provista en la Tabla 1.1.C.

Visión

1. ¿Posee el programa una **Visión**? ☐ Sí (Pase a la próxima pregunta) ☐ No (Pase a las preguntas sobre la Misión.)

   We are creating a vision

2. ¿Define la **Visión** hacia dónde se encamina el programa en términos de planificación estratégica? ¿Responde al plan estratégico del Recinto de Río Piedras, Visión Universidad 2016?

To be in the Forefront of biology education. We have set a goal to be in the top 100 of biology departments

3. ¿Es su formato apropiado? ¿Está redactada como una afirmación o un enunciado, de forma precisa y concisa? ¿Está su conjugación en presente en tercera persona singular?

The vision of the Department of Biology Graduate Program is to be in the forefront of biology education. The goal of the program is to be in the top 100 Biology Graduate Programs.

Misión

1. ¿En qué medida la **Misión** menciona la función del programa, su razón de ser, su enfoque académico (investigativo y/o profesional), sus áreas de especialización y/o aquella particularidad que hace al programa único? (Ver nota al calce 4)

   The mission establishes in clear manner the research foci and program's goals. It lists the aspects that make the program unique (tropical research).
   The Mission is:
   To prepare Masters and Doctoral students a sound and innovative curriculum . The curriculum is to be specialized in the biological areas in both the cell and fundamental sciences (i.e., Molecular Biology, Ecology, knowledge generation) and Systematics, Evolution, applied {i.e., problems Genetics, Neurobiology and solving) fields that Behavior, Microbiology and facilitates students' Developmental Biology development of a firm sciences) with a double focus theoretic~) basis and in fundamental and applied practical research and sciences, to solve immediate and emerging biological professional capabilities. problems, particularly, but not exclusively, of the tropics, using interdisciplinary

2. ¿Es su formato apropiado? ¿Está redactada a manera de párrafo, de forma precisa, concisa y asequible?

   The mission is written concisely in one paragraph.

3. ¿Cómo la **Misión** del Programa responde en el presente a la Misión del Recinto de Río Piedras?

The program mission is in synch with the UPR mission of becoming a well recognized center for Graduate Studies and Research.

4. ¿Sigue teniendo vigencia[7] la **Misión** de su Programa? ☐ Sí ☐ No
Explique por qué. Si contestó NO, indique además qué deberá hacer el Programa para actualizarla.

The mision of the program has not changed.

[7] La vigencia de la misión se relaciona con el desarrollo de la profesión, los requisitos actuales para ejercerla, el índice de obsolescencia del campo, el mercado de empleo y el contexto social dentro del cual se enmarca el Programa.

Metas del Programa

1. ¿En qué medida las **Metas del Programa** exponen en términos amplios las responsabilidades principales del Programa, la capacitación/aprendizaje de los estudiantes, el reclutamiento y desarrollo de los docentes, la investigación y producción de nuevo conocimiento, la infraestructura, la gerencia, el servicio y las relaciones con la comunidad?

   The goals of our program define our responsibilities, and principals. As such, student training, faculty recruitment, research productivity, infrastructure implementation, and outreach constitute the cornerstone of our program. This is best demonstrated by the broad range and number of publications from our faculty.

2. ¿Cuenta cada meta con un **indicador de logro** contra el cual sea posible evidenciar posteriormente en qué medida se ha alcanzado la misma?

   Yes. Achievement indicators for goals and objectives include annual faculty evaluations, personalized meetings with the personnel committee, and (most recently) the establishment mentoring programs for junior faculty.

Objetivos del Programa

1. ¿En qué medida los **Objetivos del Programa** enuncian operacionalmente las acciones y actividades concretas que se deben llevar a cabo para cumplir las responsabilidades mencionadas en las **Metas del Programa**?

   The objectives are well outlined and aligned with the program's goals.

2. ¿Se puede deducir de cada objetivo cuál es el **indicador de logro**, es decir, proveen los objetivos información medible (cualitativa y/o cuantitativa) mediante la cual se pudiera facilitar la futura evaluación de los aspectos operacionales del programa?

   See point 2 above.

Preguntas Generales

1. ¿Reflejan los fundamentos (Visión, Misión, Metas y Objetivos del Programa) la situación, los intereses y la complejidad del Programa?

   Yes.

2. ¿Le proveen un sentido de dirección claro y adecuado a sus circunstancias que facilita la implantación y la evaluación de resultados?

   Yes.

D. Perfiles Estudiantiles y Objetivos del Aprendizaje

Llene la tabla con la información que posea y alinee el **Perfil del Egresado**[10], los **Objetivos del Aprendizaje**[9] y el **Perfil del Estudiante de Nuevo Ingreso**[8]. Provea el año de aprobación para cada uno en el encabezado de cada columna. Si tienen objetivos diferenciados por cada especialidad deben incluirlos. De recibir acreditación profesional, alinee también los estándares de la acreditadora (e. g. "Estándar D.1.a.") según concierna. El propósito de esta tabla es demostrar la correspondencia entre las expectativas de desempeño establecidas para los estudiantes, antes, durante y después de graduarse y crear conciencia de la necesidad de estos fundamentos. Vea un ejemplo de esta tabla cumplimentada en el Apéndice 2.

Tabla 1.2.D – Alineamiento de Perfiles Estudiantiles y Objetivos del Aprendizaje (Ejemplo provisto en el Apéndice 1)

Estándar de Acreditadora (si aplica)	**Perfil del Estudiante de Nuevo Ingreso**[8] (Año de aprobación)	**Objetivos del Aprendizaje**[9] (Año de aprobación)	**Perfil del Egresado**[10] (Año de aprobación)
2006	Have the capacity of critical analysis Dominate spanish and inglish Capcity for research GPA 3.0	1.1 Demostrate depth of understanding of content knowledge in one of the program's specially áreas and broad knowledge in the disciplines that are related to, or supportive of, thesis research. 1.2 Demostrate appropiate information literacy skills to research, analyze, synthesize and effectively utilize scientific literatura to solve biological and/or interdisciplinary problems. 1.3 Identify research questions and establish the conceptual and logistical bases needed to conduct studies that lead to solutions in student's specialty área (namely, Cell and Molecular Biology, Ecology, Systematics, Evolution, Genetics, Neurobiology and Behavior, Microbiology or Developmental Biology.) 1.4 Identify and apply the proper norms for occupational safety, environmental protection and ethical issues.	-Identify fundamental research questions in their área of expertise in the Biological Sciences such as Cell and Molecular Biology, Ecology, Systematics, Evolution, Genetics, Neurobiology and Behavior, Microbiology and Developmental Biology, and establish the conceptual and logistical bases needed to conduct studies that lead to solutions.
		2.1 Demonstrate good interpersonal skills and ability to work in teams with people from different cultural backgrounds.	-Be part of an interdisciplinary team involved in the analysis and solutions of applied and basic research problems.

		3.1 Effectively communicate Biology concepts and use different teaching techniques to provide instruction to varied undergraduate level audiences.	-Teach courses in various áreas of Biology at the undergraduate level.
		4.1 Communicate effectively his/her experimental results in conferences, lectures, peer reviewed journals, books and other venues in both English and Spanish.	-Effectively communicate Biology concepts and their experimental results in conferences, lectures, peer reviewed journals, books and other venues in both English and Spanish.
		5.1Demonstrate capacity to perform professional work for the government or industry in his/her área of expertise. 5.2 Demostrate interest in community service by participating in activities related to his/her área of expertise and by proposing research topics intended at solving social problems.	-Perform profesional work for the govenment or industy in their área of expertise

In addition, Ph. D. students completing their degree in the Biology Program will be able to:			
		Design research Project: (a) Design a research Project: 6.1 Define research Project plan with a realistic timeline and milestones. 6.2 Develop a thesis statement and formulate questions base don the information wanted. 6.3 Identify/design and justify appropriate investigative methods to answer every research question. (b) Develop research Project: 6.4 Determine the nature and extent of information needed. 6.5 Effectively gather required data to answer research questions. 6.6 Understand relevant health and safety issues and demonstrate responsable working practices. 6.7 Keep good timing by consistently reaching milestones according to the established plan. 6.8 Demonstrate ability to summarize, document, report and refelect on progress. 6.9 apply research findings effectively to accoumplish a specific purpose. (c) Analyze and evaluate research projects in his/her área of expertise: 6.10 Demonstrate ability to critically analyze information and its sources. 6.11 Demonstrate ability to evaluate one's findings and those of others. 6.12 Display original, independent and critical thinking, and the ability to develop theoretical concepts. 6.13 Demonstrate awareness of issues relating to the rights of other researchers, of research subjects, and of others who may be affected by the research, e. g. confidentiality, ethical issues, attribution, copyright, malpractice, and ownership of data.	

		6.14 Determine the relevance and impact of new knowledge in the field.	
		7.1 Develop independent and creative scholarly research that makes a substantial contribution to our knowledge about an important question in Biology. 7.2 Demostrate awareness of available tolos and fiscal limitations for conducting specific scientific endeavors. 7.3 Demonstrate grantsmanship skills for acquiring internal and/or external funds for conducting research. 7.4 Display adequate Project management skills for the different settings (academic, govenmental, or industrial).	-Establish a research program in an academic, government or industrial position.
		8.1 Effectively communicate Biology concepts and use different teaching techniques to provide instruction to varied graduate level audiences.	-Teach graduate courses in his/her area of expertise.

		9.1 Become an active member of scientific societies and attend annual events. 9.2 Attend and offer panels in seminar series and conferences. 9.3 Attend workshops related to his/her area of specialization.	-Participate in high level expertise committees in scientific societies and consultant bodies.

8 El perfil del estudiante de nuevo ingreso es una descripción de las competencias que los estudiantes deber poseer para entrar al programa. Estas competencias definen el punto de partida o baseline del aprendizaje del estudiante. Usualmente los programas sólo poseen una lista de los requisitos de nuevo ingreso, no un perfil como tal. Si el Programa no posee este perfil, deje esta columna en blanco.

9 Los objetivos del aprendizaje definen operacionalmente las expectativas de aprendizaje para los estudiantes. Son enunciados o descripciones operacionales generales que definen a grandes rasgos las expectativas que establece el programa acerca del aprendizaje de los estudiantes. Incluyen aquellas competencias que los estudiantes deberán demostrar durante su transcurso por el programa, y mediante las cuales el programa podrá inferir si éstos se encuentran o no preparados para el ejercicio de su carrera. Los objetivos del aprendizaje sirven de guías concretas para evaluar la efectividad y eficiencia del programa. Se redactan utilizando términos de conducta observable, comenzando las oraciones con verbos de acción en infinitivo. Deben de ser cónsonos con el perfil del egresado.

10 El perfil del egresado constituye una descripción del egresado del programa de acuerdo a las competencias que éste habrá de exhibir al desempeñar sus labores, con un grado de eficiencia razonable, durante el ejercicio inicial de su carrera. Es una especie de arquetipo del profesional básico.

a. <u>Análisis</u>

Responda las siguientes preguntas tomando como referencia la información provista en la Tabla 1.1.D.

Perfil del Estudiante de Nuevo Ingreso

1. ¿Cuenta el programa con un **Perfil de Nuevo Ingreso** que detalle las competencias que el estudiante debe poseer como punto de partida en el programa? o ¿sólo contiene una lista de requisitos de admisión? en este u otro caso, cuando espera el Programa contar con un perfil?
   The new student has to have demonstrated a strong background in the basic sciences has evidenced by the class that they have taken and how they performed. One of the largest needs of the new student is hunger to gain new knowledge. More and more we are asking students to have volunteered in a laboraotory if not have had laboratory work experience, outside of the classroom

Perfil del Egresado

1. Hay correspondencia entre el **Perfil del Egresado** y las necesidades y oportunidades del mercado laboral o académico. Justifique su planteamiento.
   Yes, the profile of the graduate is driven by the needs of the labor forcé both here and abroad.

2. ¿En qué medida el **Perfil del Egresado** recoge las competencias y labores que el egresado deberá evidenciar durante <u>la etapa inicial de su carrera</u>?
   They need to be able to créate new knowledge which includes the skill set of asking good question, doing research, and answering the question. The must also be able to communicate their ideas and findings

3. ¿Está el **nivel** de exigencia del **Perfil del Egresado** a tono con el grado al que se aspira (e.g. Maestría o Doctorado)?

   Doctoral

4. ¿Está el **Perfil del Egresado** redactado a manera de un listado de alrededor de diez enunciados comenzando con un verbo en infinitivo (no necesariamente verbo de acción)? Si no es así ¿Cuándo espera el programa contar con este perfil en ese formato?

1. (a) Design, (b) develop (c) analyze (a) Design a research project: and evaluate, research projects their area of expertise. 6.1. Define a research project plan with a realistic timeline and milestones.
2. Develop a thesis statement and formulate questions based on the information wanted.
3. Identify/design and justify apprqpriate investigative methods to answer every research question.
Develop a research project:
4. Determine the nature and extent of information needed.
5. Effectively gather required data to answer research questions.
6. Understand relevant health and safety issues and demonstrate responsible working practices.
7. Keep good timing by consistently reaching milestones according to the established plan.

8. Demonstrate ability to summarize, docnment, report and reflect on progress.
9. Apply research findings effectively to accomplish a specific purpose.
Analyze and evaluate research projects in his/her area of expertise:
10. Demonstrate ability to critically analyze information and its sources.

Objetivos del Aprendizaje

1. ¿En qué medida los **Objetivos del Aprendizaje** plantean las competencias que los estudiantes deberán demostrar **durante su transcurso por el programa**?

   Students must demonstrate absolute proficiency by presenting and submitting work for publishing.

2. ¿Son medibles? ¿Están definidos operacionalmente, en términos conductuales?

   They are measurable

3. ¿Es su formato apropiado? ¿Comienzan con un verbo de acción en infinitivo? ¿Se redactan según lo que el estudiante (no el profesor) debe ser capaz de hacer? ¿Están ordenados de las competencias más sencillas a las más complejas?

   They are ordered and drafted correctly. They start with infinitive of the action verb and are arranged from the simplest to the most complex

4. ¿Están los **Objetivos del Aprendizaje** alineados, es decir, armonizan con el **Perfil del Egresado**? ¿Podría el programa inferir entonces, a través de dichos Objetivos, que los estudiantes se encontrarán preparados para el ejercicio de su carrera?

   The objectives are aligned with the profle of the graduate

5. Si han habido o se prevén cambios o innovaciones significativas en las áreas de estudio del Programa, ¿se reflejan estos cambios en el **Perfil del Estudiante de Nuevo Ingreso**, en los **Objetivos del Aprendizaje** y en el **Perfil del Egresado**?

   No major changes are expected

Preguntas Generales

1. ¿Hasta qué punto se evidencia la relación entre los **Perfiles de Ingreso** y de **Egreso** del estudiante y los **Objetivos del Aprendizaje**? ¿Se advierten lagunas entre unos y otros que pudieran estar teniendo un efecto negativo sobre el aprendizaje?

   The differences between the two profiles represent students that have arrived with Little or basic knowledge in the sciences to those who have grown to understand complicated concepts and have the ability to add new knowledge to these concepts. The releationship between the two groups is growth.

2. ¿Qué estrategias e instrumentos ha utilizado el Programa para medir el aprendizaje estudiantil y cuáles han sido sus resultados?

We use rubics at thesis and dissertation defenses to gage the progress of our students

II- Currículo y Experiencias Co-Curriculares

A. Programa de Estudios

Provea el programa de estudios y la secuencia curricular tal y como figuran aprobados. Adapte los renglones según la estructura de su currículo. El programa de estudio concreta la secuencia de pasos a seguir para adquirir los conocimientos y las destrezas que llevarán al estudiante a obtener su grado; demuestra las expectativas en términos de requisitos, secuencia y tiempo estimado para su cumplimiento. El análisis del programa de estudios comparado al tiempo que verdaderamente toma a los estudiantes completar sus requisitos, le permitirá hacer una evaluación más realista del diseño originalmente establecido vis-à-vis el funcionamiento actual del programa.

Tabla 2.1.A. MAESTRIA

Maestría en Biología

Tabla A Secuencia Curricular

Nombre del Programa	Biología
Concentración	
Áreas de Énfasis (cuando aplique)	

***Incluir cursos de educación general, medulares, de concentración y electivas necesarias para recibir el grado**

PRIMER AÑO					
Primer Semestre			**Segundo Semestre**		
Crs	**Cursos Requeridos***	**Prerrequisitos**	**Crs**	**Cursos Requeridos***	**Prerrequisitos**
1	BIOL 6001 M Colloquium	None	1	BIOL 6002 M Colloquium	None
2	BIOL 6910 M Investigación Supervisada	None	4	BIOL 6999 M Tópicos Especiales de Biología Moderna	None
6	Electivas		3	Electivas	
9	Total créditos		8	Total créditos	

SEGUNDO AÑO					
Primer Semestre			**Segundo Semestre**		
Crs	**Cursos Requeridos***	**Prerrequisitos**	**Crs**	**Cursos Requeridos***	**Prerrequisitos**
4	Electiva		5	BIOL 6997 M Investigación para Tesis de Maestría	BIOL 6910
1	BIOL 6997 M Investigación para Tesis de Maestría	BIOL 6910			
3	BIOI 6991 M Investigación Independiente				
8	Total créditos		5	Total créditos	

M=medular

UNIVERSIDAD DE PUERTO RICO
PROGRAMA GRADUADO DE BIOLOGIA
RECINTO DE RIO PIEDRAS

LISTA DE CURSOS ELECTIVAS- BIOLOGIA (BIOL) MAESTRIA Y DOCTORADO

EL COMITÉ GRADUADO PODRÁ ACEPTAR CURSOS DE OTROS DEPARTAMENTOS Y FACULTADES EN EL RECINTO DE RÍO PIEDRAS O DE CIENCIAS MÉDICAS

5025 Ecofisiología Animal. Tres (3) créditos.
5026 Histología. Cuatro (4) créditos..
5027 Fisiología Vegetal. Tres (3) créditos.
5029 Recursos del Bosque Tropical. Cuatro (4) créditos
5037 Historia Natural de Puerto Rico. Tres (3) créditos.
5495 Taxonomía de Plantas Floríferas. Tres (3) créditos
5535 Parasitología Contemporánea. Tres (3) créditos.
5538 Limnología. Tres (3) créditos
5546 Bioquímica de Acidos Nucleicos. Tres (3) créditos.
5548 Neurobiología. Tres (3) créditos
5565Biología de los Hongos. Tres (3) créditos.
5580 Entomología. Tres (3) créditos
5600 Biología Marina. Tres (3) créditos.
6001 Colloquium. Un (1) crédito.
6002 Colloquium. Un (1) crédito
6007 Procesos de Reproducción en Plantas. Tres (3) créditos
6010 Microbiomaa
6035 Neurofarmacología. Tres (3) créditos.
6040 Biogeografía. Tres (3) créditos.
6115 Comunidades y Ecosistem
6117 Ecología Fisológica de Plantas. Tres (3) créditos
6119 Comunidades y Ecosistemas. Tres (3) créditos.
6120 5istemática Filogenética
6125 Ecología Microbiana. Tres (3) créditos.
6126 Ecología Poblacional. Tres (3) créditos.
6127Ecología Gran Escala. Cuatro (4) créditos.
6145 Bioconservación. Tres (3) créditos
6190 Ecología Avanzada
6220 Morfogénesis Vegetal. Tres (3) créditos.
6222 Morfología de Plantas Vasculares. Tres (3) créditos.
6230 Aspectos Moleculares del Desarrollo. Tres (3) créditos
6310 Análisis Genético. Tres (3) créditos.
6367 Genética Ecológica. Tres (3) créditos
6410 Biología de Invertebrados Terrestres y de Agua Dulce de Puerto Rico. Tres (3) créditos
6500 Virología General. Tres (3) créditos.
6501 6501/6502 Biología Molecular y Celular I y II Tres (3) créditos.

6515 Fisiología Celular. Tres (3) créditos.
6526 Biología de las Membranas. Tres (3) créditos.
6537 Problemas Especiales de Biología Celular y Molecular. Tres (3) créditos
6560 Inmunología. Tres (3) créditos.
6586 Técnicas de Cultivo Celular y su Aplicación a la Investigación Biológica. Tres (3) créditos
6597 Hormonas y Ambiente. Tres (3) créditos.
6600 Ecología Marina. Tres (3) créditos
6636 Invertebrados Marinos. Tres (3) créditos.
6685 La Aplicación de la Computadora en la Biología. Tres (3) créditos
6745 Biometría. Tres (3) créditos.
6800 Comportamiento Animal. Tres (3) créditos
6855 Problemas en Biología.
6910Investigación Supervisada. Dos (2) créditos. .
6991Investigacion Independiente en Biología. De uno (1) a tres (3) créditos.
6997Investigación para Tesis de Maestría. De uno (1) a seis (6) créditos. Requisito: Permiso del consejero.
6995 Ecología Tropical. Tres (3) créditos,
6996 Seminario de Zoología. De uno (1) a tres (3) créditos.
6998 Continuación de Tesis para Investigación. Sin crédito.
6999 Tópicos Especiales de Biología Moderna. De dos (2) a cuatro (4) créditos.
8210Seminario de Análisis del Desarrollo. Dos (2) créditos.
8340 Seminario de Genética. Dos (2) créditos.
8368 Seminario de Biología Poblacional. Tres (3) créditos.
8505 Seminario de Biotecnología. Tres (3) créditos.
8516 Seminario de Fisiología de Plantas. Dos (2) créditos
8527 Seminario de Neurofisiología. Dos (2) créditos.
8538 Seminario de Bioquímica. Tres (3) créditos.
8991 Investigación Avanzada. De uno (1) a tres (3) créditos.
8898Continuación para Investigación Doctoral. Sin crédito. (Antes 8896)
8997 Investigación para la Disertación Doctoral. De uno (1) a seis (6) créditos

Doctorado en Biología

Tabla A Secuencia Curricular

Nombre del Programa	Biología
Concentración	
Áreas de Énfasis (cuando aplique)	

***Incluir cursos de educación general, medulares, de concentración y electivas necesarias para recibir el grado**

PRIMER AÑO					
Primer Semestre			**Segundo Semestre**		
Crs	**Cursos Requeridos***	**Prerrequisitos**	**Crs**	**Cursos Requeridos***	**Prerrequisitos**
1	BIOL 6001 [M] Colloquium	None	1	BIOL 6002 [M] Colloquium	None
2	BIOL 6910 [M] Investigación Supervisada	None	4	BIOL 6999 [M] Tópicos Especiales de Biología Moderna	None
6	Electivas		3	Electivas	
			2	BIOL 6910 [M] Investigación Supervisada	None
9	Total créditos		10	Total créditos	

SEGUNDO AÑO					
Primer Semestre			**Segundo Semestre**		
Crs	**Cursos Requeridos***	**Prerrequisitos**	**Crs**	**Cursos Requeridos***	**Prerrequisitos**
7	Electiva	None	6	Electivas	
2	BIOL 6991 [M]	None	3	BIOL 8995 [M] Seminario doctoral	BIOL 6910
9	Total créditos		9	Total créditos	

TERCER AÑO					
Primer Semestre			**Segundo Semestre**		
Crs	**Cursos Requeridos***	**Prerrequisitos**	**Crs**	**Cursos Requeridos***	**Prerrequisitos**
3	Electivas		5	BIOL 8997 [M]	
1	BIOL 8997 [M]				
4	Total de créditos		5	Total de créditos	

CUARTO AÑO					
Primer Semestre			**Segundo Semestre**		
Crs	**Cursos Requeridos***	**Prerrequisitos**	**Crs**	**Cursos Requeridos***	**Prerrequisitos**
6	BIOL 8997 [M]		0	BIOL 8997 [M]	
6	Total de créditos		0	Total de créditos	

B. Cursos y Experiencias de Aprendizaje (Matriz de Diseño Curricular)

Los objetivos del aprendizaje del programa (objetivos generales) se descomponen en los objetivos de los cursos y otras experiencias curriculares (objetivos específicos). Llene la columna de "Objetivos del Aprendizaje" con los objetivos generales del aprendizaje y ordénelos de los más sencillos a los más complejos de acuerdo a la Taxonomía de Objetivos de Bloom[11]. Marque los objetivos que impliquen destrezas de investigación o de pensamiento crítico en las columnas de la extrema izquierda. Escriba en las columnas de Objetivos Específicos los cursos y/o experiencias de su programa, de izquierda a derecha en el orden de la secuencia curricular. Por último, marque los cursos y experiencias según como sus prontuarios respondan a los objetivos generales del aprendizaje. Esto le permitirá hacer un análisis visual del alineamiento curricular, percibir el orden en que los objetivos se dispusieron en el currículo y detectar lagunas en el diseño.

Tabla 2.2.B..

Ivestig.	P. Crítico	Objetivos del Aprendizaje (Objetivos Generales)	BIOL 6001 Coloquio I	BIOL 6002 Coloquio II	BIOL 6999 Tópicos Especiales en Biología	BIOL 6991, 6997-8 Investigation	BIOL 8995 Seminario Doctoral
X	☐	Identify fundamental research questions in their area of expertise in the Biological Sciences such as Cell and Molecular Biology, Ecology, Systematics, Evolution, Genetics, Neurobiology and Behavior, Microbiology and Developmental Biology, and establish the conceptual and logistical bases needed to conduct studies that lead to solutions.	X	X	X	X	
X	X	Be part of an interdisciplinary team involved in the analysis and solutions applied and basic research problems	X	X	X	X	
☐	X	Teach courses in various areas of Biology at the undergraduate level					
☐	☐	Effectively communicate Biology concepts and their experimental results in conferences, lectures, peer reviewed journals, books and other venues in both English and Spanish.				X	X
☐	☐	Perfom professional work for the government or industry in their area of expertise.				X	
☐	X	Design, Develop, analyze and evaluate research projects in their area of expertise.				X	X

[11] La Taxonomía de Objetivos Educativos de Benjamín Bloom, organiza los objetivos de aprendizaje en tres dominios: el cognitivo el afectivo y el psicomotor. El dominio cognitivo es el más conocido. El mismo se subdivide en seis niveles jerárquicos de complejidad. Los niveles iniciales solían ser: conocimiento, comprensión y aplicación. Los niveles avanzados: análisis, síntesis y evaluación. Para una explicación breve de la taxonomía original y la revisada, vea el Apéndice 3. En este ejercicio se utilizará la taxonomía revisada.

C. Contenido y Revisión Curricular

1. ¿Posee el **contenido**[12] curricular actual una credibilidad sólida, según lo demuestra la práctica, la enseñanza, el estudio, y la aplicación de los resultados de las investigaciones y/o los conceptos teóricos de dicho contenido conducidos por las comunidades científicas de la disciplina?

   We have a solid and credible program that is supported with numerous publications. The prinicples taught in our courses are reinforced in our rotations of investigation and is subsequently demonstrated in both out presentations at national and international meetings as well as publications. We have just updated the current curriculum to réflex the changes by the certification 38. The changes are attached to this document for approval.

2. ¿Ha sido este **contenido** curricular revisado por pares y/o publicado en lugares que no están dedicados a la promoción del programa o la promoción individual de sus docentes o investigadores?

   Yes

3. ¿Refleja dicho **contenido** los delineamientos y estándares éticos, legales y regulativos que impactan el campo de estudios en cuestión, incluyendo los criterios de las agencias acreditadoras?

   yes

4. ¿Cuándo fue la última revisión curricular del Programa? Mes/Año

   March 2015 for the MS
   2013 for the PhD progam

5. ¿De qué forma la última revisión curricular (si alguna) contribuyó a atemperar la oferta curricular a los cambios en la disciplina?

   The last revision increases production of our students while decreasing the time a student needs to complete their degree. The changes include removal of the MS exam, and acceptance of of credits from covalidated courses

6. ¿Ha habido o se prevén cambios o innovaciones significativas en las áreas de estudio del Programa desde la última revisión curricular? Si ha habido, ¿se reflejan de alguna forma estos cambios en el **programa de estudios** (Tabla 2.1.A.) o en la **oferta académica** (Sección II.F) del Programa?

   In the last revisión, there were no major changes made in the curriculum. The majority of the changes were made to decrease the time for students to finish their degree. We did however change the requirment from submission of a paper to publication for the PhD program. However those changes were too recent to see impact.

7. ¿Existen áreas de estudio importantes que el Programa desee atender? ¿Pueden estas áreas de estudio ser atendidas mediante cambios mínimos al **currículo**, o ameritan que se lleve a cabo una revisión curricular completa? De ser así, ¿qué medidas debe tomar el Programa para renovar su **currículo**?

   There are no áreas that need changes for now. We have just updated the curriculum and are in the begining stages of evaluating the PhD program and waiting to implement the changes in the masters program

[12] El contenido se refiere al saber que comprende el currículo.

D. Requisitos de Admisión-

Marque con una (X) los requisitos que exigen su Programa

Tabla 2.3.D.

Requisitos de Admisión	Programa bajo evaluación
Índice académico (Indique puntuación)	3.0
Examen de ingreso	N/A
PAEG	N/A
GRE	X
Ensayo de admisión	X
Entrevista	A veces
Recomendaciones	X
Experiencia profesional	N/A
Experiencia en investigación	X
Otros:	N/A

1. ¿Son los **requisitos de admisión** adecuados para identificar a los candidatos idóneos para el programa? ¿Conoce cuál es el valor predictivo de dichos requisitos para pronosticar la retención y el desempeño óptimo de los estudiantes en el programa?

   There requirements for admisión. They include to have a 3.0 culmative GPA or above, three letters of recommendation, and to have taken the GRE. Although there is nothing written about the predictive value of these requirements we generally place great weight on the quantative GRE scores, GPA and letters of recommendation for current faculty

2. ¿Cuán laxos o exigentes son los requisitos de admisión de su Programa?

   If the student has demonstrated that they can pass graduate courses with a study permit or has extensive research experience evidenced by publication.

3. ¿Es la preparación de los estudiantes que cumplen con estos requisitos de admisión adecuada para cumplir con el nivel de exigencia del Programa?

   Usually a bacherolers in biology or chemistry will cover the basic prerequisites. Depending on which of the tracts the student want there are specific requesites that they will need.

4. ¿Requiere el Programa poseer un bachillerato en la misma disciplina de estudios del Programa para cursar estudios graduados?

X Sí. ¿Parten los cursos iniciales de la premisa de que se necesita poseer un bachillerato para tomarlos o, por el contrario, redundan en conocimientos que ya se deberían haber adquirido?

☐ No. ¿Se encuentra el currículo sobrecargado de cursos y/o **requisitos de graduación** para compensar la falta de un bachillerato en la disciplina?

5. ¿Existe algún curso (e. g. estadística o curso especializado) que el estudiante deba poseer como **pre-requisito** para poder cursar estudios graduados en su Programa?

X Sí. ¿Siguen siendo necesarios estos **pre-requisitos**? ☐ No

E. Requisitos de Graduación

Marque con una (X) todos los requisitos de graduación que exija su Programa.

Tabla 2.4.E.

Requisitos de Graduación	Programa bajo evaluación	
	Maestría	Doctorado
Índice Académico Mínimo	3.0	3.0
Créditos requeridos	30	60
Examen de grado	x	x
Propuesta de Tesis	x	X
Proyecto de Investigación	x	X
Tesis/Disertación	x	x
Otros: Publicación		x

1. ¿Están los **requisitos de graduación** alineados con los **objetivos generales del aprendizaje** del programa? ¿Cumplen los **requisitos de graduación** con su propósito, es decir, facilitan el logro de los **objetivos del aprendizaje** o lo dificultan? (Ver Tabla 2.2.B, Cursos y Experiencias de Aprendizaje)

   Yes

2. ¿Es la selección y organización de los **requisitos de graduación** la más apropiada para facilitar los objetivos del aprendizaje o se podrían cumplir los mismos propósitos por otros medios más eficientes? (Ver Tabla 2.2.B, Cursos y Experiencias de Aprendizaje)

   yes

3. ¿Provee el Programa cierta flexibilidad para cumplir con los **requisitos del grado**? Es decir, ¿puede el estudiante escoger entre vertientes de estudio alternas (e.g. investigativa o profesional) o sustituir requisitos por trabajos equivalentes? Explique.

   No

4. ¿Se ofrecen opciones para completar los **requisitos del grado** de Doctorado en menor tiempo, pasando por la Maestría? Explique.

   Yes depends on the student and the subject of research

5. ¿Cuentan todos los **requisitos de grado** con guías, prontuarios o manuales que expliquen los procedimientos, expectativas y criterios de evaluación de los mismos? ¿Gozan estos manuales de la aprobación de los miembros del programa?

   Yes

6. ¿Se define en alguna parte un protocolo o itinerario para el desarrollo de las distintas fases del trabajo de tesis/disertación y para los roles del mentor y el estudiante? ¿Gozan estos protocolos de la aprobación de los miembros del programa y de los estudiantes?

Yes, The reglamentos define the protocol and itinerary for the students to identify mentors, thier process through their degree, which includes, the exams, defense of proposal, subsequent research, and defense of dissertation or thesis. It also has methods to obtain small funds for projects and travel. The reglamentos are approved by the faculty, the dean and the University.

F. Análisis del Diseño Curricular

1. ¿Cuenta el programa con una **secuencia curricular** a tiempo completo y una a tiempo parcial?

   X Sí ☐ No, solo cuenta con una a **tiempo completo**

   ¿Responde este diseño a las necesidades de los estudiantes?

   Sí

2. ¿En qué manera el modo en que está diseñada la **secuencia curricular** pudiera afectar el tiempo que le toma al estudiante completar sus requisitos de grado?

   When we don't have sufficent professors to cover courses, and required courses are not given on time. This could potentally disrupt a students course to complete there studies on time

3. ¿Qué se puede observar en la tabla de Cursos y Experiencias de Aprendizaje acerca de la distribución y la secuencia de los cursos y requisitos? ¿Se puede identificar algún patrón? ¿Se cumplen los **objetivos del aprendizaje** de una forma relativamente ordenada? ¿Se perciben lagunas?

   Our course structure provides a ordered sequence of classes that develop the student from the classroom, to basic introduction to investigations, leading into their thesis/dissertation work. We comply with the objective of learning in a ordered form. The curriculum has been revised and developed over the years to stay current and remove holes in learning

3. ¿Es la distribución del **contenido**[15] del currículo apropiada? Es decir, ¿incluyen los cursos medulares todos los conocimientos y competencias que son fundamentales? ¿Se incluyen los conocimientos deseables en las electivas dirigidas, los cursos de especialidad u otro requisito equivalente? ¿Contienen las electivas libres conocimiento únicamente tangencial?

The distribution is appropriate. They include the fundamental knowledge and compentences . In some of the electives basic skills are covered and new ones are added. Some electives must have tangential knowledge to develop specific skills, ie proteomics

4. ¿Poseen los cursos medulares un nivel de complejidad adecuado al grado para el cual se ofrecen (Maestría o Doctorado)?

   Sí

4. ¿Es la relación entre los **requisitos de admisión** y los **requisitos de grado** adecuada para propiciar un desempeño satisfactorio y eficiente de los estudiantes en el programa? ¿En qué manera la relación entre ambos requisitos facilita o dificulta la obtención del grado?

   Sí

---

[15] El contenido se refiere al saber que comprende el currículo.

5. ¿Qué relación existe (si alguna) entre la investigación generada en el Programa y el diseño curricular? ¿Es el diseño curricular lo que orienta las líneas de investigación, o viceversa?

   The electives are guided by the intrests of the professors and their research. Therefore there is a very close relationship between the tow.

6. ¿En qué forma promueven el currículo y las experiencias co-curriculares el conocimiento y el aprendizaje interdisciplinario?

   Within natural sciences there are seminars and clases that promote interdisiplinary learning. The Molecular sciences builiding allow interactions of scientist from many disiplines. The Inter campus PhD program also promotes interdisplinary learning by offering courses from the medical campus. Our department supports students taking courses in the OTS coureses

7. ¿Atiende el currículo y/o las experiencias co-curriculares las destrezas de información y conocimiento de la tecnología (búsqueda, manejo de información, selección, síntesis) que le permitan al estudiante ampliar su visión del campo?

   The professors give assignments that allow the students to develop these skills. We have excellent libraries and staff that guide and teach our students how to identify relavent information. We then inturn help them intergrate this information into their studies through class discussions

8. ¿Cómo el currículo prepara al estudiante para desarrollar una conciencia social y cívica?

   There is a huge push from the dean of graduate studies to teach our students ethics in reseach. They provide clases to address the largest issues. The smaller daily issues are addressed on an individual basis by the labortory Pis .

9. ¿De qué forma el currículo provee para que el estudiante desarrolle destrezas profesionales en los escenarios de trabajo accesibles al futuro egresado del Programa? ¿Provee el currículo para una experiencia de internado o práctica profesional?

   Topicos – allows the building of networking skills with world famous scientists. The interactions sometimes lead to post graduate Jobs
   Thesis development clases ofthen often include collaborations with partner institudtions that lead to post doctoral Jobs and Jobs for the master students.

10. ¿En qué manera el currículo provee los medios para que el estudiante adquiera las destrezas y actitudes que le permitan ser un profesional productivo y creativo que aporte al desarrollo de su disciplina de estudio?

    See response to ítem #9

11. ¿Prepara el programa adecuadamente a los estudiantes para pasar los exámenes de certificación? (Si aplica)

    N/A

G. Oferta Académica

Enumere los cursos ofrecidos en los años académicos señalados en la siguiente tabla. En la columna de clasificación marque con una (X) según corresponda.

Tabla 2.5.F.

Año Académico	Título de Cursos Ofrecidos	Clasificación (Marque uno)		% de bajas en cursos medulares	Cantidad de Secciones	Horario de los Cursos (Marque uno)		
		Requisitos	Electivos	See below		Matutino	Vespertino	Nocturno
2009-2010	BIOL 6001-Coloquio I	X						
	BIOL 6002-Coloquio II							
	BIOL 6910-Investigación Supervisada							
	BIOI 6991- Investigación Independiente en Biología							
	BIOI 6997-Investigación para Tesis							
	BIOI 6998-Continuación de Tesis							
	BIOL 6999-Tópicos Especiales en Biología							
	BIOI 8991- Investigación Avanzada							
	BIOL 8997-Disertación Doctoral							
	BIOL 8995-Seminario Doctoral							
	BIOL 8998-Continuación de Tesis							
	BIOL 5026-Histología		X		1	1		
	BIOL 5548-Neurobiología				1	1		
	BIOL 6119-Comunidades y Ecosistemas				1	1		
	BIOL 6996-Seminario de Zoología				3	1		
	BIOL 8210-Análisis del Desarrollo				1	1		
	BIOL 8340-Seminario de Genética				1	1		

2010-2011	BIOL 6001-Coloquio I BIOL 6002-Coloquio II BIOL 6910-Investigación Supervisada BIOI 6991- Investigación Independiente en Biología BIOI 6997-Investigación para Tesis BIOI 6998-Continuación de Tesis BIOL 6999-Tópicos Especiales en Biología BIOI 8991- Investigación Avanzada BIOL 8997-Disertación Doctoral BIOL 8998-Continuación de Tesis	X						
	BIOL 5548-Neurobiología BIOL 5565-Biología de Hongos BIOL 6190-Ecología Avanzada BIOL 6360-Bioinformática BIOL 6501-Biología Molecular y Celular I BIOL 6502-Biología Molecular y Celular II BIOL 6996-Seminario en Zoología		X		1 1 1 1 1 1 1	1 1 1 1 1 1 1		

2011-2012	BIOL 6001-Coloquio I BIOL 6002-Coloquio II BIOL 6910-Investigación Supervisada BIOI 6991- Investigación Independiente en Biología BIOI 6997-Investigación para Tesis BIOI 6998-Continuación de Tesis BIOL 6999-Tópicos Especiales en Biología BIOI 8991- Investigación Avanzada BIOL 8995-Seminario Doctoral BIOL 8997-Disertación Doctoral BIOL 8998-Continuación de Tesis	x						
	BIOL 5037-Historia Natural de Puerto Rico BIOL 6007-Biología Reproductiva BIOL 6010-Microbiomas BIOL 6120-Sistemática Filogenética BIOL 6501-Biología Molecular y Celular I BIOL 6502-Biología Molecular y Celular II BIOL 6996-Seminario de Zoología	x			1 1 1 1 1 1 3	1 1 1 1 1 1 1		
2012-2013	BIOL 6001-Coloquio I BIOL 6002-Coloquio II BIOL 6910-Investigación Supervisada BIOI 6991- Investigación Independiente en Biología BIOI 6997-Investigación para Tesis BIOI 6998-Continuación de Tesis BIOL 6999-Tópicos Especiales en Biología BIOI 8991- Investigación Avanzada BIOL 8997-Disertación Doctoral BIOL 8998-Continuación de Tesis	x						

	BIOL 5037-Historia Natural de Puerto Rico BIOL 6145-Bioconservación BIOL 6501-Biología Molecular y Celular I BIOL 6502-Biología Molecular y Celular II BIOL 6996-Seminario en Zoología		x		1 1 1 1 2	1 1 1 1 1		
2013-2014	BIOL 6001-Coloquio I BIOL 6002-Coloquio II BIOL 6910-Investigación Supervisada BIOI 6991- Investigación Independiente en Biología BIOI 6997-Investigación para Tesis BIOI 6998-Continuación de Tesis BIOL 6999-Tópicos Especiales en Biología BIOI 8991- Investigación Avanzada BIOL 8995-Seminario Doctoral BIOL 8997-Disertación Doctoral BIOL 8998-Continuación de Tesis	x						

2014-2015	BIOL 6001-Coloquio I BIOL 6002-Coloquio II BIOL 6910-Investigación Supervisada BIOI 6991- Investigación Independiente en Biología BIOI 6997-Investigación para Tesis BIOI 6998-Continuación de Tesis BIOL 6999-Tópicos Especiales en Biología BIOI 8991- Investigación Avanzada BIOL 8997-Disertación Doctoral BIOL 8998-Continuación de Tesis	X						
	BIOL 5548-Neurobiología BIOL 6006-Simbiosis BIOL 6190-Ecología Avanzada BIOL 6360-Bioinformática BIOL 6501-Biología Molecular y Celular I BIOL 6502-Biología Molecular y Celular II BIOL 6996-Seminario en Zoología BIOL 8505-Seminario en Biotecnología		X X X X X X X		1 1 1 1 1 1 1	X X X X X X X		

***

***We have less than 5% drop rate in any of our classes

i. ¿Con qué regularidad se ofrecen todos los cursos del **programa de estudios**?

All core courses are offered every year.

ii. ¿Es adecuada la frecuencia con que se ofrecen los **cursos requisitos** y **electivas dirigidas** de acuerdo con la **secuencia curricular**, las necesidades y la cantidad de los estudiantes?

Most courses are offered every year. A few of the electives are offered once every two years depending on the demand.

iii. Indique la cantidad de cursos creados, modificados, eliminados, y en moratoria por año académico en la siguiente tabla:

Tabla 2.6.F

Año Académico	Creados	Modificados	Eliminados	Moratoria
2009-2010	3	2	3	0
2010-2011	1	1	0	0
2011-2012	0	0	0	0
2012-2013	1	0	0	0
2013-2014	0	0	0	0
2014-2015	1	1	0	0

iv. ¿Cuál es la demanda de cursos de este Programa por estudiantes de otros Programas en el Recinto?

moderado

v. ¿Con cuánta regularidad el Programa evalúa los cursos que ofrece?

X Semestralmente Anualmente
En Revisiones Curriculares
No se ha hecho hasta el momento

vi. ¿Qué opinan los estudiantes sobre el contenido y calidad de los cursos, los procesos de enseñanza aprendizaje y la ejecutoria de los profesores en el salón de clases?[16]

While the content of each course has been overwhelmingly approved by the student body, the problema is the breath of selection of courses is slim. Our problem lies in that we do not have enough professors to teach basic graduate courses such as proteomics or histology. The approval rating of the professors in the clases overall is over a 3 on a 4 point scale.

[16] Utilice la información que se desprende de las evaluaciones de cursos.

III. *Profesores/Investigadores*

A. Perfil de Profesores del Programa

En la siguiente tabla escriba los nombres de los profesores del Programa y su preparación académica (que incluya la institución y el año de graduación para el grado más alto obtenido.) Indique con una (X) en la columna que corresponda si el profesor es colaborador o adscrito al Programa. Señale además la especialidad que enseña, los años de servicio, los cursos que ofrece regularmente y la cantidad de tesis supervisadas de maestría y doctorado en los últimos (5) años. En la última columna marque con una (X) aquellos profesores de procedencia internacional.

Tabla 3.1.A.

Nombre de Profesor	Preparación Académica[17]	Estatus		Especialidad en la que enseña	Líneas de Investigación	Años de servicio	Cursos que ofrece regularm	Cantidad de Tesis supervisadas	Procedencia Internacional
		Colaborador	Adscrito						
Acevedo, Miguel	Ph. D., 2013, University of Florida		X	Quantitative Ecology	Quantitative Ecology, Disease Ecology, Movement Ecology,	1	Ecology	0	0
Ackerman, James	Ph. D., 1981 Florida State University		X	Plant Taxonomy, Population Biology	Plant Systematics and Reproductive Ecology,	34	Plant Taxonomy, Plant Population	3	1
Aide, T. Mitchell	Ph. D., 1989 University of Utah		X	Conservation Ecology	Community Ecology, Restoration, Conservation	23	Ecology and Conservation	6	6
Agosto, José	Ph. D., 2008 Brandeis University		X	Neurobiology, Molecular	Molecular Genetics, Drosophila	6	Molecular Genetics		
Bayman, Paul	Ph. D., 1987 University of California		X	Micology, Botany	Micology, Mycoltoxins, Micorrhizae	22	Graduate Seminar, Botany	3	3
Betancur, Ricardo	Ph. D., 2009 Auburn University		X	Evolution and Systematics	Evolutionary Biology, Systematics Phylogenetics,	1	Evolution, Systematics	0	0
Burrowes, Patricia	Ph. D., 1997 University of Kansas		X	Herpetology	Herpetology, Science Education, Causes of	17	Biology, Herpetology		x
Cuevas, Elvira	Ph. D., 1983 Instituto Venezolano		X	Ecology	Ecosystem Ecology, Nutrients Cycling	10	Principles of Ecology, Structure and		x
Flores, Zomary	Ph. D., 2008 University of Wisconsin		X	Microbiology	Host-Microbe Interactions,	3	Microbiology,		x
García, José E.	Ph. D., 1981 University of Harvard		X	Developmental Biology, Neurobiology	Neural Development and Regeneration	29	Neurobiology, Molecular and Cellular Biology, Development	6	2
Giray, Tugrul	Ph. D., 1996 University of Illinois		X	Zoology, Genetics	Behavioral Development,	15	Zoology, Animal	2	1
González, Carlos I.	Ph. D., 1996 Rutgers University		X	Molecular Biology	Control of Gene Expression,	14	Fundamentals of	3	0
Joglar, Rafael	Ph. D., 1986 University of Kansas		X	Ecology, Biodiversity	Herpetology, Conservation Biology	29	Zoology, Ecology of PR	2	0
Lasalde, José	Ph. D., 1988 University of Puerto Rico		X	Molecular Biology, Biochemistry,	Molecular Biology, Nicotinic Receptors	19	Molecular and Cellular Biology,	3	0
Maldonaldo, Carmen S.	Ph. D., 1995 North Eastern University		X	Neuropharmacolo	Behavioral Neuroscience,	16	Neuropharmacol	1	0
Massey, Steven	Ph. D., 2004 University of Wyoming		X	Bioinformatics	Bioinformatics, Evolution,	7	Bioinformatics		X

Papa, Riccardo	Ph. D., 2003 University of Parma		X	Molecular	Molecular Genetics and	5	Genetics		X
Restrepo, Carla	Ph. D., 1995 University of Florida		X	Ecology	Landscape Ecology, Seed	14	Ecology, Large	1	0
Sabat, Alberto	Ph. D., 1990 State University of New		X	Ecology,	Population Ecology,	23	Ecology,	6	0
Santiago, Eugenio	Ph. D., 1999 University State of		X	Botany,	Evolutionary Biology,	15	Botany, Plant		x
Thomas, Richard	Ph. D., 1976 Louisiana University		X	Biogeography and Systematics;	Biogeography and Systematics; Herpetology	39	Biogeography, Systematics,	1	0
Toranzos, Gary	Ph. D., 1985 University of Arizona		X	Microbiology	Microbial Ecology,	27	General	3	1
Washington, Valance	Ph. D., 1998 Southern Methodist University		X	Immunology	Role of Platelet Receptor and TREM-Like Transcript -1 In the Regulation of the Immune	5	Molecular and Cellular Biology; Immunology	1	0

[17] Incluya institución y año de graduación para el grado más alto obtenido

B. Carga Académica

Utilizando el formulario de Desglose de la Tarea Académica del pasado año académico, complete la siguiente tabla:

LEYENDA

I- Instructor
CX- Catedrático Auxiliar
HS- Horas Semanales
HC- Horas Crédito
CA- Catedrático Asociado
C- Catedrático
ETC- Equivalente de Tarea Completa

Tabla 3.2.B. Desglose de Tarea Académica[18]

Primer Semestre 2015-16

	#Curso /Lab.	Crs.	Inv. Crs.	Otros	Crs	*Proyecto de Investigación*	Carga completa	Compensación Adicional					Total Crs.
								Otro	Crs.	Exceso Estudiantes	Crs.	Total Crs. Comp.	
Dr. Miguel Acevedo	6996-013	3	9			The implications of asymmetric dispersal for connectivity and metapopulation modeling	**12**						**12**
Dr. James D. Ackerman	5495-0U1 3410-002	3 3	6			Biología de las orquídeas; ecología de las plantas invasores; taxonomía de las plantas.	**12**	Director Herbario Director Museo	1.5 1.5			3	**15**
Dr. José Luis Agosto	4990	3	9			Mecanismos de regulación del sueño en la mosca Drosophila Melanogaster.	**12**	Coord.3350 3349-003 3350-001	1.5 1 1.5			4	**16**
Dr. Mitchell Aide	6190-0U1	3	9			Ecología, restauración y conservación de comunidades.	**12**	Presidente Comite Personal	3			3	**15**

Dr. Paul Bayman	5565-0U1	3	9			Micología. Interacciones de planta-hongos. Fitopatología	**12**						**12**
Dr. Raul Bernabe	3101-001 (75 est) 3365-004 4999-333	6 3 3					**12**	Coord 3101 Asesoría Académica	3 2			5	**17**
Dr. Ricardo Betancur	6001 4999-023	1 1	10			The role of habitat transitions in parallel marine fish radiations	**12**						**12**
Dra. Michelle Borrero	4056-001	8	4			Diseño e implantación de experiencias educativas en el área de biología celular molecular	**12**	Coord.3365 Asesoria Académica	3 1			4	**16**
Dra. Patricia Burrowes	3101-002	3	9			Ecología de anfibios y reptiles del Caribe	**12**			3101-002	1	1	**13**
Dra. Clara Camacho	3102-004 3102-005	6 6					**12**	Asesoría Académica	3			3	**15**
Dra. C. Noemí Cintrón	3349-001	6	3	Asesoría y Convalidación Estudiantes Internacionales	3	Desarrollo Curricular en Genética	**12**	Coord.3349 3349-003 (51est)	3 1			4	**16**
Dra. Elvira Cuevas			12			Ecología de Ecosistema. Ciclaje de Nutrientes	**12**						**12**

Dra. Diana Delgado	3111 3112 3112	3 3 3		Coord. 3112	3		**12**						**12**
Dr. José E. García Arrarás	5548-0U1	3	9			Regeneración del sistema nervioso en invertebrados organogenésis	**12**			5548 (45)	1	1	**13**
Dr. Tugrul Giray	Director Departamento de Biología Estudios sobre aspectos evolutivos del mecanismo de comportamiento social animal						**12**	4999-023 *Ad honorem*	3*			3*	**15**
Dr. Carlos González	Decano Facultad Ciencias Naturales Regulación de expresión genética a nivel post-transcripcional en células eucariotas						**12**	6501 *Ad honorem*	3*			3*	**15**
Dra. Zomary Flores	4999-343	3	9			Interacciones moleculares entre la bacteria bioluminiscente marina Vibrio fischeri y su hospedero el calamar sepiólido hawaiano.	**12**						**12**

Primer Semestre 2014-15

	#Curso /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	***Otros***	Crs.	Carga completa	Compensación Adicional					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp	
Dr. Miguel Acevedo			12					**12**						
Dr. James D. Ackerman	4057	3	9					**12**	Director Herbario Director Museo	1.5 1.5			3	**15**
Dr. José Luis Agosto	3350-001	3	9					**12**	Coord. 3350 3350-003	3 3			6	**18**

Dr. Mitchell Aide			12					**12**						**12**
Dr. Paul Bayman	8505	3	9					**12**						**12**
Dr. Raul Bernabe	3101-003 3101-004 3365-002	4 5 3						**12**	3365-004 4999-333 Asesoría Académica	3 5 1			9	**21**
Dr. Ricardo Bentacour			12					**12**						
Dra. Michelle Borrero	4056-001	5	7					**12**	Coord. 3365	3	4056	2 (111)	5	**17**
Dra. Patricia Burrowes			12					**12**						**12**
Dra. C. Noemí Cintrón	3349	6	3			Asesoría y Convalidación Estudiantes Internacional	3	**12**	Coord. 3349	3	3349	6 (211)	9	**21**
Dra. Elvira Cuevas			12					**12**						**12**
Dr. José E. García Arrarás	5548	3	9					**12**			5548 (45)	1	1	**13**
Dr. Tugrul Giray	Director Interino Departamento de Biología							**12**	6996 *Ad honorem*	3			3	**15**
Dr. Carlos González	Decano Interino Facultad de CN							**12**	6501 *Ad honorem*	3			3	**15**
Dr. Josean González	3101-002	3 3	6					**12**	3101-002	3			2	**15**

	3101-005													
Dra. Zomary Flores	6006	3	9					12						**12**
Dr. Rafael Joglar	3425	6	6					12	Coord. 3425	3	3425 (154)	3	6	**18**
Dr. José Lasalde			8			Vice-Presidente Interino UPR	4	12	Director Confocal	1.5			1.5	**13.5**
Dra. Lillian López	3711-001 3711-002	6 6						12	3711-003	6			6	**18**
Dra. Carmen Maldonado Enmendada 2/oct/2014	3576	3	6 1.20 1.80					12	4990	3	3576	2	5	**17**
Dra. Adaris Mas	3102-006 3102-007	6 6						12	4999-183 Asesoría Académica	3 3			6	**18**
Dr. Steven Massey	6360	3	9					12	6360 (curso 4 crds?)	1			1	**13**
Dra. Ana C. Monmany	3102-003 3102-004	6 6						12	Coord. 3102				3	**15**
Dra. Gladys Nazario	3410	6	3	3410	3			12						**12**
Dr. Ricardo Papa	3350-005	3	9					12	Director SGF	3			3	**15**
Dr. Juan Ramírez	3102-002 4545	6 6						12	Asesoría Académica	3			3	**15**
Dra. Rosaura Ramírez	3101-001 4350	3 6	3					12	Coord. 3101		4350 (199)	6	9	**21**
Dra. Caria Restrepo			9	3112	3			12						**12**

Segundo Semestre 2014-15

	#Curso /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	*Otros*	Crs.	Carga completa	Compensación Adicional					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp	
Dr. James D. Ackerman			12					**12**	Director Herbario Director Museo	1.5 1.5			3	**15**
Dr. Miguel Acevedo	4999-343	3	9					**12**			4999-343 (50 est)	1	**1**	**13**
Dr. José Luis Agosto			9	3350	3			**12**	6326 3350-001	1.5 (50%) 1.5 (50%)			3	**15**
Dr. Mitchell Aide	6145	3	6			Proyecto Especial: Plantilla Reclutamiento Personal	3	**12**						**12**
Dr. Paul Bayman	3705	3	9					**12**	Presidente del Comité de Personal *Ad honorem*	3*	3705 (157 est) (50%)	2	5	**17**
Dr. Raúl Bernabe	3101-003 (88 est) 3101-005 (88 est)	6 6						**12**	4036-001 4036-003 Asesoría Académica	3 3 1			**7**	**19**
Dr. Betancour	6120	3	9					**12**						**12**
Dra. Michelle Borrero	4056	5	7					**12**	Coord. 4036	3	4056 (113	2	5	**17**

											est)			
Dra. Patricia Burrowes	3425	6	6					**12**	Coord. 3425	3	3425 (95 est)	1	4	**16**
Dra. C. Noemí Cintrón	3349-002 (85 est)	6	3	3349	3			**12**	3349-003 (28 est) Asesoría y Convalidaciones Estudiantes Internacionales	3 3			6	**18**
Dra. Elvira Cuevas			12					**12**						**12**
Dr. José E. García Arrarás	4545	3	9					**12**			4545 (274 est)	4.5	4.5 (38%)	**16.5**
Dr. Tugrul Giray	Director Interino Programa Biología							**12**	6996 *Ad honorem*	3*			3	15
Dr. Carlos González	Decano Interino Facultad Ciencias Naturales							**12**	4545 *Ad honorem*	3*			3 (24%)	**15**
Dra. Zomary Flores	3705	3	9					**12**			3705 (157 est)	2	2 (50%)	**14**
Dr. Rafael Joglar			12					**12**						**12**
Dr. José Lasalde			8			Vice-Presidente Interino UPR	4	**12**	Director Confocal	1.5			1.5	**13.5**
Dra. Lillian López	3712-001 3712-002 3712-003	5 5 2						**12**			3712-003	3	3	**15**
Dra. Carmen Maldonado	6999-014	6	6					**12**	Neuroscience Research Opportunities to Increase Diversity Neural &	1.2 1.8			9	**21**

									Molecular Substrate of Cocaine Addiction 4990 Dirección Programa Honor	3 3				
Dra. Adaris Mas	3102-003 3102-004	6 6						**12**	Coord. 3102	3			3	**15**
Dr. Steven Massey	4545	3	9					**12**			4545 (274 est)	4.5	4.5 (38%)	**16.5**
Dra. Gladys Nazario	4486 3410	3 3	3	3410	3			**12**						**12**
Dr. Ricardo Papa			9			Director SGF	3	**12**	6326 3350-001	1.5 (50%) 1.5 (50%)			3	**15**
Dr. Juan Ramírez	4036-002 4036-004 3101-004	3 3 6						**12**	4036-005	3			3	**15**
Dra. Rosaura Ramírez	3101-002 4999-283	6 3	3					**12**	Coord. 3101 Asesoría Académica	3 1	4999-283 (52 est)	2	6	**18**
Dra. Carla Restrepo	8995	3	9					**12**	Coord. 3112	3			3	**15**

Primer Semestre 2013-14

	#Curso /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	*Otros*	Crs.	Carga completa	Compensación Adicional					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp	
Dr. James D. Ackerman	5495	3	9					**12**	Director Herbario Director Museo	1.5 1.5			3	**15**
Dr. José Luis Agosto	3350L	3	9					**12**	Coord. 3350L	3			3	**15**
Dr. Mitchell Aide			12					**12**						**12**
Dr. Paul Bayman	5565	3	9					**12**	Presidente del Comité de Personal	3			3	**15**
Dra. Michelle Borrero	4056	3	9					**12**	Coord. 3365L	3	4056 *Ad Honorem*	3 2	8	**20**
Dra. Patricia Burrowes	3101	6	6					**12**						**12**
Dra. Graciela Candelas			12					**12**						**12**
Dra. C. Noemí Cintrón			3			Coord. Programa Subgraduado	9	**12**	Asesoría Académica BIOL 3349	3 4			7	**19**
Dra. Migdalisel Colón	3349 4990	6 3	3					**12**	Avalúo BIOL 4350	3 3			6	**18**
Dra. Elvira Cuevas			12					**12**						**12**
Dra. M. Gloria Domínguez	Licencia sin Sueldo							**0**						**0**
Dr. José E. García Arrarás	5548	3	9					**12**	Coord. Programa Graduado	3	5548	2	5	**17**
Dr. Tugrul Giray	4345	3	9					**12**	BIOL 6996	3	4345	3	6	**18**
Dr. Carlos González	6501	3	9					**12**	Coloquio CINA 4996-024	1 3			4	**16**
Dra. Zomary Flores	3705	3	9					**12**						**12**

Segundo Semestre 2013-14

	#Curso /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	*Otros*	Crs.	Carga completa	Compensación Adicional					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp	
Dr. James D. Ackerman	4057	3	9					**12**	Director Herbario Director Museo	1.5 1.5			3	**15**
Dr. José Luis Agosto	3350-001	3	9					**12**						
Dr. Mitchell Aide	6145 8995	3 3	6					**12**						**12**
Dr. Paul Bayman	3705	3	9					**12**	Presidente del Comité de Personal	3	3705	1.5	4.5	**16.5**
Dra. Michelle Borrero	4056	3	9					**12**	Asesoría Académica	1	4056	6	7	**19**
Dra. Patricia Burrowes	3425	6	6					**12**	Coord. 3425 3425-101	3 3	3425	1	7	**19**
Dra. Graciela Candelas			12					**12**						**12**
Dra. C. Noemí Cintrón	3349-003	6				Alacima Asesoría y Convalidaciones Estudiantes Internacionales	3 3	**12**	Coord. 3350 3350-005 Asesoría Académica	3 3 3			9	**21**

Dra. Migdalisel Colón	3349-001 3349-002 4990	3 3 3	3					**12**	Avalúo BIOL 5398 Programa de Honor	3 2 3	3349-002	1	9	**21**
Dra. Elvira Cuevas	3111	3	9					**12**			3111	5	5	**17**
Dra. M. Gloria Domínguez	Licencia sin Sueldo							**0**						**0**
Dr. José E. García Arrarás	8210	3	9					**12**	Coord. Programa Graduado 4545	3 3			6	**18**
Dr. Tugrul Giray	4345	3	9					**12**						**12**
Dr. Carlos González	4545	3	9					**12**	Coor. 4545 5398 6002	1 2 1			4	**16**
Dra. Zomary Flores	3705	3	9					**12**			3705		1.5	**13.5**

Primer Semestre 2012-13

	#Cursos /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	***Otros***	Crs.	Carga com-pleta	Compensación					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp.	
Dr. James D.	3410 4999	3 3	6					**12**	Director	1.5 1.5				**15**

Ackerman									Herbario Director Museo					
Dr. José Luis Agosto	3350	3	9					12						12
Dr. Mitchell Aide	6190 6996	3 3	6					12						12
Dr. Paul Bayman	3705	6	6					12	3705	3			3	15
Dra. Michelle Borrero	4056	6	6					12	ALACIMA	6	4056	1		19
Dra. Patricia Burrowes	3101	5	6			Asesoria	1	12						12
Dra. Graciela Candelas			12					12						12
Dra. C. Noemí Cintrón						Decana Asuntos Académicos		12						12
Dra. Migdalisel Colón	3349 3350	3 3	3	3349	3			12	Avalúo 4350	3 3	3349	3	9	21
Dra. Elvira Cuevas			12					12	CREST-CATEC	3			3	15
Dra. M. Gloria Domínguez						Licencia sin sueldo								
Dr. José E. García Arrarás	5548	3	9					12	Coord Prog Graduado	3			3	15
Dr. Tugrul Giray	4345	3	9					12			4345	3	3	15
Dr. Carlos González	6501	3	9					12						12
Dr. Zomary Flores			12					12						12

	#Cursos /Lab	Crs.	Inv. Crs.	Coord. Cursos	Crs.	Otros	Crs.	Carga com-pleta	Compensación Otro	Crs.	Exc. Est	Crs.	Total Crs. Comp.	Total Crs.
Dr. Tomas Hrbek						Licencia	sin	sueldo						
Dr. Rafael Joglar			12					12						12
Dr. José Lasalde			7			Vice-Pres. Investigación UPR	5	12	Director Confocal	1.5			1.5	13.5
Dra. Lillian López	3711 3711	6 6						12			3711	5	5	17

Dra. Carmen Maldonado						Directora		**12**	Biol 3576 Ad honorem Investigacion	3 9			9	**21**
Dra. Adaris Mas	3101 3101 3102 3102	3 3 3 3						**12**						**12**
Dr. Steven Massey	4360	3	9					**12**	6360 6001	A.h. 1			4	**16**
Dra. Gladys Nazario	3102	6	3	3102	3			**12**						**12**
Dr. Ricardo Papa	3350	3	9		12			**12**	Director SGF	3			3	**15**
Dra. Sandra Peña			12		12			**12**						**12**
Dra. Rosaura Ramírez	3101 4350	3 3	3	3101	3			**12**	Asesoría 3101	2 3	4350	4	9	**21**
Dra. Carla Restrepo			9	3112	3			**12**	6127 Ad honorem	6				**12**
Dra. Aurea Rodríguez	3102 3102 3102 3102	3 3 3 3						**12**	3102	6			6	**18**
Dr. Enrique Rodríguez	3349 3350	9 3						**12**	Asesoría Coord 3350	3 3			6	**18**
Prof. Mayra Román						Ayudante Académica	12	**12**	Asesoria Coord 3365 Ad honorem	3 3			3	**15**
Dr. Eduardo Rosa-Molinar	3781 3781	3 3	6					**12**						**12**
Dr. Alberto Sabat	3111	3	9					**12**	Presidente ComitéPersonal 3111	3 3			6	**18**
Dr. Eugenio Santiago			6	3410	3	Curador Herbario	3	**12**						**12**
Dr. Anibal Soto	3365 3365 3365 3350	3 3 3 3						**12**						**12**

Dr. Richard Thomas	4455	6	6					**12**	Biol 6996	3			3	**15**
Dr. Gary Toranzos	6425	3	9					**12**						**12**
Dr. Carlos Toledo	3102 3102	6 6						**12**						**12**
Dr. Irving Vega	5900	3	9					**12**	Biol 4990	3			3	**15**
Dr. Anthony Valance W.			12					**12**						**12**

Segundo Semestre 2012-13

	#Cursos /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	*Otros*	Crs.	Carga com-pleta	Compensación					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp	
Dr. James D. Ackerman	6145	3	9					**12**	Director Herbario Director Museo	1.5 1.5			3	**15**
Dr. José Luis Agosto	6999	3	9					**12**						**12**
Dr. Mitchell Aide			12					**12**						**12**
Dr. Paul Bayman			12					**12**						**12**
Dra. Michelle Borrero	4036	3	9					**12**	Coord. 4036 4036	3 3			6	**18**
Dra. Patricia Burrowes	3425	6	6					**12**			3425	3	3	**15**
Dra. Graciela Candelas			12					**12**						**12**
Dra. C. Noemí Cintrón	Decana de Asuntos Académicos-FCN							**12**	3350-002 3350-003 *ALACiMA*	3 3 3***			9	**21**
Dra. Migdalisel Colón	3349	6	3	3349	3			**12**	Avalúo 5398	3 2			5	**17**
Dra. Elvira Cuevas	3111	6	6					**12**	CREST-CATEC	3+	3111	2	5	**17**
Dra. M. Gloria Domínguez	Licencia sin Sueldo							**0**						**0**
Dr. José E. García Arrarás			9			Coord. Programa Graduado		**12**	6002	1				**13**
Dr. Tugrul Giray	6996	3	9					**12**						**12**
Dr. Carlos González	4545*	3	9					**12**	Coord. 4545 5398	1 2	4545	1	4	**16**
Dra. Zomary Flores	6996	3	9					**12**						**12**

	#Cursos /Lab	Crs.	Inv. Crs.	Coord. Cursos	Crs	Otros	Crs.	Carga com-pleta	Compensación Otro	Crs.	Exc. Est	Crs.	Total Crs. Comp.	Total Crs.
Dr. Tomas Hrbek	Licencia sin Sueldo							0						0
Dr. Rafael Joglar	5037	6	6					12						12
Dr. José Lasalde			7	Vice-Pres. Investigación UPR			5	12	Director Confocal	1.5			1.5	13.5
Dra. Lillian López	3712-001 3712-002 3712-003	5 5 2						12			3712-003	2	2	14
Dra. Carmen Maldonado	Directora Departamento							12	Investigación	9			9	21
Dra. Adaris Mas	3101-001 3101-003 3102-006	5 5 2						12	4999-253 3101-008	3 4	3101-006	3	10	22**
Dr. Steven Massey	4545*	3	9					12			4545	1	1	13
Dra. Gladys Nazario	4486 3410	3 3	3	3410	3			12			3410	1		13
Dr. Ricardo Papa	6999	3	9		12			12	Director SGF	3			3	15
Dra. Sandra Peña	Licencia por Enfermedad							0						0
Dra. Rosaura Ramírez	3101-002 3101-004 4999-283	3 3 3	3					12	Asesoría Coord. 3101	2 3	3101-002 3101-004 4999-283	2 2 1	10	22**
Dra. Carla Restrepo			9	3112	3			12	4999-293 / 6996-023	3***			3	15
Dra. Aurea Rodríguez	3102-001 3102-002 3102-003 3102-004	3 3 3 3						12	Coord. 3102	3	3102-001 3102-002 3102-003	1 1 1	6	18
Dr. Enrique Rodríguez	3349 3350 3350	6 3 3						12	Asesoría Coord. 3350	3 3	3349	3	9	21

	#Cursos /Lab	Crs.	Inv. Crs.	Coord. Cursos	Crs	Otros	Crs.	Carga com-pleta	Compensación					Total Crs.
									Otro	Crs.	Exc. Est	Crs.	Total Crs. Comp.	
Prof. Mayra Román						Ayudante Académica	12	**12**	Asesoría 4036-002 4036-003	3 3 3***			9	**21**
Dr. Eduardo Rosa-Molinar	3782 3782	3 3	6					**12**						**12**
Dr. Alberto Sabat			9			Presidente Comité Personal	3	**12**						**12**
Dr. Eugenio Santiago	4999	3	6			Curador Herbario	3	**12**						**12**
Dr. Richard Thomas	4345	5	7					**12**						**12**
Dr. Gary Toranzos	3705	3	9					**12**			3705	6	6	**18**
Dr. Carlos Toledo	3102-005 3102-006 5600	4 2 6						**12**	3102-007	4	3102-006	2	6	**18**
Dr. Irving Vega	4545*	3	9					**12**	Coord. 4990	3	4545	1	4	**16**
Dr. A. Valance Washington	6502	3	9					**12**						**12**

Primer Semestre 2012-13

	#Cursos /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	*Otros*	Crs.	Carga com-pleta	Compensación					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp.	
Dr. James D. Ackerman	3410 4999	3 3	6					**12**	Director Herbario Director Museo	1.5 1.5				**15**
Dr. José Luis Agosto	3350	3	9					**12**						**12**
Dr. Mitchell Aide	6190 6996	3 3	6					**12**						**12**
Dr. Paul Bayman	3705	6	6					**12**	3705	3			3	**15**
Dra. Michelle Borrero	4056	6	6					**12**	ALACIMA	6	4056	1		**19**
Dra. Patricia Burrowes	3101	5	6			Asesoria	1	**12**						**12**
Dra. Graciela Candelas			12					**12**						**12**
Dra. C. Noemí Cintrón						Decana Asuntos Académicos		**12**						**12**
Dra. Migdalisel Colón	3349 3350	3 3	3	3349	3			**12**	Avalúo 4350	3 3	3349	3	9	**21**
Dra. Elvira Cuevas			12					**12**	CREST-CATEC	3			3	**15**
Dra. M. Gloria Domínguez						Licencia sin sueldo								
Dr. José E. García Arrarás	5548	3	9					**12**	Coord Prog Graduado	3			3	**15**
Dr. Tugrul Giray	4345	3	9					**12**			4345	3	3	**15**
Dr. Carlos González	6501	3	9					**12**						**12**
Dr. Zomary Flores			12					**12**						**12**

	#Cursos /Lab	Crs.	Inv. Crs.	Coord. Cursos	Crs.	Otros	Crs.	Carga com-pleta	Compensación					Total Crs.
									Otro	Crs.	Exc. Est	Crs.	Total Crs. Comp.	
Dr. Tomas Hrbek						Licencia	sin	**sueldo**						
Dr. Rafael Joglar			12					**12**						**12**
Dr. José Lasalde			7			Vice-Pres. Investigación UPR	5	**12**	Director Confocal	1.5			1.5	**13.5**
Dra. Lillian López	3711 3711	6 6						**12**			3711	5	5	**17**
Dra. Carmen Maldonado						Directora		**12**	Biol 3576 Ad honorem Investigacion	3 9			9	**21**
Dra. Adaris Mas	3101 3101 3102 3102	3 3 3 3						**12**						**12**
Dr. Steven Massey	4360	3	9					**12**	6360 6001	A.h. 1			4	**16**
Dra. Gladys Nazario	3102	6	3	3102	3			**12**						**12**
Dr. Ricardo Papa	3350	3	9		12			**12**	Director SGF	3			3	**15**
Dra. Sandra Peña			12		12			**12**						**12**
Dra. Rosaura Ramírez	3101 4350	3 3	3	3101	3			**12**	Asesoría 3101	2 3	4350	4	9	**21**
Dra. Carla Restrepo			9	3112	3			**12**	6127 Ad honorem	6				**12**
Dra. Aurea Rodríguez	3102 3102 3102 3102	3 3 3 3						**12**	3102	6			6	**18**
Dr. Enrique Rodríguez	3349 3350	9 3						**12**	Asesoría Coord 3350	3 3			6	**18**

Prof. Mayra Román						Ayudante Académica	12	**12**	Asesoria Coord 3365 Ad honorem	3 3			3	**15**
Dr. Eduardo Rosa-Molinar	3781 3781	3 3	6					**12**						**12**
Dr. Alberto Sabat	3111	3	9					**12**	Presidente ComitéPersonal 3111	3 3			6	**18**
Dr. Eugenio Santiago			6	3410	3	Curador Herbario	3	**12**						**12**
Dr. Anibal Soto	3365 3365 3365 3350	3 3 3 3						**12**						**12**
Dr. Richard Thomas	4455	6	6					**12**	Biol 6996	3			3	**15**
Dr. Gary Toranzos	6425	3	9					**12**						**12**
Dr. Carlos Toledo	3102 3102	6 6						**12**						**12**
Dr. Irving Vega	5900	3	9					**12**	Biol 4990	3			3	**15**
Dr. Anthony Valance W.			12					**12**						**12**

Segundo Semestre 2012-13

	#Cursos /Lab.	Crs.	Inv. Crs.	Coord. Cursos	Crs.	***Otros***	Crs.	Carga com-pleta	Compensación					Total Crs.
									Otro	Crs.	Exc. Est.	Crs.	Total Crs. Comp	
Dr. James D. Ackerman	6145	3	9					**12**	Director Herbario Director Museo	1.5 1.5			3	**15**
Dr. José Luis Agosto	6999	3	9					**12**						**12**
Dr. Mitchell Aide			12					**12**						**12**
Dr. Paul Bayman			12					**12**						**12**
Dra. Michelle Borrero	4036	3	9					**12**	Coord. 4036 4036	3 3			6	**18**
Dra. Patricia Burrowes	3425	6	6					**12**			3425	3	3	**15**
Dra. Graciela Candelas			12					**12**						**12**
Dra. C. Noemí Cintrón	Decana de Asuntos Académicos-FCN							**12**	3350-002 3350-003 *ALACiMA*	3 3 3***			9	**21**
Dra. Migdalisel Colón	3349	6	3	3349	3			**12**	Avalúo 5398	3 2			5	**17**
Dra. Elvira Cuevas	3111	6	6					**12**	CREST-CATEC	3+	3111	2	5	**17**
Dra. M. Gloria Domínguez	Licencia sin Sueldo							**0**						**0**
Dr. José E. García Arrarás			9			Coord. Programa Graduado		**12**	6002	1				**13**
Dr. Tugrul Giray	6996	3	9					**12**						**12**
Dr. Carlos González	4545*	3	9					**12**	Coord. 4545 5398	1 2	4545	1	4	**16**
Dra. Zomary Flores	6996	3	9					**12**						**12**

	#Cursos /Lab	Crs.	Inv. Crs.	Coord. Cursos	Crs	Otros	Crs.	Carga com-pleta	Compensación Otro	Crs.	Exc. Est	Crs.	Total Crs. Comp.	Total Crs.
Dr. Tomas Hrbek	Licencia sin Sueldo							0						0
Dr. Rafael Joglar	5037	6	6					12						12
Dr. José Lasalde			7	Vice-Pres. Investigación UPR			5	12	Director Confocal	1.5			1.5	13.5
Dra. Lillian López	3712-001 3712-002 3712-003	5 5 2						12			3712-003	2	2	14
Dra. Carmen Maldonado	Directora Departamento							12	Investigación	9			9	21
Dra. Adaris Mas	3101-001 3101-003 3102-006	5 5 2						12	4999-253 3101-008	3 4	3101-006	3	10	22**
Dr. Steven Massey	4545*	3	9					12			4545	1	1	13
Dra. Gladys Nazario	4486 3410	3 3	3	3410	3			12			3410	1		13
Dr. Ricardo Papa	6999	3	9		12			12	Director SGF	3			3	15
Dra. Sandra Peña	Licencia por Enfermedad							0						0
Dra. Rosaura Ramírez	3101-002 3101-004 4999-283	3 3 3	3					12	Asesoría Coord. 3101	2 3	3101-002 3101-004 4999-283	2 2 1	10	22**
Dra. Carla Restrepo			9	3112	3			12	4999-293 / 6996-023	3***			3	15
Dra. Aurea Rodríguez	3102-001 3102-002 3102-003 3102-004	3 3 3 3						12	Coord. 3102	3	3102-001 3102-002 3102-003	1 1 1	6	18
Dr. Enrique Rodríguez	3349 3350 3350	6 3 3						12	Asesoría Coord. 3350	3 3	3349	3	9	21

	#Cursos /Lab	Crs.	Inv. Crs.	Coord. Cursos	Crs	Otros	Crs.	Carga com-pleta	Compensación					Total Crs.
									Otro	Crs.	Exc. Est	Crs.	Total Crs. Comp.	
Prof. Mayra Román						Ayudante Académica	12	**12**	Asesoría 4036-002 4036-003	3 3 3***			9	**21**
Dr. Eduardo Rosa-Molinar	3782 3782	3 3	6					**12**						**12**
Dr. Alberto Sabat			9			Presidente Comité Personal	3	**12**						**12**
Dr. Eugenio Santiago	4999	3	6			Curador Herbario	3	**12**						**12**
Dr. Richard Thomas	4345	5	7					**12**						**12**
Dr. Gary Toranzos	3705	3	9					**12**			3705	6	6	**18**
Dr. Carlos Toledo	3102-005 3102-006 5600	4 2 6						**12**	3102-007	4	3102-006	2	6	**18**
Dr. Irving Vega	4545*	3	9					**12**	Coord. 4990	3	4545	1	4	**16**
Dr. A. Valance Washington	6502	3	9					**12**						**12**

[18] Se establecerá la cantidad de horas semanales (HS) y la equivalencia en tarea completa (ETC) para las tres categorías principales, enseñanza, investigación y administración. La equivalencia de tarea completa (ETC) se calcula dividiendo la cantidad de horas-crédito dedicadas a una labor, por las 12 horas-crédito semanales que comprenden la tarea completa (E.g. Seis créditos dedicados a la enseñanza equivalen a 6/12, o 50% de la tarea completa). Bajo la categoría "Otras labores adicionales" se calcularán únicamente las horas semanales dedicadas a esas labores; éstas se sumarán en la columna del total (Total HS de "Otros").

2. ¿Cómo responde el Perfil de los Profesores a las necesidades y aspiraciones del Programa en términos de especialización, internacionalización y desarrollo de la labor investigativa?

At the momento we are spread pretty thin. We have a wide área of topics that we cover and we are now in the process of hiring the professors that will make our net complete. That is allowing us to be proficent at studying and teaching a large range of subjects and having comprable research. acuerdo con las categorías de la Tabla 3.2.B., describa la distribución de la carga académica regular ¿Cuál es el promedio de horas semanales dedicadas a cada labor?

Teaching: 12 créditos = 4.5 horas promedio
Investigación Completa: 9 créditos = 5.6 horas promedio

3. ¿Es adecuada la distribución de la carga académica de los profesores del Programa para promover su productividad y su desempeño en la enseñanza y la investigación?

Sí

C. Proyectos de Investigación y Labor Creativa

Enumere los proyectos de investigación y labor creativa realizados en el Programa en los pasados seis años (Añada renglones según sea necesario). Si el Programa posee un Centro de Investigación, marque con un asterisco en la columna de "Título del Proyecto" aquellos proyectos que pertenezcan al Centro de Investigación. Coloque una (P) al final del título del proyecto para aquellos proyectos que estén planificados.

Tabla 3.3.C.

PROJECT DIRECTOR	TITLE	GRANTING AGENCY	BUDGET APPROVED / Annual	BUDGET APPROVED/Total	PROJECT PERIOD
Ackerman, James	Improving Collection Conservation and Enriching Availability in Three Caribbean Herbaria	National Science Foundation	499,949.00	499,949.00	Sept 1 2009 to Aug 31, 2012
Aide, Mitchell	Impact of Economic Globalization on Human Demography, Land use, and Nat. Systems in Latin America & Caribe	National Science Foundation	264,472.00	775,183.00	Jun 9, 2009 to Aug 31, 2010
Bayman, Paul	A Phylogenetic Approach to Virulence in Aspergillus*	National Institutes of Health	99,990.00	423,480.00	June 1, 2009 to May 31, 2010
García-Arrarás, José	Molecular control of intestinal regeneration	National Institutes of Health	355,345.00	1,369,940.00	Aug 1, 2009 to July 31, 2010
García-Arrarás, José	Molecular insights into echinoderm regeneration: Genes and signal pathways	National Science Foundation	490,000.00	490,000.00	Jul 1, 2009 to Jun 30, 2012
García-Arrarás, José	Gene profiling of nervous system regeneration using a novel model organism	National Institutes of Health	74,500.00	149,000.00	May 15, 2009 to April 30, 2010
Giray, Tugrul	Uso de Sensores Remotos	Fundación Toyota de Puerto Rico	12,850.00	12,850.00	Oct 15 2009 to Mar 30, 2010
Hernández, Edwin A.	Puerto Rican Coral Reefs Long-Term Ecological Monitoring Program - Year 2	Caribbean Coral Reef Institute	96,223.00	96,223.00	Sept 1, 2009 to Aug, 31, 2010

Lasalde, José A.	NRI/Acquisition: Upgrading the Confocal Imaging Facility at the University of Puerto Rico to Enable Emission Fingerprinting	National Science Foundation	255,762.00	255,762.00	Sept 1, 2009 to Aug 31, 2012
Peña, Sandra	DNA Recombination/Repair Mechanisms in Memory	National Institutes of Health	335,250.00	1,341,000.00	Aug 1, 2009 to July 31, 2010
Restrepo, Carla	Collaborative Research: Landsliding, land-use change, and carbon dynamics in a Central American Mountainscape	National Science Foundation	164,380.00	337,351.00	Dec-15-2009 to Nov-30-2010
Restrepo, Carla	SGER: Development of a landscapes approach for understanding the contribution of landsliding to carbon budgets: Using the Rio Jones of the Sierra de Las Minas, Guatemala W	National Science Foundation	40,560.00	40,560.00	Apr 1, 2009 to Mar 31, 2011
Rosa Molinar, Eduardo	Probes and Instrumentation for Monitoring and Manipulating Nervous System Plasticity	Nanoprobes, Inc.	111,000.00	111,000.00	Sept 18, 2009 to Aug 31, 2010
Vega, Irving	The role of a novel tau-associated protein in neurodegeneration	National Institutes of Health	204,324.00		Aug 1, 2009 to June 30, 2010
Bayman, Paul	A phylogenetics Approach to Virulence in Aspergillus	National Institutes of Health	111,750.00		Jun 1, 2011 to May 31, 2012
Borrero, Michelle	Centro de Excelencia en Matemáticas, Fase II	Departamento de Educación de PR	3,463,534.00	3,463,534.00	Jun 17, 2010 to Sept 30, 2011
García, José E.	Gene profiling of nervous system regeneration using a novel model organism* (RO3)	National Institutes of Health	74,500.00		May 15, 2009 to April 30, 2011
García, José E.	Molecular control of Intestinal Regeneration*(SC1)	National Institutes of Health	329,625.00		August 01, 2008 to June 30, 2014

i. Discuta el grado de correspondencia de las investigaciones realizadas en los pasados cinco años y las líneas de investigación presentadas en la tabla 3.1A?
The level of investigations by the professors in the departmentt has been more than acceptalbe, Unfortunately if we want to reach our goal of reaching the tob 100 schools we will have to improve on our numbers. While investigators suchas Garcia, Aid, Akerman, and Giray are at the top of their field. The remainder of us are at earlleir points in our careers and are in the process of growing. The to points made above the wisdome of expierience and the energy and ambition of youth demonstrat that we have the potential to reach our goal. We still however have to keep our professors that we hire to reach that goal

Si ha habido cambios en los temas de investigación, ¿son éstos el resultado de innovaciones significativas en las áreas de estudio del Programa, cambios en la disciplina, prácticas deseables o desarrollos previsibles?

None of note, there may have been changes in direction with in a subject área that has helped a profesor reach their goal, but no changes in subject area

ii. ¿En qué medida las investigaciones del Programa tienen un impacto en la investigación de los estudiantes (dirección de tesis y disertación, supervisión y capacitación)?
The investgators are the one that give the direction and topics for thesis and dissertaion. They supevise and guide all works

iii. ¿En qué medida las investigaciones del Centro de Investigación (si aplica) tienen un impacto en la investigación de los estudiantes (dirección de tesis y disertación, supervisión y capacitación)?
The center of iadminstration has several research days where the students get to present their work in poster form or give seminars

iv. ¿Qué actividades lleva a cabo el Programa que tengan un impacto directo en la profesión o en la comunidad? (e.g. Participación en juntas editoriales, estudios comisionados)
Many members of the Graduate Program participate as reviewers in international and national scientific journals; some of them function as members of Editorial Boards in international and national journals. Likewise, members of the program have published several reference books in different areas of biology; There are still some who are about to be published. Many members of the program participate in panels of reviewers from the National Science Foundation (NSF), and other federal funding agencies (NIH, EPA, USDA). Some faculty members have presided, preside on local, national and international scientific societies, and some have served in forums such as the Science Advisory Board of the USEPA, and have been part of Research Councils of agencies such as WERF (Water Environment Research Foundation). One member of the program has a podcast program under the auspices of the American Society for Microbiology (ASM, Radio the World of Microbes); This is a monthly program which is currently the most successful Spanish PodCast on microbiology. At least one member has participated in expert workshops organized by the U.S.E.P.A. to change / improve existing laws on water quality at the federal level.

v. ¿Qué actividades lleva a cabo el Centro de Investigación (si aplica) que tengan un impacto directo en la profesión o en la comunidad? (e.g. Participación en juntas editoriales, estudios comisionados)

The Central administration does participate here

vi. ¿Colabora la facultad actualmente en proyectos con pares en el Recinto, en otras instituciones en y fuera de PR?

☐ **Sí** (Mencione cuáles) ☐ No

The collaborations in the department with other campuses with in and outside of Puerto rico are too numerous to mention. Each professor that has funding has at least two collaborators that help them reach their goals in research. Coolaboration is an important part of survival in Puerto rico

D. Fondos

Indique la cantidad de asistentes de investigación y de cátedra asignados al Programa, los fondos para viajes y la cantidad de viajes realizados para la divulgación de investigación.

Tabla 3.4.D.

Año	Cantidad de asistentes de investigación	Cantidad de asistentes de cátedra	Fondos asignados para viajes	Cantidad de viajes realizados para divulgación de investigación
2009-10	8	25	$20, 000.00	$20, 000.00
2010-11	7	26	$20, 000.00	$20, 000.00
2011-12	10	24	$20, 000.00	$20, 000.00
2012-13	8	22	$20, 000.00	$20, 000.00
2013-14	5	27	$20, 000.00	$20, 000.00
2014-15	3	32	$20, 000.00	$20, 000.00

6. ¿Qué incentivos provistos por el Programa, la Facultad o el Recinto usan los profesores y estudiantes del Programa para la investigación?

the is incentive that is paid to the professors if they have grants that support pay. Students are given money to travel if they are presenting. There is also small grants that are given to professors that are exploring new directions and novel ideas

7. ¿Considera que la cantidad y tipo de incentivo que el Programa ofrece a los profesores es suficiente para fomentar la investigación en su Programa? ☐ Sí ☐ **No** (Por favor explique)

there should be a few more programs that allow the professors and students to apply for small pots of money. Sometimes the money is not the most important part of the small award, but the excersize of putting your thoughts together on the small stage to prepare yourself for the larger grants

8. ¿Considera que la cantidad de ayudantías de cátedra o investigación es suficiente para satisfacer con las necesidades del Programa? ☐ Si ☐ **No** (Por favor explique)

The department coudl do with persons that help with the common facilities or admistration of the program

9. ¿Es adecuado el apoyo institucional brindado mediante ayudantías, fondos para viajes, etc. para el desarrollo de la investigación y labor creativa en el Programa?

for the students there are fund for these type of events, not so much for the professors

10. ¿Qué gestiones realiza el Programa para allegar más fondos externos para sus investigaciones?

there should be a team at the level of the dean that regularly applys for facilities grants that work to improve the facilites of the natrual sciences.

Each professor must increase both the amount of publications and grants submitted

Higher expectations from the students

11. ¿Logran los profesores y la gerencia académica del Programa allegar suficientes fondos externos para financiar la investigación?

We are not there yet, but are moving in that directions. We have had some imput from some surpising places. Professors not originaly involved in investigation have proved to be forces in áreas of expertise landing collaborative grants and educational grants. Our department chair has taken on mentoring of the younger staff members to help them achieve their goals.

E. Investigación Estudiantil

Enumere la cantidad de investigaciones realizadas y divulgadas por los estudiantes, incluyendo Tesis y Disertaciones, ya sea en conferencias, congresos, seminarios o en publicaciones (Puede también incluirse como apéndice con la misma información solicitada).

Tabla 5.6.E.

Defensas de Tesis de Maestría:

Jessica Castro Prieto
Mayo 2009
A Multi-Scab Analysis of Habitat Use for Medium and Large Mammals in a subtropical Riparian Forest Network in Uruguay
Dr. Mitchell Aide

Jimena Forero Montana
Mayo 2009
Population ecology of two dioecios trees in tropical wet forest, Puerto Rico
Dr. Jess Zimmerman

Felix Araujo
Agosto 2009
The population genetics of two warning color loci in *helilconius erato.*
Dr. Tomas Hrbek

Silvia Planas Navarro
Enero 2010
Molecular Characterization of Hybridization and Interspecific Introgression in the Espeletia Complex,
Dr. Tomas Hrbek

José Camilo Fagua
Enero 2010
Pollination in the Caribbean cactus, *Melocactus intortus*: the effect of an invasive bee visitor on a specialized bird pollination system
Dr. James D. Ackerman

María I. Lázaro Peña
Marzo 2010
The presence of calretinin-like protein in the echinoderm nervous system
Dr. Carlos I. González and Dr. José E. García Arrarás

María Isabel Herrera Montes
Mayo 2010
The effect of anthropogenic noise in anuran and bird communities in Puerto Rico
Dr. Mitch Aide

Luis A. Ramírez Camejo
Agosto 2010
Phylogeography and genetic variation of the Cosmopolitan fungus aspergillys flavus
Dr. Paul Bayman

Ana Rita Caldas Patricio
Enero 2011
Survival analysis of Green turtles at two developmental sites in Culebra, Puerto Rico & Evolution and phylogeography of the fibropapillomatis-associated turtle herpesvirus.
Dr. Tomas Hrbek

Rosa L. González Marrero
Enero 2011
Coral reef fish recruitment on acropora cervicornis
Dr. Alberto Sabat

Joel Alejandro Mercado Díaz
Marzo 2011
Plant community responses of the alaskan artic tundra to environmental and experimental changes in climate
Dr. Joseph Wunderle

Augustin C. Engman
Mayo 2011
Fish assemblage structure in urban streams of Puerto Rico: The importance of reach-and-catchment-scale abiotic factors
Dr. Alonso Ramírez

Karla Z. Maldonado-Mena
Mayo 2011
Dissecting genetic basis of spot color and pattern in heritance:QTL analysis and mapping of heliconius.
Dr. Tomas Hrbek

Jessica Fonseca Da Silva
Mayo 2011
Ecophysiology and productivity of castilla elástica, and introduced tropical tree species
Dr. Ariel Lugo

Branko Hilje
Mayo 2011
Recovery of amphibian species richness an composition in a chronosequence of secondary in a northeastern Costa Rica
Dr. Mitch Aide

Ana Rita Caldas Patricio
Enero 2011
Survival analysis of Green turtles at two developmental sites in Culebra, Puerto Rico & Evolution and phylogeography of the fibropapillomatis-associated turtle herpesvirus.
Dr. Tomas Hrbek

Rosa L. González Marrero
Enero 2011
Coral reef fish recruitment on acropora cervicornis
Dr. Alberto Sabat

Joel Alejandro Mercado Díaz
Marzo 2011
Plant community responses of the alaskan artic tundra to environmental and experimental changes in climate
Dr. Joseph Wunderle

Augustin C. Engman
Mayo 2011
Fish assemblage structure in urban streams of Puerto Rico: The importance of reach-and-catchment-scale abiotic factors
Dr. Alonso Ramírez

Karla Z. Maldonado-Mena
Mayo 2011
Dissecting genetic basis of spot color and pattern in heritance:QTL analysis and mapping of heliconius.
Dr. Tomas Hrbek

Jessica Fonseca Da Silva
Mayo 2011
Ecophysiology and productivity of castilla elástica, and introduced tropical tree species
Dr. Ariel Lugo

Branko Hilje
Mayo 2011
Recovery of amphibian species richness a composition in a chronosequence of secondary in a northeastern Costa Rica
Dr. Mitch Aide

Ana Rita Caldas Patricio
Survival Analysis of Green Turtles at Two Developmental Sites, in Culebra, Puerto Rico & Evolution and Evolution and Phylogeography of the Fibropapillomatosis-Associated Turtle Herpesvirus
Dr. Gary Toranzos
Diciembre 2011

Franchescka Ruiz Canino
Adaptationsof Eleutherodactylus Antillensis in two Distinct Habitat Types
Mayo 2011

Rafael Benítez
The Effects of Anthropogenic Activities on the Carbon Dynamics of Stratified Estuaries in Puerto Rico
Diciembre 2011

Hana Y. López Torres
Spatial Ecology, Habitat USE, and Habitat Selection by Feral Goats in Mona Island Nature Reserve, Puerto Rico
Enero 2012
Dr. Alberto Sabat

Dylan Rhea Fournier
"The relationship of earthworms and soil carbon, nitrogen and microbial biomass in a subtropical wet forest of Puerto Rico"
Noviembre 2012
Dra. Grizelle González

Chen Dingfang
"Patterns of soil properties and respiration along an elevation in the Luquillo Mountains, Northeastern Puerto Rico"
Diciembre 2012
Dra. Mei Yu

Shakira G. Quiñones Lebrón

"Do Calves Matter?: The Effect of Number of Boats and Mode of Approach on the Behavioral and Accoustic Responses of Cetacean Groups with Calves"

Diciembre 2012

Dr. Mitch Aide

Dania Rodriguez

A Nuclear Phylogeny to Understand the Evolution of Annualism in Aplocheiloid Killifish

Mayo 2013

Dr. Thomas Hrbek

Carlos Andres Rodriguez

A Distribution Model, Nest Temperatures, Predators and Results for a Five Year Management Plan of Iguana iguana in Puerto Rico

Mayo 2013

Dr. Rafael Joglar

Pamela Medina

Some Aspects of the Biology Three Endangered Species of Eleutherodactylus frogs at the Carite State Forest, Puerto Rico: Eleutherodactylus Locustus, E. Richmondi and E. Wightmanae

Mayo 2013

Dr. Rafael Joglar

Wilfredo Falcón

The Emerging Dominance of Spathoglottis plicata in the Rio Abajo State Forest and the Effects of Plant-Animal Interactions on Population Growth Rates

Mayo 2013

Dr. James D. Ackerman

Cristina Del Valle

Developmental Genes in Gut Regeneration of the Sea Cucumber Holothuria Glaberrima

Noviembre 2013

Dr. José E. García-Arrarás

María Juliana Soto Girón

Genome-Wide Patterns of Positive Selection Among Helicobacter Pylori Strains

Octubre 2013

Dr. Steve Massey

Colibrí Sanfiorenzo-Barnhard

Woody Structure and Composition Across a Silvopastoral Landscape: A Case Study of the Los Angeles Ejido, Chiapas Mexico

Junio 2014

Dra. Elvia Meléndez-Ackerman

Omar Gutiérrez del Arroyo

June 2014

Soil Respiration of a Novel Subtropical Forest: From Diurnal to Annual Temporal Patterns

Dr. Ariel Lugo, Advisor

Gerty Pierre

December 2014

Resistencia al Acido Hipocloroso en Vibrio Fischeri

Dra. Zomary Flores

Defensas de Tesis Doctoral:

Karen Tossas Roblés
Febrero 2010
Regeneration of the Enteric Nervous System of the Sea Cucumber *Holothuria glaberrima* using Tubulin and other Neuronal Marker.
Dr. José E. García Arrarás

Julissa Rojas-Sandoval
Mayo 2010
Identification and evaluation of vulnerability factors affecting the caribbean cactus species *Harrisia Portoricensis.*
Dra. Elvia Meléndez Ackerman

Alberto Galindo-Cardona
Mayo 2010
Male behavior and hybridization of Africanized and European bees.
Dr. Tugrul Giray

Anabel Puig-Ramos
Junio 2010
Kappa opioid receptor modulation of cocaine-induced locomotor activity and behavioral sensitization in female rats.

Pablo Andrés Ortíz Pineda
Julio 2010
Analysis and characterization of genes associated with intestinal regeneration in the sea cucumber (*Echinodermata: holothuroidea).*
Dr. José E. García Arrarás

Nilza M. Biaggi-Labiosa
Julio 2010
Molecular mechanisms regulating neuronal nicotinic acetylcholine receptor function and expression.
Dr. José A. Lasalde

María Consuelo Pastén Ramos
Mayo 2011
Characterization of proteolytic activities during intestinal regeneration of "*Holothuria glaberrima*".
Dr. José E. García-Arrarás

Carlos Conde Costas
Mayo 2011
Nitrogen Dynamics in a tropical cave stream.
Dr. Jorge R. Ortíz Zayas

Pascal Mège
Junio 2011
Population structure and bacterial community dynamics in the elkhorn coral-white band disease system.
Dr. Owen McMillan

Juan Pablo Palavicinni
Diciembre 2011
Molecular Mechanisms Underlying High Level RNA Editing in Cephalopds
Dr. Joshua Rosenthal

Alberto R. Puente Rolón
Mayo 2012
REPRODUCTIVE ECOLOGY, FITNESS AND MANAGEMENT OF THE PUERTO RICAN BOA (*EPICRATES INORNATUS*, BOIDAE)
Dr. Richard Thomas

José W. Beltrán Salazar
Mayo 2012
Behavior and Diet of Five Bird Species Foraging for Foliage Arthropods in a Dry Puerto Rican Woodland: Arthropod Seasonality, Resource Partitioning and Tree Species Preferences
Dr. Joseph Wunderle

Lixmar Pereira
Dr. José E. García Arrarás
Junio 2012
Identification of Machado Joseph Disease 1Gene Among the Puerto Rican Population and its Associated Genetic Background

Ximena Vélez Zuazo
Dr. Ingi Agnarsson
Diciembre 2012
Integrating Phylogenetics and Population Genetics for the Conservation of Sharks and Sustainable Fisheries

Ana Carolina Monmany
Dr. Jess Zimmerman
Mayo 2013
Landscape complexity and vegetation structure as drivers of parasitoid comunities structure and function in the Dry Chaco, Argentina

Tasha M. Santiago Rodríguez
Dr. Gary Toranzos
April 2013
Enterococcus Faecalis-Infecting Phages (Enterophages) as Markers of Human Fecal Pollution and as Reservoirs of Antibiotic-Resistance and Virulence Genes

Yancy Ferrer Acosta
Dr. Irving Vega
April 2013
Characterization of EFHD2, a Novel Amyloid Protein Associated to Pathological Tau in Alzheimer's Disease

Raisa Hernández Pacheco
Dr. Alberto Sabat
Mayo 2013
Impacts of Bleaching on the Caribbean Reef-Building Coral Montastraea Annularis: From Communities to Colonies

Sofia Burgos-Caraballo
Dr. Alonso Ramírez
Mayo 2013
Function and Diversity of Benthic Biofilm Communities in Tropical Stream Ecosystems: The Relevance of Land Use and Reach Factors

Nydia Rivera Rivera
Dr. Eduardo Rosa-Molinar
Mayo 2013
GAP Junctions, Dye-Coupling, and Neurons: a Signaling System that Shapes a Spinal Motor Circuit Controlling a Rapid-Synchronous Movement

Iván J. Santos
Dra. Sandra Peña
Mayo 2013
Voluntary Wheel Running in C57BL/6J Mice: Effects on Anxiety and Fear Associate Learning Behavior and a Lipidomic Approach to Cellular/Molecular Processes

Gaddiel Galarza
Dr. Joshua Rosenthal
Mayo 2013
Molecular Determinants of Adaptation to the Cold of an Antarctic NA+/K+-ATPASE

Rodrigo A. Correa Rojas
Dr. Joshua Rosenthal
Mayo 2013
Functional Consequences of a To I RNA Editing on a Squid ADAR2

Sandra Garrett
Dr. Joshua Rosenthal
Mayo 2013
RNA Editing and Cold Adaptation in Cephalpods

Sandra V. Rivera Beltrán
Dra. Sandra Peña
Agosto 2013
Role of the Orphan Nuclear Receptor Nurr1in Long Term Memory of Context Fear Conditioning

Clarivel Lasalde De La Cruz
Dr. Carlos I. González-Vargas
Diciembre 2013
Understanding the Role of Phosphorylation of UPF1 Protein in *Saccharomyces cerevisiae*

José A. González Feliciano
Dr. Carlos I. González-Vargas
Diciembre 2013
Identification and Characterization of AU-RICH Elements and Trans-Acting Factors Involved in the Post-Transcriptional Regulation of Human Interleukin-3

Hamlet N. Pérez Villalona
Dr. Jorge Ortiz-Zayas
Marzo 2014
Nutrient Dynamics in the Laguna San José, a Tropical Urban Lagoon in the San Juan Bay Estuary, Puerto Rico

Manuel Delgado-Vélez
Dr. José A. Lasalde
Mayo 2014
The Cholinergic Anti-inflammatory Response in teh HIV Context

Ana María Sánchez Cuervo
Dr. Mitch Aide
Mayo 2014
Spatial Dynamics and Drivers of Land Use and Land Change in Colombia: Implications for Biodiversity Conservation

María E. Ocasio Torres
Dr. Alberto Sabat
Mayo 2014
Predation on the Tropical Freshwater Shrimp Xiphocaris elongata: Rostrum Inducibility, Antipredator Responses and Cascade Effects

Benjamin James Crain
Dr. Raymond Tremblay
Mayo 2014
Geographic Demographic, and Ecological Aspects of Lepanthes (Orchidaceae) Conservation

Evasomary Rivera Ramírez
Dr. Braulio Jiménez
Mayo 2014
Effects of Atmospheric Particulate Matter on the Post-Transcriptional Control of the Pro-Inflammatory Mediators Interleukin-6 and Interleukin-8

Edgardo A. Castro Pérez
Dra. Sandra Peña
Agosto 2014
Characterization of DNA Recombination Mechanisms in Long-Term Memory: The Role of DNA Ligase Inhibition by ARA-CTA and the V(D)J Recombination Activating Gene1 (RAG1) in Context Fear Conditioning

Eva Nilda Rodríguez Cruz
Dr. Irving Vega
Agosto 2014
Generation and Characterization of an EFHD2 Knockout Mice

Arlene Martínez Rivera
Dra. Carmen S. Maldonado-Vlaar
Diciembre 2014
Behavioral and Intracellular Mechanisms of MGLUR5 within the Nucleus Acumbens Shell during Expression of Environmental Elicited Cocaine Conditioning

Ruber Rodríguez Barreras
Dr. Alberto Sabat
Mayo 2015
Current Status of the Long-Spined Sea Urchin Diadema Antillarum in Puerto Rico

Sheila Soler Llavina
Dr. Jorge Ortiz-Zayas
Mayo 2015
Estrogenic Activity of Contaminants of Concern in Tropical Urban Waters

Julio C. Lazcano Lara
Dr. James D. Ackerman
Mayo 2015
The Reproductive Biology of Zamia(Cycadales: Zamiaceae) in Puerto Rico: Implications for Patterns of Genetic Structure and Species Conservation

Diana L. Delgado Rivera
Dra. Carla Restrepo
Mayo 2015
Disentangling Vine-Invaded Tropical Landscapes-From Individual Vine Patches to Vine Networks

Luis Alberto Ramírez Camejo
Dr. Paul Bayman
Mayo 2015
Aspergillosis in the Fruit Fly Drosophila melanogaster as a Model System

Alex E. Mercado Molina
Dr. Alberto Sabat
Mayo 2015
Demographics Aspects of the Threatened coral Acropora cervicornis: Implications for its Conservation and Restoration

Clara L. Camacho
Dr. Irving Vega
Mayo 2015
Ethnicity or location? Differential clinical profile of Alzheimer's disease among Puerto Ricans

Catalina Dávila Aguer
Dr. Gary Toranzos
Mayo 2015
Microalgae as a possible feedstock for biofuel production in Puerto Rico and their diversity in coastal waters

José L. Ortiz Lugo
Dra. María Sosa
Mayo 2015
Impacts of Urbanization and River Water Contaminants on Abundance, Locomotion and Aggression of a Local Freshwater Crustacean

Coral M. Capó Vélez
Dr. José A. Lasalde
Mayo 2015
Alpla7-nAChRs as a Novel Therapeutic Target in HIV-gp120 Neurotoxicity: Implications in the Development of HIV-Associated Neurocognitive Disorders

Arian Avalos Navia
Dr. Tugrul Giray
Mayo 2015
Perception, Response, and Integration of Aversive Stimuli in Castes and Colonies of Gentle Africanized Honey Bees

Moraima Morales Cruz
Dr. Kai Griebenow
Mayo 2015
Development of Nano-Size Delivery Systems to Improve Protein Pharmaceuticals in Cancer Applications

Yamixa Delgado Reyes
Dr. Kai Griebenow
Mayo 2015
Nano-Sized Delivery Systems to Treat Cancer

Yobana Mariño Cardenas
Dr. Paul Bayman
Mayo 2015
Reproduction, sex ratio and bacterial communities of the coffee berry borer Hypothenemus hampei (Coleoptera: Curculionidae)

2. ¿Qué reflejan los datos de la tabla anterior en cuanto a la investigación estudiantil a lo largo de estos años?

The data above suggests that when complared to the amount of students that enter, the majority of the complete their graduate work. What it dosent reflect is how many publication are derived from each student.

3. ¿Qué iniciativa debe tomar el Programa para aumentar la divulgación de las investigaciones estudiantiles?

   One possibility is to increase the amount of collaborations, second is to increase the expectations from each of the students and not necessarily in that order. Greater incentives of funding and payment on a monthly basis.

4. ¿Qué porcentaje de los estudiantes sub-graduados participan en las investigaciones desarrolladas por el Programa?

   20%

F. Publicaciones

Tabla 3.7.F.

Apéndice – Publicaciones

2015

Acevedo, M.A., Sefair, J., Smith, J.C., Fletcher, R. J. 2015. Optimal site-selection: pro- tecting against worst-case disturbance scenarios. Journal of Applied Ecology. In review.

Acevedo, M.A., Prosper, O., Lopiano, K., Ruktanonchai, N., Caughlin T., Martcheva, M., C. Osenberg and D. L. Smith. 2015. Connectivity, spatial heterogeneity and vector-borne disease transmission. PLoS ONE. In review.

Sefair, J., Smith, J. C., **Acevedo, M**, Fletcher, R. J. 2015. A three-stage model and algorithm for maximizing weighted expected hitting time with application to conservation planning. Operations Research. In review.

Acevedo, M.A., Fletcher, R. J., Tremblay, R. and Meléndez-Ackerman. 2015. The implications of asymmetric dispersal for connectivity and metapopulation modeling. Oecologia. In review.

2014

Fletcher Jr., R. J., **Acevedo, M. A.,** and Robertson E. P. 2014. The matrix alters the role of path redundancy on patch colonization rates. 96: 1444-1450 a

2013

Caughlin, T., Ruktanonchai, N., **Acevedo, M. A.,** Lopiano, K., Prosper, O., Eagle, N., and Tatem, A. J. 2013 Place-based attributes predict community membership in a mobile phone communication network.: 8:e56057

2012

Acevedo, M. A., Marcano, M. and Fletcher, R. J. 2012. A diffusive logistic growth model to describe forest recovery. 244: 13 - 19.

Luther, D., **Acevedo, M. A.,** Herrera, M. I., Estrada, A. E., and Aide, T. M. 2012. Is congener abundance related to vocal adjustments that minimize acoustic interference? 2-3: 150 - 158.

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2015

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2014

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Areces Berazain, Vega, **Ackerman**. 2014. Annotated list of the vascular plants at El Verde Field Station, El Yunque National Forest, Puerto Rico. Caribbean Naturalist 16: 1-51. Published.

Ackerman, collaborators. 2014. Orchids of the Greater Antilles. *Memoirs of the New York Botanical Garden 109*. Book.

Ackerman, Falcón, Molinari, Vega, Espino Cuevas. 2014. Consequences of acquired interspecific interactions for an invasive orchid, Spathoglottis plicata in Puerto Rico. *Biol. Invasions* DOI 10.1007/s10530-014-0676-3.

Ackerman, J. D. 2014. Rapid transformation of orchid floras. Lankesteriana 13:157-164.

Whitman, **Ackerman.** 2014. Habitat suitability for terrestrial orchids in a tropical rainforest: best sites for survival differ from those for reproduction.
Ecology. In review.

Areces Berazain, Vega, **Ackerman.** 2014. Annotated list of the vascular plants at El Verde Field Station, El Yunque National Forest, Puerto Rico. Caribbean Naturalist. In review.

2013

Miller, Krupnick, Stevens, Porter-Morgan, Boom, Acevedo-Rodriguez, **Ackerman**, Kolterman, Santiago, Torres, Vélez. 2013. Toward target 2 of the global strategy for plant conservation: an expert analysis of the Puerto Rican flora to validate new streamlined methods for assessing conservation status. Ann. Missouri Bot. Gard. 99: 199-205.

2010

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Tremblay, R. L., **J.D. Ackerman** and M.E. Perez. 2010. Riding across the selection landscape: fitness consequences aof annual variation in reproductive characteristics. Philosophical Transactions of the Royal Society B 365: 491-498.

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Agnarsson I, Kuntner M, May-Collado LJ. 2010. Dogs, cats, and kin: a molecular species-level phylogeny of Carnivora. Molecular Phylogenetics and Evolution 54: 726–745.

2015

Sarai Torres-Ruiz, Claribel Ojeda- Reyes, Ron Brown, Jadira Aponte-Ramírez, **José L. Agosto-Rivera** & Nelson D. Cruz-Bermúdez. 2015. Authentic Research Experiences for Public High School Teachers and Students in Puerto Rico: University-High School Partnership. Electronic Journal of Science Education. In Preparation.

Menéndez-Delmestre RM, **Agosto-Rivera JL** and Segarra AC. 2015. Estrogen receptors: Critical neural substrates of cocaine-induced sensitization. *Hormones and Behavior.* In Preparation.

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Ramirez-Camejo L., Torres-Ocampo a. P, **Agosto-Rivera JL,** Bayman P. 2014. An opportunistic human pathogen on the fly: Strains of Aspergillus flavus vary in virulence in Drosophila melanogaster. Med Mycol 2014:1–9. Journal.

Giannoni-Guzmán M, Giray T, **Agosto-Rivera JL**, Stevinson, BK, Freeman, B, Ricci P, Brown EA, Abramson CI. 2014. Ethanol-induced effects on sting expression response and punishment learning in the European honey bee (Apis mellifera). Journal Article. Submitted.

Sarai Torres-Ruiz, Claribel Ojeda- Reyes, Ron Brown, Jadira Aponte-Ramírez, **José L. Agosto-Rivera** & Nelson D. Cruz-Bermúdez. 2014. Authentic Research Experiences for Public High School Teachers and Students in Puerto Rico: University-High School Partnership. Electronic Journal of Science Education. Journal Article (Submitted).

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Daniel Redo, **T. Mitchell Aide** & Matthew L. Clark (2012): Vegetation change in Brazil's dryland ecoregions and the relationship to crop production and environmental factors: Cerrado, Caatinga, and Mato Grosso, 2001–2009, **Journal of Land Use Science**, 1-31. doi:10.1080/1747423X.2012.667448. pdf

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i. ¿Cuál es la expectativa del Programa en cuanto a la cantidad de publicaciones que espera anualmente de cada profesor?

Depending on impact factor between 1 and 4

ii. ¿Qué porcentaje de publicaciones de los profesores se hacen en revistas arbitradas?

100%

iii. ¿Tiene el Programa una publicación propia?

Sí (Conteste preguntas 3.a la 3.e)
X No (Pase a la pregunta 6)

3a. Título: _____

3b. Año en que comenzó: _____

3c. Tipo de publicación:

____Impresa

____Electrónica

____Semestral

____Anual

___Otra: _____

3d. Circulación:

Cantidad de tirada: _____

Distribución:

____Correo federal

____Correo Interno

____Por canje

____Otro: _____

¿Incluye la presente Junta Editora de la publicación del Programa (si aplica) miembros internacionales? ¿Cuál es la proporción de miembros internacionales en relación al total?

iv. ¿Posee la publicación suficiente alcance como para dar a conocer la investigación generada a las poblaciones importantes del Programa (estudiantes, investigadores, foros prominentes)?

v. ¿Qué estrategias de divulgación de sus investigaciones utiliza el Programa dentro y fuera del Recinto?

X Publicaciones (revistas, libros) x Foros
X Congresos
X Seminarios a la comunidad universitaria
X Seminarios a la comunidad fuera de la universidad
Otros _____

vi. Según los datos recogidos en esta sección, ¿está la cantidad de publicaciones de los pasados seis años de acuerdo con los objetivos del Programa (de acuerdo a la expectativa de publicaciones anuales que se tenía por profesor)?

Yes, 1-2 per professors. We would like to increase the number and qualify the publications, in particular trying to increase the number of publications in high impact journals.

vii. ¿Cuál ha sido el impacto de las publicaciones en la competitividad y proyección del Programa?

The pbulcations derived from our university have been enough to keep us at a basic or survival funding level. We have not have the ground breaking work come form our department on a regular basis that causes funding agencies to increase funding levels.

IV. Estudiantes/Egresados

A. Admisión

a. Cupo

a. Indique el cupo del Programa

20 a 25 estudiantes anualmente; dependerá de los grados otorgados el año anterior y el presupuesto otorgado.

b. Marque cuáles de los siguientes criterios se consideran para determinar el cupo del programa:

- ☐ Instalaciones
- ☐ Cantidad de estudiantes activos
- X Presupuesto
- ☐ Cantidad de profesores disponibles para enseñar cursos
- ☐ Cantidad de investigadores activos que podrán supervisar tesis
- ☐ Cantidad de cursos a enseñarse
- ☐ Cantidad de estudiantes en prórroga
- ☐ Ayudantías disponibles
- ☐ Diversidad de la población estudiantil
- ☐ Otros:

b. Reclutamiento

a. ¿Tiene el Programa un plan de reclutamiento para estudiantes?

X Sí. ¿Cuán eficaz ha sido el mismo? Indique la cantidad de estudiantes reclutados mediante ese plan en los últimos 5 años

No. ¿Cuáles son las estrategias de reclutamiento que utiliza el Programa?

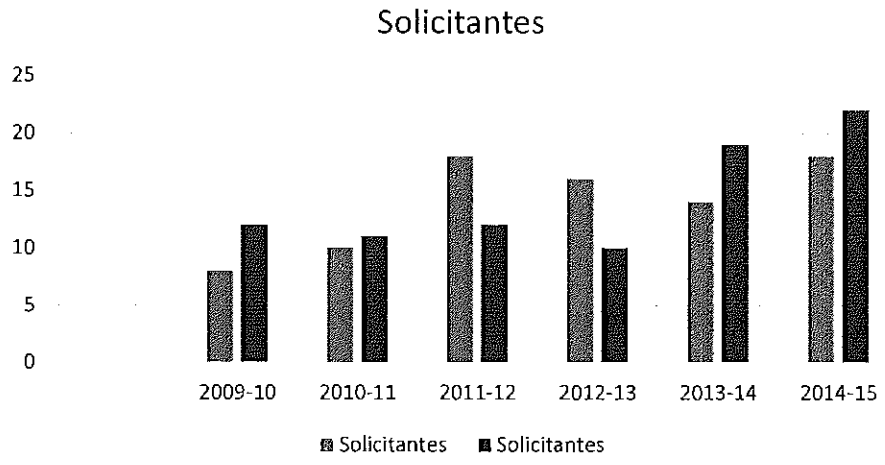
___Ferias de estudios graduados
___Campaña publicitaria
___Visitas a universidades
___Otras _____
___Ninguna

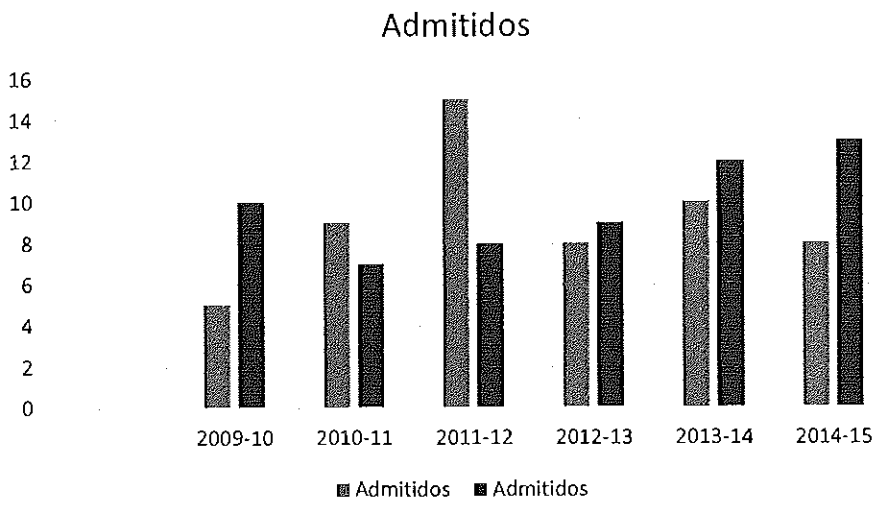
c. Distribución de la población estudiantil. Escriba en la siguiente tabla las cifras para los pasados cinco años.

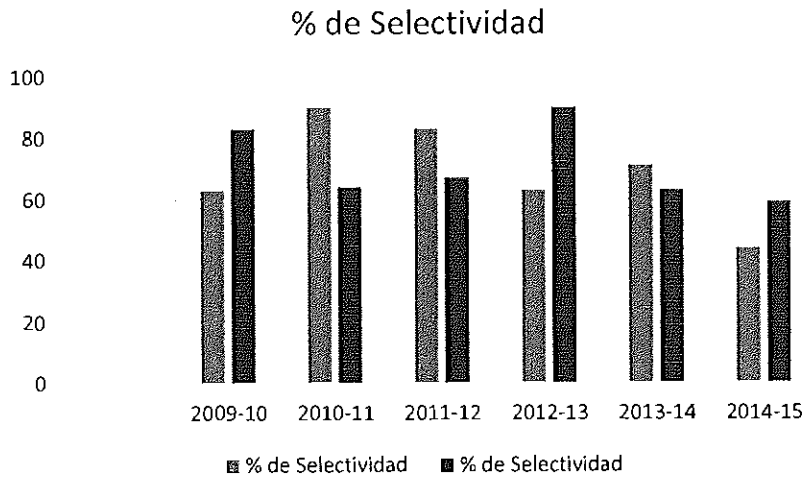
Tabla 4.1.A.

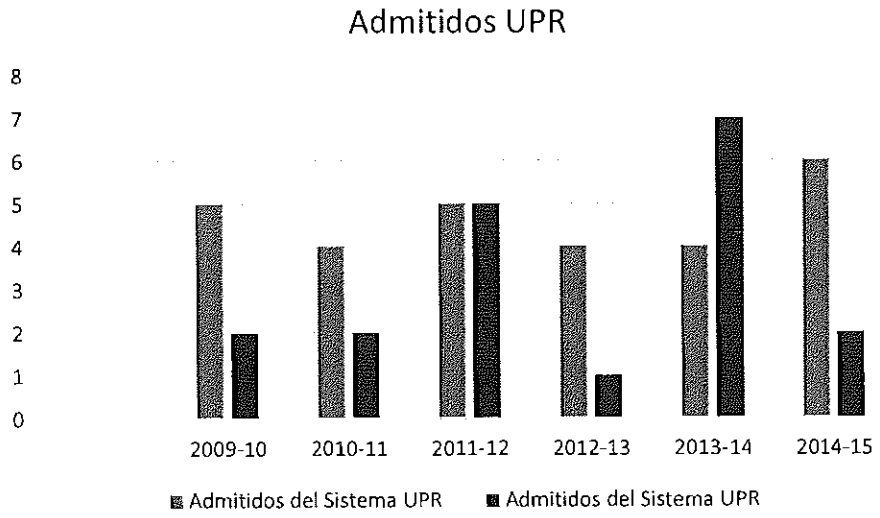
Año	Cupo	Solicitantes		Admitidos		% de Selectividad		Admitidos del Sistema UPR		Matriculados		Estatus Matriculados	
		Masculino	Femenino	Masculino	Femenino	Masculino	Femenino	Río Piedras	Otras unidades del Sistema	Masculino	Femenino	Tiempo Parcial	Tiempo Completo
2009-10		8	12	5	10	63	83	5	2	5	10	0	X
2010-11		10	11	9	7	90	64	4	2	9	5	0	X
2011-12		18	12	15	8	83	67	5	5	11	8	0	X
2012-13		16	10	8	9	63	90	4	1	8	7	0	X
2013-14		14	19	10	12	71	63	4	7	10	12	0	X
2014-15		18	22	8	13	44	59	6	2	8	13	0	X

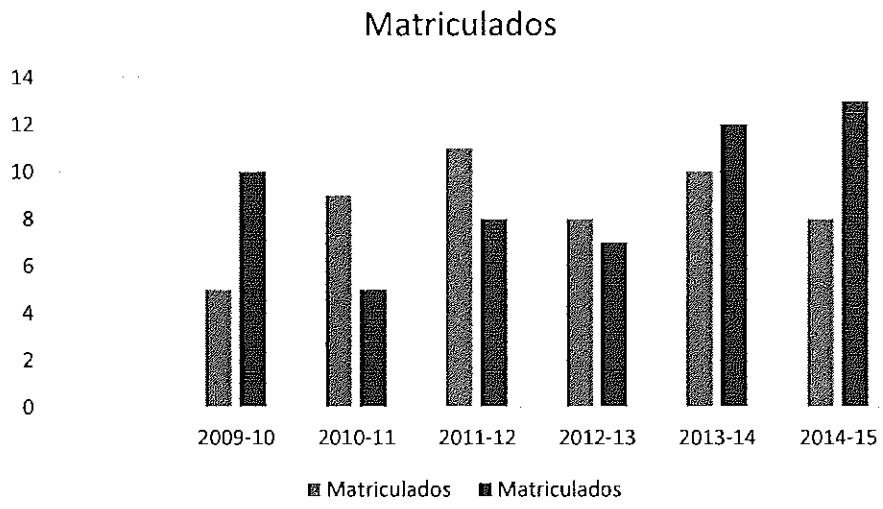
Tabel 4.1b - Applicants and acceptances by sex




Admitidos
16
14
12
10
8
6
4
2
0
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
Admitidos
Admitidos


% de Selectividad
100
80
60
40
20
0
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
% de Selectividad
% de Selectividad


Admitidos UPR
8
7
6
5
4
3
2
1
0
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
Admitidos del Sistema UPR
Admitidos del Sistema UPR



a. Considere los datos provistos en la tabla anterior y evalúe. ¿Cuán selectivo[19] y atractivo[20] es el Programa?

In latin america our program is very attractive. It is very strong in ecology and we are building a stronger program in the molecular sciences

b. ¿Cómo ha variado la cantidad de estudiantes en el programa en los pasados seis años?

There has been a slow but study increase in the amount of students that apply, with not much differences in sex (male vs female)

c. ¿Cómo se han ajustado las admisiones en relación al cupo?

There is no specific quota established. The main factor is whether students are competitive enough and whether there are funded by mentors or need assistanships.

d. Describa la distribución de la matrícula en términos de género

In the last two years there we have had more females than males, however before that, it has been pretty even

[19] La selectividad se refiere a la cantidad de estudiantes que se admiten de los solicitantes.

[20] El atractivo se refiere a la cantidad de estudiantes aceptados que finalmente se matriculan.

e. Describa la distribución de estudiantes a tiempo completo y a tiempo parcial

The majority of our students are full time. There are a few that may move to part time for a semster or two but for the most par tour students are full time.

f. Describa la proporción de estudiantes admitidos de la UPR-Recinto de Río Piedras con la de los admitidos de otros recintos del Sistema UPR

We don't have Access to those numbers

g. Describa y compare la cantidad de estudiantes por recinto de UPR que son provenientes de otros países (Ver Tabla 2.4.B)

We have about 25% of our students from other countries. 1 from Italy, 2-3 from India and the remainer from latin america and the carribean

Estudiantes Internacionales-Indique en la siguiente tabla la cantidad de estudiantes internacionales que han solicitado admisión al Programa, los que han sido admitidos y matriculados.

Tabla 4.2.A.

Año	Solicitantes Internacionales		Admitidos	Matriculados
	Cantidad	Países de Procedencia		
2009-2010	5	Colombia, Costa Rica	4	4
2010-2011	7	Colombia, Venezuela, México	6	6
2011-2012	10	Colombia, Cuba, Costa Rica, EU	8	7
2012-2013	11	Colombia, Israel, República Checa, EU	9	9
2013-2014	15	Colombia, Guatemala, Haití, EU, Venezuela, India, Perú, Cuba, China	10	10
2014-2015	12	Colombia, Ecuador, Perú, Haití, Bolivia, Bangladesh, República Dominicana	11	10

a. ¿Cuán diverso, en términos de procedencia específica, es el cuerpo estudiantil del Programa?

We have a great variety of students from Puerto Rico, United States, India, Italy, and many from latin America

b. Describa como la diversidad contribuye a la competitividad, el enriquecimiento del Programa y a la meta de internacionalización del Recinto y la UPR

While the diversity of our program. enriches our program, it doesn't contribute to the competetivness of the program. Our program is not set up to enrich the competitiveness of the students with the world at large and therefore we are not prepared to compete with the world community. While our students receive the skill necessary to compete, the sense of urgency seems lacking.

Retención Estudiantil

Indique la cantidad de estudiantes por cohorte para cada año académico. Calcule la tasa de retención para el segundo y tercer año, si el programa evaluado es de Maestría, y para el segundo y cuarto año si es del Doctorado. Luego establezca el porciento de retención[21] para dichos años.

Tabla 4.3.B.

Año de admisión	Cantidad de estudiantes admitidos	Cantidad de estudiantes matriculados 2do año		Cantidad de estudiantes matriculados 3er año		Cantidad de estudiantes matriculados 4to año	
		#	%	#	%	#	%
2009-10	15	15	100	15	100	15	100
2010-11	16	16	100	16	100	16	100
2011-12	23	22	95	22	95	22	95
2012-13	17	17	100	17	100	17	100
2013-14	22	22	100	22	100	22	100
2014-15	21	20	95	20	95	18	90

[21]Cantidad de estudiantes que se matriculan cada año dividido entre la cantidad de estudiantes que se matricularon en el primer año de estudio.

1. Marque con una (X) las razones principales que por las que los estudiantes no completaron su Programa. Utilice información que haya sido recopilada por el propio Programa a través de cuestionarios u otros medios.

☐ Incapacidad física

☐ Ausencia prolongada

☐ Baja voluntaria

X Dificultades de salud

☐ Falta de recursos en el Programa

☐ Limitaciones en el ofrecimiento académico

___Poca diversidad en el ofrecimiento

___ Horario inconveniente

☐ Servicios en Fuerzas Armadas

☐ Suspensión académica (promedio)

☐ Falta de recursos económicos

☐ Servicios estudiantiles limitados

☐ Relaciones interpersonales con Facultad

Otras razones:

2. ¿Qué información se desprende del análisis de los datos incluidos en las tablas 4.3B a 4.7.B y de los criterios marcados en pregunta 2?

   The table suggests that we have a high retention rate

3. ¿Qué acciones ha llevado a cabo el Programa para asistir a los estudiantes cuando desea darse de baja? ¿Cuáles debería tomar?

   The student makes an appointment with the coordinator and the students options are discussed at lengh make sure that the student that is making the decisión is aware of their options and makes the best decisión.

4. Incentivos Económicos

   En la siguiente tabla, registre la cantidad de estudiantes que han solicitado préstamos, ayudantías o becas en los pasados seis años[22]. En cada columna registre los datos correspondientes a la cantidad de solicitudes de incentivos y aquellos que fueron otorgados.

   Tabla 4.7.B. *

Año	Ayudantías[23]		Becas	
	Solicitados	Otorgados	Solicitados	Otorgados
2009-10		unknown		
2010-11		unknown		
2011-12		unknown		
2012-13		49		
2013-14		42		
2014-15		53		
2015-16		45		

   1. Compare la demanda de ayuda económica por parte de los estudiantes del Programa con el otorgamiento de los diferentes incentivos
   2. To date we have met the needs of the students. We have had great help from grants by the professors. The majority of the demand of 1 -3 yr students is from the department

[22] Puede conseguir esta información en la Oficina de Asistencia Económica.

[23] Fondos institucionales recurrentes de las facultades, escuelas autónomas y del DEGI (FIPI, EAFs) otorgados con el fin de proveer incentivos económicos a estudiantes graduados para que se dediquen a tiempo completo a sus estudios y para promover el desarrollo de la investigación y actividad creativa en el Recinto. Estos incluyen ayudantías para experiencias de cátedra, experiencias de investigación o labor creativa y experiencias profesionales.

Graduación

3. Tiempo que tardan los estudiantes en completar el Grado

   a. ¿Muestra claramente el programa de estudios el tiempo que le tomará al estudiantecompletar el grado y el orden en que debe tomar los cursos y completar otras experiencias curriculares (sí aplica) para terminar en el tiempo señalado?
   Sí ☐ **No**☐

   b. ¿Ofrece el Programa orientación sobre la importancia de seguir el secuencial curricular y las implicaciones de no seguirlo?

   The first courses are assigned and from there there are few courses that need to be taken in a specific order. Only doctoral seminar do the students need to have data to write their grants.

   c. ¿Cuál es el promedio del tiempo, en términos de años, que tardan los estudiantes en completar el grado de su Programa[24]?_____Años

   master's: 3 años

   doctorate: 6 años

   d. ¿Confrontan los estudiantes algún problema para completar el grado en el tiempo estipulado en programa de estudios? Funding is one reasons, family situations is another.

   Yes, most students take a year or two longer than what is expected.

4. Tasa de Graduación
   Utilizando como referencia la cantidad de estudiantes matriculados (Vea Tabla 4.3 B), indique en las siguientes tablas el número de estudiantes que se gradúan por año en el Programa de MA y el PhD. Escriba los datos en la columna que le corresponda al Programa.

   Tabla 4.8.C. **MAESTRIA**

Año de admisión	# de estudiantes admitidos	# de estudiantes graduados en 2 años	# de estudiantes graduados en 3 años	# de estudiantes graduados en 4 años o más
2009-2010	15	0	1	2
2010-2011	16	1	2	4
2011-2012	22	1	1	5
2012-2013	17	0	3	4
2013-2014	22	0	2	2
2014-2015	20	1	3	1

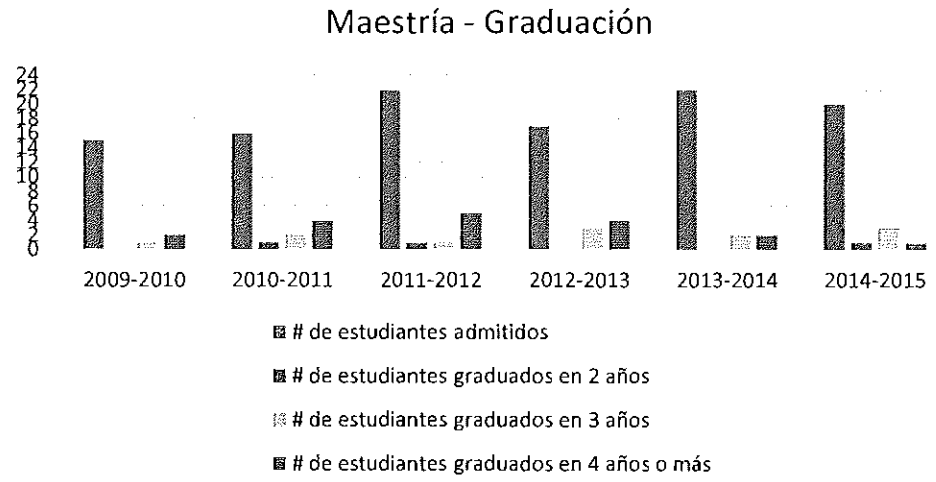
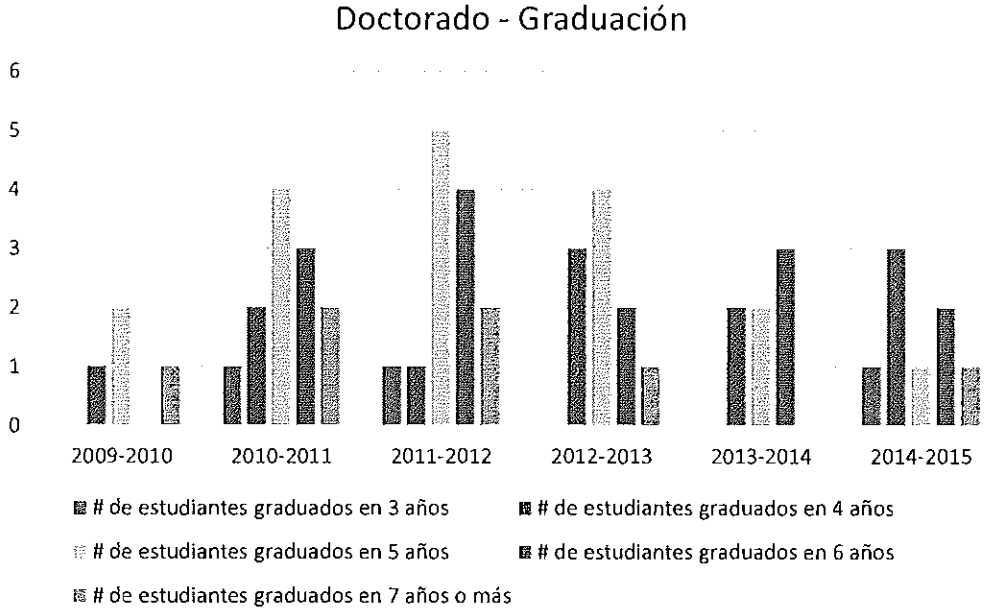


Tabla 4.8.D **DOCTORADO**

Año de admisión	# de estudiantes graduados en 3 años	# de estudiantes graduados en 4 años	# de estudiantes graduados en 5 años	# de estudiantes graduados en 6 años	# de estudiantes graduados en 7 años o más
2009-2010	0	1	2	0	1
2010-2011	1	2	4	3	2
2011-2012	1	1	5	4	2
2012-2013	0	3	4	2	1
2013-2014	0	2	2	3	0
2014-2015	1	3	1	2	1



24 Puede conseguir esta información en OPEP o el Registrador.

Egresados

ii. ¿Tiene el Programa un sistema para darle seguimiento a sus egresados?

x Sí. (Pase a la pregunta 2.) ☐ No (Pase a la pregunta 5.)

iii. ¿Cómo el Programa mantiene contacto con sus egresados?

Not a formal one.

iv. ¿Dónde se emplean los egresados del Programa y cuánto tiempo les toma en obtener empleo luego de graduarse?

In recognized universities, pharmaceutical companies, and post docs

v. ¿Cuál es el porcentaje de egresados que anualmente continúan estudios más avanzados?
100 %

vi. Servicios de Apoyo

1. Consejería

¿Cómo implanta el Programa la consejería académica? ¿Cómo informa el Programa a sus estudiantes sobre requisitos, normativas y servicios institucionales del Recinto y del Programa? (Favor de incluir ejemplos de éstos en la sección de anejos)

All students attend an orientation in either their first or third semester. The orientation covers all aspects of the graduate program and gives them training for their TA assignments. For more immediate needs of communication we work through department meetings were advisors are informed and this is in turn passed on to the student. There is also a long standing weekly news letter sent out by the administrator of the Julio Garcia Diaz

2. Procuraduría

¿Qué ha hecho el Programa para atender las situaciones o querellas de los estudiantes? ¿Cuáles han sido las causas más comunes de esas querellas?

There is an order of meetings. First with their advisor, then with the graduate coordinator, the department chairmen, until finally the dean.

V. Recursos Esenciales para la Docencia, la Investigación y la Creación

A. Recursos Bibliográficos *Ver Anejos*

B. Recursos Tecnológicos

1. Cursos – Haga una lista de los cursos que ofrece el Programa en los que se utiliza la tecnología para algo más que para procesar textos, por ejemplo: manejo de estadísticas, simulaciones, manejo de datos, traducción o lenguas, educación a distancia, tecnología para el aprendizaje, cursos en línea, diseño de páginas de Internet, Blackboard, entre otros.

Tabla 5.4.C.

Código del Curso	Título	Tipo de recurso tecnológico
	See course table. Most courses use either	Black board
	Blackboard or Moodle except for maybe	Moodle
	Colloquiem .	Specific data bases

a. Investigación - ¿Tiene el Programa proyectos de investigación o enseñanza que requieran tecnología exclusivamente dedicada a los mismos?

☐ Sí. ¿Cuáles? ☐ No

(Por favor, explique.) The genomics uses big data conscepts where large amounts of genetic data is saved and compared between species. Imaging aslo uses large amounts of technology. The files need to be integrated and then saved. These are two such examples

[25] La proporción de estudiantes por computadora se refiere a la cantidad de estudiantes matriculados dividida entre la cantidad de computadoras que posee el Programa.

C. Plan de Tecnología

1. ¿Cuenta el Programa con un Plan de Tecnología adecuado? ☐ Sí ☐ No

   a. ¿Incluye el plan la adquisición, actualización, mantenimiento distribución y reposición de tecnología? ☐ Sí ☐ No

   b. ¿Incluye el adiestramiento del personal docente y no docente? ☐ Sí ☐ No

   c. ¿Contempla el adiestramiento de los estudiantes? ☐ Sí ☐ No

d. ¿Cuenta el Programa con un presupuesto para la implantación, desarrollo y mantenimiento del Plan de Tecnologías? **Sí** No

e. ¿Considera el Plan una partida dentro de su presupuesto para mantenimiento y actualizaciones (upgradings) para los recursos tecnológicos, por ejemplo: sistemas operativos, Programas de computadoras, memoria, entre otros? **Sí** No

f. ¿Considera el plan la ampliación de recursos, servicios y horarios? **Sí** No

D. Análisis

Evalúe cuán adecuados son los recursos tecnológicos del Programa para promover la productividad y la excelencia en la docencia de sus profesores.

1. ¿Es la proporción de estudiantes por computadora adecuada? X☐ Yes ☐

About 95% of the students have there own and all laboraoties have computers for the students to use as well as the graduate network in the library

2. ¿Son los Programados disponibles suficientes y adecuados para la demanda de los usuarios? ☐ **Sí** ☐ No

There are ample computers and resources available for the students and faculty. A member of the biology department has joined forces with mathamatics and landed a big data grant to teach us to better use our current resourses

3. ¿Son las funciones de estas instalaciones del personal, de los servicios ofrecidos, cónsonas con las necesidades de los usuarios y expectativas de desarrollo del Programa?

For the area of cell and molecular we are still a generation behind. We need more shared facilities with the people who have the competence to not just run the facility but to help develop new and specialized procedures to meet the needs of the users

4. ¿Cuán adecuadas son las instalaciones, los recursos bibliográficos y el equipo tecnológico para las necesidades de los usuarios y las expectativas de desarrollo del Programa?

The MRSB holds promise to answer many of the technological problems we have.

5. ¿Qué necesita hacer el Programa para actualizar los recursos bibliográficos, mejorar la infraestructura física, adquirir y mantener recursos tecnológicos adecuados?

State of the art facilities or an easier and wider access to current journals/literature.

Gerencia, Planificación y Desarrollo

A. Estructura Organizativa, Políticas y Procedimientos

1. Prontuarios, catálogo graduado y publicidad del Programa

   a. ¿Cómo difunde el Programa la Misión, sus Metas y Objetivos?

   ☐ Opúsculos ☐ **Página** electrónica

   ☐ Tablón de edictos ☐ Otro: todos los anteriores

   b. ¿Cumplen los prontuarios del Programa con las normas institucionales, del CEPR y la MSA? ☐ Sí X ☐ No

   c. ¿Cuál fue el resultado de la más reciente actualización del Catálogo de Cursos Graduados? Marque con una (X) todas las que apliquen.

   ☐ Se eliminaron cursos del Catálogo, así como del Archivo de Administración Central.

   ☐ Se añadieron cursos. ¿Cuántos? 2

   ☐ Se actualizaron cursos, pero no surgieron cambios adicionales a los ya registrados oficialmente.

   ☐ Se solicitó la actualización de cursos y estamos en el proceso de oficializar los cambios.

   ☐ **No se actualizó**

   d. ¿Mediante qué herramientas logra exposición o se promociona el Programa?

   x **Opúsculo**

   x **Hojas Sueltas**

   x Página electrónica

   ☐ Medios de comunicación masiva. ¿Cuáles? _____

   XOtros Facultad, estudiantes graduados, talleres, convenciones.

   e. ¿Cumple esa promoción con las normas institucionales del CES y de la MSA?

   x Sí ☐ No

Por favor, explique. Si no cumple, indique qué medidas se tomarán para lograr su cumplimiento.

2. ¿Cómo comunica la gerencia académica del Programa las normativas institucionales vigentes? ¿Cómo logra el cumplimiento de las mismas?

B. Adiestramiento

1. ¿Con qué frecuencia el personal administrativo y de apoyo participa en conferencias, talleres y seminarios de mejoramiento profesional? Marque con una (X).

   ☐ Mensualmente

   X Semestralmente

   ☐ Anualmente

   ☐ Otro _____

2. Indique los talleres o conferencias a los que han asistido en el último año académico.

   Talleres de Etica

3. ¿Son las actividades de desarrollo profesional adecuadas y suficientes para promover el funcionamiento eficiente del Programa y mejorar los servicios que ofrece el mismo?

   none

4. ¿Con qué frecuencia se evalúa el desempeño del personal administrativo y de apoyo? Marque con una (X).

   ☐ Mensualmente

   ☐ Semestralmente

   XAnualmente

   ☐ Otro _____

   ☐ No se evalúa

5. ¿Qué efecto tienen las evaluaciones de personal (si alguna) en el desempeño del mismo?

   The personal evaluations are used as a basis for discussion with the personnel committee if improvement is needed..

C. Reclutamiento

Facultad:

1. ¿Tiene el Programa un plan de reclutamiento y desarrollo de facultad?

   x Sí. Conteste: ¿Cuán eficaz ha sido el mismo? ¿Toma ese plan en consideración el retiro de profesores y los cambios de énfasis en el área de estudio? (Incluya copia del Plan en los anejos)

   No. Conteste: ¿Cuáles son las prácticas y procedimientos de reclutamiento de profesores?

2. ¿Son las prácticas y procedimientos afines con la intención de reclutar al personal más idóneo según las metas, objetivos y expectativas de desarrollo del Programa y del Recinto?

   - Annoucements in the newspapers and jounals such as Nature.
   - Interviews are completed with the department members
   - A seminar is givien to the department by the candidate
   - The department votes on its choice

3. ¿A qué problemas se enfrenta el Programa a la hora de reclutar profesores?

   Low salary
   Location (Puerto Rico
   amount of startup funds
   Repetation

4. Enumere las prioridades del reclutamiento de profesores para los próximos cinco años.
   - Ability to obtain outside funding
   - Teaching
   - service

D. Comités Permanentes

1. ¿Cuáles son los Comités Permanentes que posee el Programa?

   The graduate committee for Master's and Doctorate programs

2. ¿Cumplen con las tareas que se proponen anualmente? ¿Funcionan eficazmente los comités?

   Yes

3. ¿Tiene el Programa una Junta Externa? ☐ Si ☐ x No

E. Relaciones con la comunidad

1. ¿Existe evidencia de vínculos entre el Programa, el sector privado y el gubernamental? ¿Mediante qué iniciativas se mantienen?

   no

2. ¿Con qué otras unidades del Recinto el Programa tiene relaciones directas y colaborativas?

   Sí, con los otros Recintos de la UPR; Universidad Central del Caribel, Universidad Metropolitana, Universidad Interamericana.

3. ¿Es adecuada la relación entre el Programa y otras unidades académicas de la Facultad, incluyendo la Oficina del Decano?

   yes

4. ¿Mediante qué iniciativas o proyectos concretos mantiene el Programa su relación con la comunidad externa? ¿Cómo participan los miembros del Programa en el servicio a la comunidad externa?

   no

5. ¿Tiene o ha tenido el Programa proyectos de Práctica Intramural? Si es así, por favor inclúyalos en el espacio a continuación.

   no

F. Plan de Desarrollo

1. ¿Cuenta el Programa actualmente con un Plan de Desarrollo? ☐ Sí ☒ No

   (Si su respuesta fue Sí, por favor, inclúyalo como anejo.)

2. ¿Tiene el Programa unas expectativas de desarrollo definidas? ☐xSí ☐ No
3. ¿Han sido estas expectativas discutidas y aprobadas por su profesorado? ☐xSí ☐No

4. ¿Qué mecanismos se han utilizado para discutir y divulgar el Plan de Desarrollo entre la facultad del Programa?
   En las reuniones del Programa Graduado.

5. El Plan de Desarrollo del Programa es: (marque todas las que apliquen)

- ☐ Razonable y realizable
- ☐ Actualizado
- xEstablece prioridades (metas)
- ☐ Define objetivos y actividades
- ☐ Asigna personas responsables
- ☐ Establece fechas límites para la consecución de cada tarea
- ☐ Toma en consideración el sitial al que la facultad aspira conducir el Programa

G. Presupuesto

1. ¿Cuenta el Programa con un Presupuesto Operacional propio?
   ☐ Sí. (Incluya copia del mismo en la sección de Anejos) x No

2. ¿Toman en cuenta las partidas del Presupuesto Operacional las prioridades establecidas en el Plan de Desarrollo? ☐ Sí ☐ No

3. ¿De qué manera participa la facultad y los estudiantes en el diseño del Presupuesto Operacional del Programa, su utilización y evaluación de los resultados?

   Through department meetings

4. ¿Cuán diverso es el portafolio de ingresos fiscales del Programa? ¿Qué iniciativas contempla el Programa para allegar recursos fiscales adicionales? ¿Cuenta el Programa con un plan para identificar y solicitar fondos externos?

   Medium to low. Funds are sought out by the professors to run their programs

H. Análisis

1. ¿Se percibe a la gerencia del Programa como un agente de cambio?

   yes

2. ¿Cuáles son los mayores retos administrativos que el Programa enfrenta en la actualidad? ¿Qué medidas debe tomar para afrontarlos?

   Approval of the Reglamentos, which are attached here

3. ¿Ofrece el Programa a sus estudiantes, egresados y profesores un servicio de excelencia en todas sus áreas? ¿Hay algún área de servicio que requiera especial atención? ¿Qué ajustes o inversión adicional se requeriría para elevar la calidad del Programa?

   No we do not. We need to have infrastructure improvement and grants are sought after by faculty members at all levels

4. ¿Le parece que el apoyo recibido de la alta gerencia universitaria ha sido adecuado para atender las necesidades y aspiraciones del Programa?

   no

5. ¿Qué políticas o procedimientos (si alguno) relacionados a la alta gerencia universitaria considera que se deberían modificar para facilitar el funcionamiento y el desarrollo del Programa? ¿Cuáles son sus recomendaciones? See five year plan

VI. Avalúo del Aprendizaje Estudiantil

A. Implantación

Conteste en qué se diferencian las medidas recogidas de las que fueron propuestas en la **Guía de Implantación del Avalúo del Aprendizaje**:

1. ¿Cuántos estudiantes participaron en las actividades de avalúo?

   3

2. ¿Qué competencias se midieron?

   -Effective communication
   -investigation and creation of new knowledge
   -critical thinking

3. ¿Qué instrumentos se utilizaron?

   rúbricas

4. ¿Hubo algún cambio con respecto al plan original? Explique.

   no

5. ¿Surgieron imprevistos durante la implantación? Explique.

   Yes, they have asked for Rubics to be completed.

6. ¿Cuenta el programa con un Plan de Avalúo a 5 años? Provea el Plan de Avalúo detallado con el que cuenta el Programa (puede ser como apéndice).

   Yes

Año Académico	Dominios a evaluar	Objetivos de aprendizaje	Cursos donde se evaluará
2014-2015	Comunicación efectiva	Preparación de un manuscrito que gane las herramientas necesarias para entender el método científico y formas de comunicación de sus hallazgos.	BIOI 6997, BIOL 8997
	Investigación y creación	Desarrollar las actitudes necesarias para completar un proyecto de investigación. En particular se busca que el estudiante a través de la colección y análisis de datos.	BIOI 6997, BIOL 8997
	Pensamiento crítico	Preparación de un manuscrito que gane las herramientas necesarias para entender el método científico y formas de comunicación de sus hallazgos.	BIOI 6997, BIOL 8997

B. Análisis

1. ¿Se puede detectar alguna relación entre el desempeño de los estudiantes en la investigación y las destrezas de pensamiento crítico de los estudiantes antes de empezar la tesis?

   ,Yes the skills needed to complete there thesis are often taught to them before they begin there thesis. The key skill taught is critical thinking. Which is reinforced in clases and in the clases of research..

2. ¿Se puede detectar alguna posible relación entre el desempeño de los estudiantes en la investigación y factores relacionados al diseño e implantación del currículo y el programa?

   the performace of the students is directly related to the design of the curriculum. We give our students the tolos for success and they implement these tolos in there investigation

3. ¿Qué otros factores que no se encuentran contenidos en esta sección de Análisis pudieron haber contribuido o entorpecido el logro de los resultados esperados?

   None

4. ¿Qué actividades de evaluación se podrían llevar a cabo en el futuro para profundizar en el conocimiento de los problemas identificados o identificar con mayor certeza otros posibles factores que contribuyeron o entorpecieron el logro de los resultados esperados?

   the problema is not the information given in clases nor skills taught in the research clases. Where we need to improve on is the intensity of the program. Students must be encouraged to want more from their careers. I am not sure that we can influence every student on this aspect and this may be a function of selection

SECCIÓN DE APÉNDICES

APENDICE

Seminarios del Departamento

APENDICE

TABLA INFORMACION PRESENTADA

DE LA BIBLIOTECA, TECNOLOGIA Y REVISTAS

TABLAS AVALÚO PROGRAMA GRADUADO DE BIOLOGÍA
AÑO ACADÉMICO 2014- 2015

Master Thesis seminar presentation

Master Thesis Seminar Presentation Rubric	Exceeds Expectations		Meets Expectations		Does Not Meet Expectations		No Presenta	
	3	%	2	%	1	%	NP	%
OVERALL QUALITY OF PRESENTATION								
Well Organized	12	80%	3	20%	0	0%	0	0%
Professional presentation	11	73%	2	13%	1	7%	1	7%
Excellent communication skills	8	53%	4	27%	0	0%	3	20%
Slides and handouts outstanding	9	60%	2	13%	0	0%	4	27%
OVERALL BREADHT OF KNOWLEDGE								
Presentation is superior	9	60%	4	27%	0	0%	2	13%
Presentation reveals exceptional depth of subject of knowledge	11	73%	1	7%	1	7%	2	13%
Presentation reveals the ability to interconnect and extend knowledge from multiple disciplines	11	73%	1	7%	1	7%	2	13%
QUALITY OF ORAL COMMUNICATION								
Use and knowledge of technical terminology and concepts is excellent	9	60%	3	20%	0	0%	3	20%
Oral expressions is excellent	10	67%	4	27%	0	0%	1	7%
Organization of ideas is excellent	11	73%	1	7%	0	0%	3	20%
OVERALL ASSESSMENT								
Exceeds Expectations	10	67%	3	20%	0	0%	2	13%

Doctoral Thesis proposal

Doctoral Thesis Proposal Rubric	Exceeds Expectations		Meets Expectations		Does Not Meet Expectations		No Presenta	
	3	%	2	%	1	%	NP	%
OVERALL QUALITY OF SCIENCE								
Objectives are well defined	3	100%	0	0%	0	0%	0	0%
Exhibits matere, critical thinking skills	3	100%	0	0%	0	0%	0	0%
Reflects mastery of subject matter and associated literature	2	67%	1	33%	0	0%	0	0%
Displays exceptional creativity and insight	2	67%	1	33%	0	0%	0	0%
Excellent potencial for success of research	2	67%	1	33%	0	0%	0	0%
CONTRIBUTION TO DISCIPLINE								
Greatly extends previous research	2	67%	1	33%	0	0%	0	0%
Exceptional theoretical or applied significance	2	67%	1	33%	0	0%	0	0%
Exceptional publication potential	2	67%	1	33%	0	0%	0	0%
QUALITY OF WRITING								
Writing is publication quality	1	33%	2	67%	0	0%	0	0%
No grammatical or spelling errors apparent	1	33%	2	67%	0	0%	0	0%
Organization is excellent	2	67%	1	33%	0	0%	0	0%
OVERALL ASSESSMENT								
Excceeds expectations	2	67%	1	33%	0	0%	0	0%

Doctoral Thesis seminar presentation

Doctoral Thesis Seminar Presentation Rubric	Exceeds Expectations		Meets Expectations		Does Not Meet Expectations		No Presenta	
	3	%	2	%	1	%	NP	%
OVERALL QUALITY OF PRESENTATION								
Well Organized	25	71%	9	26%	0	0%	1	3%
Professional presentation	22	63%	7	20%	0	0%	6	17%
Excellent communication skills	20	57%	9	26%	0	0%	6	17%
Slides and handouts outstanding	16	46%	9	26%	2	6%	8	23%
OVERALL BREADHT OF KNOWLEDGE								
Presentation is superior	21	60%	9	26%	0	0%	5	14%
Presentation reveals exceptional depth of subject of knowledge	25	71%	6	17%	0	0%	4	11%
Presentation reveals the ability to interconnect and extend knowledge from multiple disciplines	21	60%	12	34%	0	0%	2	6%
QUALITY OF ORAL COMMUNICATION								
Use and knowledge of technical terminology and concepts is excellent	25	71%	8	23%	0	0%	2	6%
Oral expressions is excellent	22	63%	8	23%	0	0%	5	14%
Organization of ideas is excellent	21	60%	11	31%	0	0%	3	9%
OVERALL ASSESSMENT								
Exceeds Expectations	23	66%	10	29%	0	0%	2	6%

Apéndice 1

Ejemplo del alineamiento de los fundamentos para un programa ficticio de Doctorado en Psicología Clínica.

Misión	Metas del Programa	Objetivos del Programa
Ejemplo: El Programa de Doctorado en Psicología Clínica de la Universidad X está comprometido con la formación de psicólogos capaces de hacer intervenciones clínicas con calidad científica, ética y humanística, que propenda al mejoramiento de la realidad social puertorriqueña, sus problemas, trastornos y conflictos.	• Preparar psicólogos competentes cuyo enfoque práctico e investigativo los capacite para el ejercicio de la psicología en Puerto Rico.	• Desarrollar y mantener una oferta curricular variada y actualizada que refleje los últimos adelantos en el campo.
		• Suplir la demanda para cursos y secciones en horarios flexibles que se ajusten a las necesidades de los estudiantes.
		• Desarrollar y proveer servicios de apoyo al estudiante (consejería, mentoría para investigación, tutorías.)
		• Proveer actividades de capacitación estudiantil y oportunidades para la interacción con una variedad de profesionales de diferente procedencia y marco teórico.
		• Facilitar la inmersión de los estudiantes en la práctica profesional mediante acuerdos con firmas y organizaciones que permitan llevar a cabo internados.
	• Promover la investigación y el intercambio del saber científico para contribuir al enriquecimiento del conocimiento en el campo de la psicología.	• Crear centros de apoyo a la investigación y a la docencia que contribuyan al desarrollo de proyectos y nuevas líneas de investigación y atraigan fondos externos.
		• Promover la participación de la comunidad universitaria en congresos y seminarios.
		• Asignar una descarga anual para el desarrollo de propuestas y la búsqueda de fondos para la investigación.
	• Atender las necesidades de las comunidades aledañas (dentro y fuera de la universidad) mediante la coordinación de iniciativas académicas, la implantación de proyectos y la prestación de servicios psicológicos.	• Crear centros de servicios psicológicos para la comunidad que a la vez sirvan de conducto para la práctica intramural y los internados.
		• Facilitar una mayor y más completa relación y cooperación interdepartamental.
		• Contribuir al mejoramiento de los programas subgraduados a través del intercambio de ideas y actividades con los estudios graduados.
		• Vincular a la Universidad con la realidad psicosocial de la cual forma parte para mejorar los instrumentos y procesos de entendimiento individual y colectivo.
	• Promover la capacitación del profesorado para mantener sus conocimientos actualizados, aumentar la cantidad de docentes con grados doctorales, y desarrollar un cuerpo docente variado, compuesto por especialistas en distintas áreas.	• Desarrollar un Programa de capacitación que le permita a la docencia actualizar los conocimientos en su campo por medio de su participación en talleres presenciales y a distancia y convalidarlos por créditos de nivel universitario.
		• Proveer talleres de capacitación pedagógica y tecnológica.
		• Establecer un sistema de promoción por méritos que de prioridad al trabajo investigativo y a la producción de publicaciones.
	• Proveer una infraestructura física y administrativa, y los recursos bibliográficos y tecnológicos necesarios para facilitar el eficiente funcionamiento y el desarrollo óptimo del Programa.	• Establecer un cupo razonable que permita un manejo adecuado de los recursos existentes: una cantidad manejable de estudiantes por miembro docente y administrativo.
		• Establecer un sistema de evaluación sistemática de todos los componentes del Programa.
		• Promover un manejo fiscal responsable que responda a un plan de desarrollo bien fundamentado.

Apéndice 2

Ejemplo del alineamiento de los perfiles estudiantiles y los objetivos del aprendizaje para un programa ficticio de Doctorado en Psicología Clínica (Los números de los Estándares de la agencia acreditadora también son ficticios).

Estándar de Acreditadora	Perfil del Estudiante de Nuevo Ingreso[26] Fecha de aprobación: 5/01	Objetivos del Aprendizaje[27] Fecha de aprobación: 4/00	Perfil del Egresado[28] Fecha de aprobación: 4/95
	El estudiante de nuevo ingreso al Doctorado en Psicología Clínica deberá:	El estudiante del Doctorado en Psicología Clínica deberá:	El egresado del Doctorado en Psicología Clínica será capaz de:
D.1.a.	Demostrar haber adquirido una panorámica sobre la evolución histórica que han experimentado los estudios de psicología, desde sus inicios hasta nuestros días.	Demostrar conocimiento de las teorías de la personalidad, la psicología anormal y de la psicoterapia.	Analizar las condiciones biopsicosociales que fomentan y sostienen las realidades psicológicas de la persona.
	Demostrar conocimiento de los principales conceptos teóricos que actualmente dominan la psicología en su dimensión general y en sus vertientes de especialización principales.		
D.1.b.	Disponer de una base de conocimientos en genética, fisiología, y sociología como explicación a muchos aspectos de la conducta humana.	Interpretar y explicar las condiciones biopsicosociales de una persona a la luz de las teorías psicológicas estudiadas.	
D.2.c.	Demostrar conocimiento de las distintas modalidades de análisis psicológico, los instrumentos de medida y las facetas de la personalidad que son susceptibles de medición.	Demostrar dominio de los métodos de evaluación psicológica y creación de pruebas diagnósticas.	Llevar a cabo mediciones y evaluaciones psicológicas para diagnosticar, dar referidos y tratar pacientes.
D.2.c.		Impartir pruebas psicológicas a individuos y grupos e interpretar sus resultados.	
D.3.a	Demostrar conocimiento de las distintas modalidades de terapia psicológica y ser capaz de aplicarlo a un problema o	Demostrar capacidad para a diseñar terapias y llevar cabo intervenciones clínicas en un contexto real.	Contribuir al mejoramiento de la sociedad puertorriqueña mediante la consultoría, las ponencias o el magisterio y las

26 El perfil del estudiante de nuevo ingreso es una descripción de las competencias que los estudiantes deber poseer para entrar al programa. Estas competencias definen el punto de partida o baseline del aprendizaje del estudiante.

27 Los objetivos del aprendizaje definen operacionalmente las expectativas de aprendizaje para los estudiantes. Son enunciados o descripciones operacionales generales que definen a grandes rasgos las expectativas que establece el programa acerca del aprendizaje de los estudiantes. Incluyen aquellas competencias3 que los estudiantes deberán demostrar durante su transcurso por el programa, y mediante las cuales el programa podrá inferir si éstos se encuentran o no preparados para el ejercicio de su carrera. Los objetivos del aprendizaje sirven de guías concretas para evaluar la efectividad y eficiencia del programa. Se redactan utilizando términos de conducta observable, comenzando las oraciones con verbos de acción en infinitivo. Deben de ser cónsonos con el perfil del egresado.

28 El perfil del egresado constituye una descripción del egresado del programa de acuerdo a las competencias que éste habrá de exhibir al desempeñar sus labores, con un grado de eficiencia razonable, durante el ejercicio inicial de su carrera. Es una especie de arquetipo del profesional básico.

	contexto simulado.		intervenciones clínicas de terapia psicológica para individuos y grupos.
D.3.a., D.4.b.	Ofrecer presentaciones del trabajo desempeñado a la comunidad universitaria (estudiantes o profesores).	Participar en congresos, talleres y seminarios que propicien la discusión de temas psicológicos de beneficio para la sociedad.	
D.2.c.		Demostrar amplia virtud y disposición para comunicar y explicar conocimientos teóricos y prácticos de psicología con un enfoque informativo o didáctico.	
D.4.b.	Demostrar compromiso profesional, disposición y sensibilidad para el trato con sujetos humanos.	Estar alerta a las consideraciones éticas y legales que pudieran surgir en el ejercicio de sus funciones y promover una práctica responsable.	
D.3.b.	Evidenciar destrezas de búsqueda y acopio de información y manejo básico de la tecnología, y manifestar una capacidad crítica para la evaluación y la solución de problemas provistos.	Realizar investigación de la literatura científica en miras a definir un problema de investigación o ampliar los conocimientos del campo.	Aportar al conocimiento, metodología y práctica de la psicología como campo, por medio de la investigación y la práctica clínica.
D.3.b.	Manifestar una capacidad crítica para la evaluación y la solución de problemas provistos.	Integrar conocimientos teóricos, metodológicos y prácticos para generar nuevos marcos conceptuales y nuevas formas de intervención terapéutica.	
D.3.b.	Conocer los métodos estadísticos fundamentales para el estudio de las ciencias humanas.	Diseñar y llevar a cabo investigaciones teóricas y aplicadas que permitan incrementar el caudal de entendimiento psicológico sobre el comportamiento humano.	
D.3.a., D.3.b.	Demostrar la capacidad de redacción de ensayos analíticos o artículos.	Divulgar los resultados de la investigación realizada en revistas científicas y otras publicaciones profesionales.	

Apéndice 3

¿Qué es la Taxonomía de Bloom?

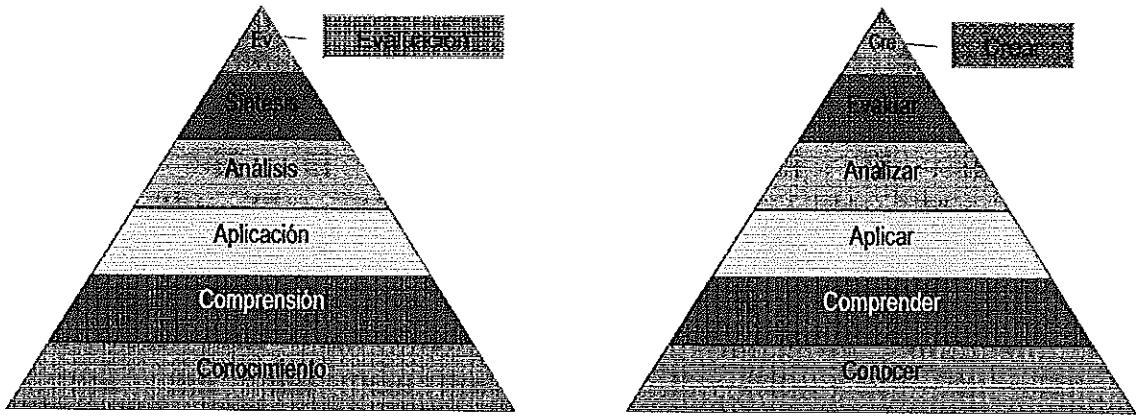
Partir de la premisa de que los términos "taxonomía" y "clasificación" son sinónimos nos permite disipar algunas de las dudas asociadas al primero. La Taxonomía de Bloom es un modelo de clasificación del pensamiento de acuerdo a seis niveles de complejidad. A través de los años, dichos niveles han sido presentados como una escalera, induciendo a muchos maestros a hacer que sus estudiantes se movieran hacia niveles más altos de pensamiento. Los niveles iniciales son: el conocimiento, la comprensión, y aplicación. Los niveles avanzados son: análisis, síntesis, y evaluación. "La taxonomía es jerárquica; [en el sentido de que] cada nivel está contenido en el nivel siguiente. Es decir, un estudiante que funciona al "nivel de aplicaion ta,bién ha dominado el material al nivel de "conocimiento' y al de 'comprensión'." (UW Teaching Academy, 2003). Es fácil deducir cómo este arreglo dio lugar de manera natural a las divisiones de niveles de pensamiento inicial y avanzado.

Durante la década de los 1990's, una ex-estudiante de Bloom, Lorin Anderson, organizó una nueva asamblea que se reunió con el propósito de actualizar la taxonomía, y hacerla más relevante para los estudiantes y maestros del siglo veintiuno. Esta vez, "representantes de los tres grupos [estuvieron presentes]: psicólogos cognitivos, teóricos de currículo e investigadores instruccionales, y especialistas de medición y avalúo" (Anderson, & Krathwohl, 2001, p. xxviii). A continuación verá un resumen de los resultados de dicha reunión. Los cambios efectuados se manifiestan en tres categorías amplias: terminología, estructura, y énfasis.

Nueva terminología

Los cambios a la terminología entre las dos versiones son, probablemente, los más sobresalientes, y los que pudieran causar la mayor confusión. Básicamente, las seis categorías principales de Bloom fueron modificadas de sustantivos a verbos. Además, el nivel más bajo se re-tituló y se convirtió de "Conocimiento" en "Recordar". Finalmente, se re-tituló el nivel de "Síntesis" y se convirtió en "Crear". La comparación entre ambas versiones que aparece a continuación intenta minimizar la confusión.

Fuente: http://web.odu.edu/educ/llschult/blooms_taxonomy.htm



Versión antigua **Versión nueva**

Subtítulo: "Esta gráfica es una representación de la nueva terminología asociada a la ya familiar, Taxonomía de Bloom. Note el cambio de Nombres a Verbos [e.g., Aplicación a Aplicar] para describir los diferentes niveles de la taxonomía. Los dos niveles de arriba se han intercambiado de orden con respecto a la versión antigua." (Schultz, 2005) (Evaluación se movió de la posición más alta a la segunda y Síntesis se movió de la segunda a la más alta.)

Los nuevos términos se definen de la siguiente manera:

- **Recordar**: Evocar, reconocer y remembrar conocimiento relevante de la "memoria a largo plazo" (long-term memory).
- **Comprender**: Construir significado a partir de mensajes orales, escritos, y gráficos por medio de la interpretación, la ejemplificación, la clasificación, el resumen, la inferencia, la comparación, y la explicación.
- **Aplicar**: Llevar a cabo o emplear un procedimiento a través del desempeño o la implantación.
- **Analizar**: Descomponer el material en sus componentes, determinando la relación entre las partes cómo las partes se relacionan con la unidad completa o con el propósito, mediante la diferenciación, la organización y la atribución.
- **Evaluar**: Pasar juicio a base de criterios y estándares mediante el cotejo y la crítica.
- **Crear**: Acoplar elementos para formar un todo coherente o funcional; reorganizar elementos en un nuevo patrón o estructura mediante la invención, la planificación o la producción.

(Anderson & Krathwohl, 2001, pp. 67-68).

Extracto de: Forehand, M.. (2005). Bloom's taxonomy: Original and revised. In M. Orey (Ed.), Emerging perspectives on learning, teaching, and technology. Website: http://www.coe.uga.edu/epltt/bloom.htm.

Universidad de Puerto Rico – Recinto de Río Piedras

PLAN DE TRABAJO ANNUAL por cinco anos

Año Académico 2015 – 2016

Nombre de Facultad/Escuela/Unidad Académica o Administrativa: Departamento de Biología, Facultad de Ciencias Naturales

Firma autorizada:_____

Fecha de envío/entrega a OPEP:_____

Nombre del archivo:_____

ESTRATEGIA/PROYECTO/INICIATIVA	Estabilizar la estructura administrativa acorde con las necesidades de servicio											
ESTRATEGIA DEL PLAN DE DESARROLLO												
META DEL PLAN DE DESARROLLO	Year 1			**OBJETIVO DEL PLAN DE DESARROLLO**								
Etapas/Pasos	**Indicador de Éxito y Métrica de las Etapas/Pasos (según aplique)**	**Calendario**	**Persona(s) Responsable(s)**	**Presupuesto**			**Plan de Avalúo (Incremental)**				**Acciones**
				Fondo General	**Fondos Externos**	**Otros**	**Persona(s) Responsable(s)**	**Métodos**	**Estatus**		
									Resultados	**% Logro**	
Evaluate current graduate program and students. Identify the critical elements that define how we choose our students	Arrive at a set of critieria for the acceptance of students	Dec 2016	Graduate committee				Graduate Coordinator				

Hire the 5 professors for the program. Make sure that they receive proper startup funds and enroll them into a grant writing program taught by the department starting at 6 months' time in the department	Have hired 5 new professors in the graduate program and 2 focused on teaching	July 2017	Departmen t chairman	900,0 00			Department Chairman				
apply for at least one infrastructure grant.	Infrastructure grant submitted	July 2017	Dean				Dean				

ESTRATEGIA/PROYECTO/INICIATIVA	Estabilizar la estructura administrativa acorde con las necesidades de servicio										
META DEL PLAN DE DESARROLLO	Year 2			OBJETIVO DEL PLAN DE DESARROLLO							
Etapas/Pasos	Indicador de Éxito y Métrica de las Etapas/Pasos (según aplique)	Calendario	Persona(s) Responsable(s)	Presupuesto			Plan de Avalúo (Incremental)				Acciones
				Fondo General	Fondos Externos	Otros	Persona(s) Responsable(s)	Métodos	Estatus		
									Resultados	% Logro	
Apply the principles developed in year one to the graduate program. Reduce the amount of students accepted, and accept only the best.	Have accepted and attracted the highest quality students	Aug 2018	Graduate committee				Graduate Coordinator				
Institute an increase in the amount of publication expected from each student and require that they submit a grant and a resubmission in their 2nd and 3rd years of studies	Students having at least 2 publications accepted before graduation	aug 2018	Graduate committee Individual professors	900,000			Graduate Coordinator				
apply for at least two infrastructure grants		July 2018	Dean				Dean				

Increase the amount of stipend to the student. This should be doable because less students have been accepted		August 2018	Dean, Department chaiman Graduate Coordinator				Dean, Department chaiman Graduate Coordinator				
Start the classes for grant writing and submission with the new professors			Mentors of new professors				Department Chairman				
Established professors are increase grant submission output.			Individual Professors				Department Chairman				

ESTRATEGIA/PROYECTO/INICIATIVA	Estabilizar la estructura administrativa acorde con las necesidades de servicio										
INSTRUMENTOS DE PLANIFICACIÓN											
META DEL PLAN DE DESARROLLO	**Year 3 &4**			**OBJETIVO DEL PLAN DE DESARROLLO**							
Etapas/Pasos	**Indicador de Éxito y Métrica de las Etapas/Pasos (según aplique)**	**Calendario**	**Persona(s) Responsable(s)**	**Presupuesto**			**Plan de Avalúo (Incremental)**				**Acciones**
				Fondo General	**Fondos Externos**	**Otros**	**Persona(s) Responsable(s)**	**Métodos**	**Estatus**		
									Resultados	**% Logro**	
Continue implementing the policies above and take meticulous statistics that will help us evaluate progress and holes in our plan	Increased studnet first autor publications Increased grant awards from new professors. At least one infratructure award	Aug 2020	Graduate committee Department chairman Dean				Graduate Coordinator Department chairman				

ESTRATEGIA/PROYECTO/INICIATIVA	Estabilizar la estructura administrativa acorde con las necesidades de servicio										
META DEL PLAN DE DESARROLLO	Year 5			OBJETIVO DEL PLAN DE DESARROLLO							
Etapas/Pasos	Indicador de Éxito y Métrica de las Etapas/Pasos (según aplique)	Calendario	Persona(s) Responsable(s)	Presupuesto			Plan de Avalúo (Incremental)				Acciones
				Fondo General	Fondos Externos	Otros	Persona(s) Responsable(s)	Métodos	Estatus		
									Resultados	% Logro	
Evaluate progress in the department. The ultimate measures are how many ranks we decreased toward to the top 100 and how close are we to self sufficiency	Greater amount of students supported by professors than univeristy A 50% increase of grants over 2016 Have been awarded 2 infrastructure grants. An augmentation of grants awarded	Aug 2021	Graduate committee Department chairman Dean				Graduate Coordinator Department chairman				