Graduate Council Curriculum Report

The Graduate Council Curriculum Report (GCCR), which includes all graduate program curricular proposals approved through the Graduate Council curricular review process, is published 12 times each calendar year.

Questions/comments regarding the GCCR or its contents may be directed to the Director of Graduate Education Administration.

September 9, 2015

1. **Program Change**: Adult Education - discontinue extension of the M.Ed. in Adult Education to McKeesport (College of Education), page 2

2. **Program Change**: Molecular, Cellular and Integrative Biosciences — adoption of new MCIBS MD/PhD joint degree program (Intercollege Degree Programs), page 6

3. **Program Change**: Food Science – Add CTS dual-title option to Ph.D. in Clinical Translational Science (College of Agricultural Sciences), page 36
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Curriculum Coordinator, University Faculty Senate, 101 Kern Graduate Building, University Park. The proposals will be transmitted to the Office of the Dean of the Graduate School for entry into the Graduate Council curricular review process; for more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: College of Education
Department or Instructional Area: Learning and Performance Systems

New Graduate Program, Option, or Minor: [ ] Add

Designation of new graduate program: ____________________________
Classification of Instructional Programs (CIP) Code: ____________________________
Designation of new graduate option: ____________________________
Designation of new graduate minor: ____________________________

Indicate effective semester:
[ ] First semester following approval
[ ] Second semester following approval

Existing Graduate Program Option, or Minor: [ ] Change [ ] Drop

Current designation of graduate program: ____________________________
Current designation of graduate option: ____________________________
Current designation of graduate minor: ____________________________

New designation of existing graduate program (if changing): ____________________________
New designation of existing graduate option (if changing): ____________________________
New designation of existing graduate minor (if changing): ____________________________

Brief description of the change (if not noted above): See attached

Indicate effective semester: [ ] Dec 2001 (see attached memo)
[ ] First semester following approval
[ ] Second semester following approval

Submitted by Graduate Program Head

[Signature]
Date: 6/18/15

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:

[Signature]
Date: 7/8/15

Approved by College/School Dean/Chancellor (or Designee):

[Signature]
Date: 7/9/15
Recommended by Chair, Graduate Council Subcommittee on New and Revised Programs and Courses:

On Behalf of C. Andrew Cole
Printed name
Signature
Date: 9/4/2015

Recommended by Chair, Graduate Council Committee on Programs and Courses:

On Behalf of Joan Redwing
Printed name
Signature
Date: 9/4/2015

Noted by Dean of the Graduate School:

On Behalf of Regina Vasilatos-Younken
Printed name
Signature
Date: 9/4/2015
Date: June 18, 2015

To: Graduate School

From: Adult Education Program, Learning and Performance Systems Department

Re: Discontinuation of Masters' degree Program in 2001

Upon the closure of the Monroevile Center, the program was moved to Penn State McKeesport only for those students who had not completed their degree at the Monroevile Center.

When the last Monroevile student completed their degree, the program was closed in December of 2001. Only adult education courses taught by adult education faculty were offered. No other programs were involved in delivering the Masters degree at McKeesport.

The Masters' degree program continues to be offered at University Park
To: Vicki L. Hewitt, Ed.D., Director of Graduate Education Administration
From: Margaret L. Signorella, Ph.D., Director of Academic Affairs
Date: June 29, 2015
Subject: M.Ed. program in Adult Education

Penn State Greater Allegheny was informed a long time ago that the M.Ed. program in Adult Education was being discontinued as a College of Education program at the campus. It is a surprise to hear that the program is still in the system, and thus the closure of the program has no impact on Greater Allegheny.
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College/School: Graduate School
Department or Instructional Area: IGDPs

New Graduate Program, Option, or Minor: ☐ Add
Designation of new graduate program: NEW JOINT DEGREE PROGRAM: MCIBS MD/PHD joint degree program
Classification of Instructional Programs (CIP) Code: ____________
Designation of new graduate option: ____________________________
Designation of new graduate minor: ____________________________

Indicate effective semester:
☑ First semester following approval
☐ Second semester following approval

Existing Graduate Program Option, or Minor: ☑ Change ☐ Drop
Current designation of graduate program: ____________________________
Current designation of graduate option: ____________________________
Current designation of graduate minor: ____________________________

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above): ____________________________

Indicate effective semester:
☐ First semester following approval
☑ Second semester following approval

Submitted by Graduate Program Head
Melissa Rolls
Printed name
Signature: ____________________________
Date: 4/16/2015

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:
Jean Vasilatis-Yourken
Printed name
Signature: ____________________________
Date: 4/16/15

Approved by College/School Dean/Chancellor (or Designee):
Jean Vasilatis-Yourken
Printed name
Signature: ____________________________
Date: 4/16/15
<table>
<thead>
<tr>
<th>Role</th>
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<tr>
<td>On Behalf of C. Andrew Cole</td>
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<td>8/25/2015</td>
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<td>Recommended by Chair, Graduate Council Subcommittee on New and Revised Programs and Courses:</td>
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NEW PROGRAMS, OPTIONS* AND MINORS**

A. Program Objectives.

The National Institutes of Health (NIH) has long recognized the need for dually trained physician-scientists to translate the discoveries of basic science laboratories into effective clinical treatments. Scientists with doctoral level training in both the practice of clinical medicine and research are among the most important practitioners of this critical step in the discovery of new medical treatments. The College of Medicine has had a formal MD/PhD training program in support of this goal since 1988.

The NIH supports the training of such scientists through its Medical Scientist Training Program (MSTP) grant awards; the College of Medicine is actively building its existing MD/PhD program to obtain such funding (for example, the College of Medicine MD/PhD program has been actively implementing recommendations of its external advisory board, and has established joint degree programs with Engineering Science and Mechanics and the Biomedical Sciences (BMS) graduate programs). Recently the NIH and others have recognized the need to give this training area more attention; the NIH’s Clinical and Translational Science Awards (CTSA) have a stated intent to further build this critical research capacity. The objective of the MD/PhD program is to establish a nationally recognized training program that combines the medical training at Hershey with the strength in research throughout Penn State, including at University Park.

As part of the effort to partner medical training and life science research in the most productive manner at Penn State, MD/PhD students accepted to the MD/PhD program at the College of Medicine have always been encouraged to fully explore all options for their PhD training at both Hershey and University Park. This open access to research at both campuses allows the program to attract the best students, and also to match students with labs that fit their interests and motivation as closely as possible. The proposed joint degree program with Molecular, Cellular and Integrative Biosciences (MCIBS) will allow MD/PhD students access to over 120 life sciences labs at University Park.

B. New courses to be established as a part of the new offering.

None.

C. Program Statements.

Note: Please see Table 3 at the end of the proposal for a side-by-side comparison of the PhD and MD/PhD requirements for students in the MCIBS program and in the Bioinformatics and Genomics option within MCIBS.

Admissions

Students interested in simultaneously pursuing an MD and PhD degree must apply to the College of Medicine MD program using the national American Medical College Application Service
(AMCAS) application system and indicate their intent to pursue the joint degree program. The College of Medicine MD/PhD Admissions Committee, which includes experienced graduate faculty members, reviews applications and evaluates candidates for acceptance into both the MD and PhD program. The MCIBS Chair, or designated representative, will be a part of this admissions committee. Applicants invited to interview for the MD/PhD program will be directed to complete the Graduate School application and will be provided with a fee waiver. Applicants will only need to complete the Graduate School portions of the application (not the program-specific questions) and upload their transcripts to the Graduate School application. Once admissions decisions are made, the MD/PhD program administrator will email the relevant graduate program chairs and program administrative assistants with this information; this also ensures programs are informed about all decisions and Graduate Enrollment Services will be notified.

Students accepted into the MD/PhD program will be approved for the MCIBS program. Similarly students accepted into the MD/PhD program who initially apply to BMS or one of the other graduate programs with a joint MD/PhD degree will be able to transfer to MCIBS if they choose a thesis advisor in this program. Students not accepted into the joint degree program can be referred to either the MD or PhD program, depending on their qualifications and interests.

Medical School Years 1 and 2 (MS1, MS2)

During the first two years of medical school, the student conducts at least three research rotations in addition to the standard medical school curriculum. A Pass grade must be earned for all required courses (medical school courses are graded Pass/Fail).

Graduate Program

After successful completion of the first two years of medical school and identification of a research mentor at University Park the candidate begins the MCIBS Graduate Program dedicated course work and their dissertation research.

MCIBS Candidacy Examination

For MD/PhD students the requirement for the candidacy exam will be fulfilled by successful completion of two things before they begin the dedicated MCIBS coursework. During the summer after the second year of medical school MD/PhD students take Step 1 of the United States Medical Licensing Examination (USMLE). The content of the first two years of medical school is focused on the biological foundations underlying our understanding of health and disease, including extensive integrated coursework in biochemistry, physiology, pharmacology and related fields. This coursework provides the MD/PhD student with a strong foundation that will support both their advanced graduate coursework and their intellectual development as a clinician scientist. Step 1 extensively assesses the student’s understanding of this material and is extremely rigorous. Thus, passing Step 1 of the USMLE is required for progress in medical school, and provides evidence that the student has mastered the material satisfying the intent of the Candidacy Examination. In addition to mastery of background material, the MCIBS candidacy exam assesses critical thinking and ability to understand and present research papers. These skills are developed and assessed in a year-long course, BMS 506 A and B, which is taken in the second year of medical school. Successful completion of this course with a grade of B or higher meets the critical thinking and paper analysis requirement of the candidacy exam.
MCIBS Program-Specific Requirements (see below for information about completing the Option in Bioinformatics and Genomics)

The doctoral committee of an MD/PhD student in the MCIBS program is formed upon entry into the thesis laboratory. The committee must include a minimum of four faculty members, i.e., the chair and at least three additional members, all of whom must be members of the Graduate Faculty. The committee must include at least two members of the MCIBS program graduate faculty and one MD/PhD steering committee member. One member of the doctoral committee must represent a field outside the candidate's major field of study in order to provide a broader range of disciplinary perspectives and expertise. This person is the “outside field member.” Additionally, one member of the committee must be an “outside unit member:” a member of the graduate faculty outside the adviser’s administrative home (for a tenure-line faculty member this is the department that serves as their tenure home). The same person can be the outside field member and outside unit member. The outside member(s) can be members of MCIBS.

In addition to taking the required courses MCIBS 590, Colloquium, MCIBS 591, Ethics in the Life Sciences, and MCIBS 592, Current Seminars, elective courses are selected in consultation with the student’s dissertation adviser and doctoral committee, with guidance from the MCIBS emphasis area course lists and program chair. 6 credits of elective courses will be selected.  

Comprehensive Examination

The MD/PhD candidate prepares a written comprehensive examination in the format of a grant application and gives an oral presentation of this proposal to their doctoral committee; the exam will be the same for the MD/PhD students and all other students in the MCIBS program.

Doctoral Dissertation

The MCIBS dissertation requirements for both PhD and MD/PhD students follow:
All PhD candidates must conduct original research and prepare a dissertation that makes a significant contribution of new knowledge, is presented in a scholarly manner, and demonstrates an ability on the part of the candidate to do independent research of high quality. The contents and conclusions of the dissertation must be defended at the time of the final oral examination.

Students must present their dissertation in accordance with Graduate Council and Graduate School guidelines as described in the THESIS GUIDE: Requirements for the Preparation of Master's Theses and Doctoral Dissertations.

Final Doctoral Examination

This requirement is the same as that for MCIBS PhD candidates:

The final examination of the doctoral candidate is an oral examination administered and evaluated by the entire doctoral committee. It consists of an oral presentation of the dissertation by the candidate and a period of questions and responses. These will relate in large part to the dissertation, but may cover the candidate's entire program of study, because a major purpose of the examination is also to assess the general scholarly attainments of the candidate. The portion of the examination in which the dissertation is presented is open to the University community and the public; therefore, it is expected that the examination will take place at University Park or the Hershey campus.
Information regarding Graduate Council requirements for the Ph.D., including the establishment of a doctoral committee; candidacy, comprehensive, and final oral examinations; and submission of a dissertation of original research in the field can be found in the Graduate Degree Programs Bulletin.

Additional Requirements for MCIBS students including MD/PhD students:
All MCIBS graduate students must maintain a cumulative grade-point average of ≥ 3.0 to remain in good academic standing. Furthermore, the Ph.D. student must have a 3.0 to take the doctoral candidacy, the comprehensive and the final oral examinations. One or more failing grades (F) or a cumulative grade-point average below 3.0 will be considered evidence of unsatisfactory scholarship and may be grounds for dismissal from the program.

MD/PhD Program Requirements

MD/PhD students must have submitted a first-author manuscript before defending their dissertation. Before returning to medical school the doctoral thesis must be accepted by the Graduate School.

The MD/PhD Program requires that students have one first author peer-reviewed paper published based on their research accepted prior to completing medical school, and preferably accepted for publication prior to returning to the third year of medical school. The paper does not need to be accepted or published to defend the doctoral dissertation nor to submit the final dissertation nor (assuming all other Ph.D. requirements have been met) to receive their Ph.D.

The rationale for the expectation of joint degree students to have a published first author paper upon completion of the MD/PhD program is based on current national standards for MD/PhD programs. The Penn State MD/PhD program is working to obtain National Institutes of Health (NIH) T32 Medical Scientist Training Program (MSTP) funding; such funding is virtually equivalent to national accreditation (something required of all Penn State graduate programs for which accreditation is available). One of the current expectations of NIH review panels is that all students in MD/PhD programs will have at least one first-author publication by the time they graduate.

A recent survey of MD/PhD programs around the country revealed that 59% of responding programs (n= 44) and 58% of MSTP-funded programs (n=26) have a publication requirement for their MD/PhD students; several require accepted publications before the thesis defense or before the return to medical school. Publication requirements in MD/PhD programs are common and have become the de facto national standard. The College of Medicine MD/PhD program intends to be nationally competitive. Offering the option of a PhD in MCIBS is an important part of that goal as it provides opportunities for our MD/PhD students to take advantage of the research faculty members at University Park.

MD/PhD program training faculty members are carefully selected to be productive scientists with strong publication records. While there can be no guarantees in research, MD/PhD student dissertation projects are carefully chosen to have a very high likelihood of publication. Each MD/PhD student’s dissertation committee includes a member of the MD/PhD Steering Committee who is attentive to the student’s progress both toward degree and publication.
However, the MD/PhD program recognizes that publication can sometimes be out of the control of the student. Thus, at the discretion of the CoM Vice Dean for Research and Graduate Studies, in consultation with the MCIBS Program Chair, the requirement for a first author publication prior to completing medical school may be waived. Examples of conditions that might warrant exemptions include: (a) prolonged illness, (b) mentor’s relocation, (c) mentor’s reluctance to submit the student’s work for publication, (d) the student’s project is published by another research group, or (e) delays or challenges in the publication review process beyond the control of the student or dissertation advisor.

Conferral of the PhD without the MD

If a student decides not to return to medical school, or for some other reason is not able to complete the last two years of medical school, but they have successfully completed their Ph.D. dissertation and oral defense and met all other degree requirements of MCIBS, they will still be able to complete the PhD. The latter will be conferred after the student notifies the program that she/he wishes to withdraw from the MD program and completes all requirements for conferral of the graduate degree.

Dual counting of Courses

The Graduate School’s policy on Joint Degree programs expects “that there will be some reciprocity on the part of both programs involved in the Joint offering…”.

Table 1. MCIBS Courses replaced by SPM 711

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MCIBS 503 Critical Elements of Genetics and Molecular and Cellular Biology</td>
<td>4 credits</td>
</tr>
<tr>
<td>BMMB 541 Molecular Biology of Animal Development</td>
<td>3 credits</td>
</tr>
<tr>
<td>BMMB 542 Eukaryotic Cell Biology</td>
<td>3 credits</td>
</tr>
<tr>
<td>MCIBS 596 Individual Studies: Research Rotation</td>
<td>1 credit</td>
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</tbody>
</table>

The MCIBS program will accept passing grades in the medical school courses *SPM 711 Scientific Principles of Medicine* (15 credits) in lieu of 11 required credits from the MCIBS Core and Elective Courses (see Table 1).

SPM 711 covers foundational science that underlies both medical practice and research in molecular and cellular biology, including cell biology, biochemistry, molecular genetics, histology, microbiology, immunology, cancer biology, and pharmacology. Substitution of these medical school courses for 11 credits of MCIBS required courses (11 credits equals 36% of the MCIBS credit requirements) meets the Graduate School’s standard of 20-40% of the graduate programs credits substituted with credits from the professional program.

Because students in the MD/PhD program are being trained to combine research and medicine, most likely in medical schools, the MCIBS requirement for exposure to undergraduate teaching is waived. MD/PhD candidates will not be required to take BIOL 593 Experiential Teaching in Biology (2 credits) or to be teaching assistants.
The College of Medicine will accept 8 credits of \textit{MCIBS 600/601 Thesis Research/Ph.D. Dissertation} conducted over the four years of the graduate portion of the training program in lieu of two months of elective rotations (\textit{MED 797}). In addition, the College of Medicine requires all MD students to complete a Medical Student Research project; this requirement is waived for all MD/PhD students.

\textit{Specific requirements for the Option in Bioinformatics and Genomics (BG)}

All requirements for the joint degree are the same for the BG Option within MCIBS as MCIBS (no option) with the exception of the coursework required in the PhD. There is less overlap between BG and medical school coursework and so fewer credits will counted from medical school towards the PhD (8 rather than 11, compare Tables 1 and 2). For complete information about course work see Table 3 below. All other requirements, for example candidacy exam, comprehensive exam and final dissertation are the same for the BG Option and MCIBS (no option). The BG Option can be pursued with faculty at the Hershey and University Park Campuses and courses will be offered by video-conference as necessary.

\begin{table}[h]
\centering
\begin{tabular}{|l|}
\hline
BMB 400 Molecular Biology of the Gene (3) \\
BMB 484 Functional Genomics (3) \\
MCIBS 596 Individual Studies: Research Rotation (2 credits) \\
\hline
\end{tabular}
\caption{BG Courses replaced by SPM 711}
\end{table}

D. Admission requirements.

In addition to the basic college level premedical school requirements for the Penn State College of Medicine (one each year of biology, chemistry, physics, math, and organic chemistry), the MD/PhD program has the following requirements:

- \textbf{Academic Achievement} Applicants to our program generally have very strong grades and MCAT scores. In recent years, successful applicants have an average GPA of 3.75 and MCAT scores of 33-34. Applicants are not required to take the GREs.
- \textbf{Research Experience} We are especially interested in students with a strong and sustained background in research. Students who have spent 1-2 years after graduation conducting research are strongly encouraged to apply. Alternatively in-depth research experience as an undergraduate can suffice.
- \textbf{Recommendations} We are especially interested in receiving letters of recommendation from faculty with whom you conducted research and who can comment on your passion and potential for research.
- \textbf{Goals} Applicants must be able to clearly articulate the reasons for pursuing the joint degree.
- \textbf{International Students} All qualified students are eligible to apply regardless of
citizenship.

E. Program Justification.

All medical schools at research-intensive universities offer an MD/PhD joint degree program, as Penn State has since 1988. This proposal extends that program to our new PhD program in Molecular, Cellular and Integrative Biosciences (MCIBS) at University Park. Life Sciences graduate programs at University Park were recently reorganized, and five of the previous programs that served as access points for MD/PhD students to dissertation research labs at University Park were merged into MCIBS. Creating a joint degree program with MCIBS will maintain the ability of MD/PhD students to choose dissertation research labs at University Park- an important aspect of the program for recruiting, grant-writing and evaluation purposes. MCIBS has different emphasis areas and can be tailored to the student’s research interests. At the same time, the program is set up to allow new students to form a cohort by taking several classes that focus on exposure to a wide variety of life sciences research and critical analysis together in the first year. MD/PhD students will take these classes, MCIBS 590 and 592, together with the entering MCIBS cohort so they will become integrated into this group and familiar with students working in wide range of research areas. The breadth of research represented by the program faculty combined with the flexibility inherent in the MCIBS program will be a major attraction to potential MD/PhD students and is expected to result in increased interest from highly qualified applicants. The Bioinformatics and Genomics Option within MCIBS takes advantage of major strengths at Penn State and allows rigorous training of students with world class faculty analyzing a variety of medically relevant data. This Option is offered both at the Hershey and University Park Campuses and courses are taught by video-conference with students at both campuses as necessary.

The existing MD/PhD program is regularly reviewed by an external advisory board (EAB) composed of directors of highly successful MD/PhD programs at other institutions. They have been guiding our efforts to develop a program capable of successfully competing for the highly competitive MSTP awards from NIH. Maintaining access and connections with labs at University Park is an important part of the strategy for being competitive.

F. Accreditation:

There is no specific accrediting body for MD/PhD joint degree programs. The Liaison Committee on Medical Education (LCME) accredits MD programs (evaluation of MD/PhD programs are reviewed as part of that accreditation if they exist). The College of Medicine MD program was reviewed by the LCME in 2010 and was fully accredited for 7 years (the maximum allowed) with recognition of the many strengths of the program. As indicated above, securing MSTP funding from NIH is an independent mark of high quality.
### Table 3. Course overview

<table>
<thead>
<tr>
<th>Core Requirement</th>
<th>MCIBS PROGRAM</th>
<th>MD/PhD – 30 credits required</th>
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<tbody>
<tr>
<td>MCIBS 503 Critical Elements of Genetics and Molecular and Cellular Biology (4 credits)</td>
<td>12 Core Requirement Credits</td>
<td>10 Core Requirement Credits</td>
</tr>
<tr>
<td>SPM 711 Scientific Principles of Medicine (11) (sub for 5 core and 6 elective credits)</td>
<td>12 Elective Credits</td>
<td>12 Elective Credits</td>
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<tr>
<td>MCIBS 591 Ethics (1)</td>
<td>6+ Research Credits</td>
<td>8+ Research Credits</td>
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<tr>
<td>MCIBS 590 Colloquium (2)</td>
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<tr>
<td>MCIBS 592, Current Seminars (2)</td>
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<tr>
<td>BIOL 593 Experiential Teaching in Biology (2)</td>
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<td>Per student, adviser and program (3)</td>
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# MCIBS OPTION IN BG

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<th>MD/PhD – 30 credits required</th>
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<td></td>
<td>15 Core Requirement Credits</td>
<td>14 Core Requirement Credits</td>
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<td></td>
<td>8-9 Elective Credits</td>
<td>8-9 Elective Credits</td>
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<tr>
<td></td>
<td>6+ Research Credits</td>
<td>8+ Research Credits</td>
</tr>
<tr>
<td>Elective</td>
<td>MCIBS 596 Individual Studies (for rotations) (2)</td>
<td>SPM 711 Scientific Principles of Medicine (8) (sub for 2 core and 6 elective credits)</td>
</tr>
<tr>
<td>Elective</td>
<td>BMB 400 Molecular Biology of the Gene (3)</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>BMB 484 Functional Genomics (3)</td>
<td></td>
</tr>
<tr>
<td>Core Requirement</td>
<td>MCIBS 591 Ethics (1)</td>
<td>MCIBS 591 Ethics (1)</td>
</tr>
<tr>
<td>Core Requirement</td>
<td>MCIBS 590 Colloquium (2)</td>
<td>MCIBS 590 Colloquium (2)</td>
</tr>
<tr>
<td>Core Requirement</td>
<td>MCIBS 554 Foundations in Data Driven Life Sciences (3)</td>
<td>MCIBS 554 Foundations in Data Driven Life Sciences (3)</td>
</tr>
<tr>
<td>Core Requirement</td>
<td>STAT 555 Statistical Analysis of Genomics Data (3)</td>
<td>STAT 555 Statistical Analysis of Genomics Data (3)</td>
</tr>
<tr>
<td>Core Requirement</td>
<td>MCIBS 541, Critical Analysis in BG Research Topics (2)</td>
<td>MCIBS 541, Critical Analysis in BG Research Topics (2)</td>
</tr>
<tr>
<td>Core Requirement</td>
<td>BIOL 593 Experiential Teaching in Biology (2)</td>
<td>Waived</td>
</tr>
<tr>
<td>Elective</td>
<td>Chosen from courses* below (2-3)</td>
<td>Chosen from courses* below (3)</td>
</tr>
<tr>
<td>Research credits</td>
<td>MCIBS 600 and 601 (6+)</td>
<td>MCIBS 600 and 601 (6+)</td>
</tr>
</tbody>
</table>

*Electives will be chosen from these courses based on the student’s background

- BIOL 405 Molecular Evolution (3)
- BMMB 852 Applied Bioinformatics (2)
- STAT 500 Applied Statistics (3)


Bulletin Copy

MCIBS Program

Degrees conferred:

PhD, MD/PhD, M.S.

The Graduate Faculty

(unchanged)

PhD Admissions Requirements

(unchanged)

MD/PhD Admissions Requirements

In addition to the basic college level premedical school requirements for the Penn State College of Medicine (one each year of biology, chemistry, physics, math, and organic chemistry), the MD/PhD program has the following requirements:

- **Academic Achievement** Applicants to our program generally have very strong grades and MCAT scores. In recent years, successful applicants have an average GPA of 3.75 and MCAT scores of 33-34. Applicants are not required to take the GREs.
- **Research Experience** We are especially interested in students with a strong and sustained background in research. Students who have spent 1-2 years after graduation conducting research are strongly encouraged to apply. Alternatively in-depth research experience as an undergraduate can suffice.
- **Recommendations** We are especially interested in receiving letters of recommendation from faculty with whom you conducted research and who can comment on your passion and potential for research.
- **Goals** Applicants must be able to clearly articulate the reasons for pursuing the joint degree.
- **International Students** All qualified students are eligible to apply regardless of citizenship.

(http://www.pennstatehershey.org/web/md/admissions/overview/requirements)

Master’s Degree Requirements

(unchanged)

Doctoral Degree Requirements
MD/PhD Degree Requirements

Students interested in simultaneously pursuing an MD and PhD degree must apply to the College of Medicine MD program using the national American Medical College Application Service (AMCAS) application system and indicate their intent to pursue the joint degree program. The College of Medicine MD/PhD Admissions Committee reviews applications and evaluates candidates for acceptance into both the MD and PhD program. Students not accepted into the joint degree program can be referred to either the MD or PhD program, depending on their qualifications and interests.

During the first two years of medical school, the student conducts at least three research rotations. After successful completion of the first two years of medical school the candidate joins their thesis lab in the MCIBS Graduate Program.

During the summer after the second year of medical school MD/PhD students take Step 1 of the United States Medical Licensing Examination (USMLE), which serves in lieu of the knowledge-based part of the Candidacy Examination for the MCIBS program. Successful completion of BMS 506 A and B, which is taken in the second year of medical school, with a grade of B or higher meets the critical thinking and paper analysis requirement of the candidacy exam.

MCIBS Program Requirements

The doctoral committee of an MD/PhD student in the MCIBS program is formed upon entry into the thesis laboratory. The committee must include a minimum of four faculty members, i.e., the chair and at least three additional members, all of whom must be members of the Graduate Faculty. The committee must include at least two members of the MCIBS program graduate faculty and one MD/PhD steering committee member. One regular member of the doctoral committee must represent a field outside the candidate's major field of study in order to provide a broader range of disciplinary perspectives and expertise. This person is the “outside field member.” Additionally, one member of the committee must be an “outside unit member” a member of the graduate faculty outside the adviser’s administrative home (for a tenure-line faculty member this is the department that serves as their tenure home). The same person can be the outside field member and outside unit member. The outside member(s) can be members of MCIBS.

In addition to taking the required courses MCIBS 590, Colloquium, MCIBS 591, Ethics in the Life Sciences, and MCIBS 592, Current Seminars, elective courses are selected in consultation with the student’s dissertation adviser and doctoral committee, with guidance from the MCIBS emphasis area course lists and program chair. 6 credits of elective courses will be selected.

The MD/PhD candidate prepares a written comprehensive examination in the format of a grant application and gives an oral presentation of this proposal to their doctoral committee.

A dissertation must be prepared and defended by each MD/PhD candidate as for all MCIBS students. In addition, MD/PhD students must have submitted a first-author manuscript before defending their dissertation. Before returning to medical school the doctoral thesis must be accepted by the Graduate School.
The MD/PhD Program requires that students have one first author peer-reviewed paper published based on their research accepted prior to completing medical school, and preferably accepted for publication prior to returning to the third year of medical school. At the discretion of the College of Medicine Vice Dean for Research and Graduate Studies, in consultation with the MCIBS Program Chair, the requirement for a first author publication prior to completing medical school may be waived. Examples of conditions that might warrant exemptions include: (a) prolonged illness, (b) mentor’s relocation, (c) mentor’s reluctance to submit the student’s work for publication, (d) the student’s project is published by another research group, or (e) delays or challenges in the publication review process beyond the control of the student or dissertation advisor.

If a student decides not to return to medical school, or for some other reason is not able to complete the last two years of medical school, but they have successfully completed their Ph.D. dissertation and oral defense and met all other degree requirements of MCIBS, they will be able to complete the PhD. The latter will be conferred after the student notifies the program that she/he wishes to withdraw from the MD program and completes all requirements for conferral of the graduate degree.

For students who choose the Option in Bioinformatics and Genomics within MCIBS, all requirements are the same as above with the exception of coursework taken during the PhD. BG students will take required courses: MCIBS 590, Colloquium, MCIBS 591, Ethics in the Life Sciences, MCIBS 554 Foundations in Data Driven Life Sciences, MCIBS 541, Critical Analysis in BG Research Topics, STAT 555, Statistical Analysis of Genomics Data. In addition, based on the background and needs of the student at least one of the following elective courses will also be taken: BIOL 405, Molecular Evolution, STAT 500, Applied Statistics, BMMB 852, Applied Bioinformatics (2).
Index of consultation/ support letters

This proposal was drafted with input from Dr. Cooduvalli Shashikant, the director or the Bioinformatics and Genomics Option within MCIBS.

Page 14. letter of support from the MD/PhD program co-directors, Dr. Bob Levenson and Dr. Leslie Parent

Page 15. letter of support from Dr. Craig Hillemeier, Dean of the Medical School

Page 16. letter of support from Dr. Michael Verderame, Associate Dean for Graduate Studies in the College of Medicine

Page 17. letter of support from Dr. Chuck Fisher, Associate Dean for Graduate Education in the College of Science

Page 18. letter of support from Dr. Gary Thompson, Associate Dean Research and Graduate Education in the College of Agriculture

Page 19. letter of support from Dr. Val Beasley, Department Head, Veterinary and Biomedical Sciences, College of Agriculture (with questions and answers about the program included)

Page 23. letter of support from Dr. Catherine Harmonosky, Interim Associate Dean, College of Engineering- with support from Dr. Will Hancock, Chair of the Bioengineering Graduate Program, and Dr. Michael Lanagan, Professor of Engineering Science and Mechanics

Page 25. letter of support from Dr. Eric Silver, Associate Dean for Research in the College of Liberal Arts, with request from Dr. Christopher Long, Associate Dean for Undergraduate and Graduate Education, that Dr. Silver be the consultant

Page 27. letter of support from Dr. Kathryn Drager, Associate Dean for Research and Graduate Education, College of Health and Human Development
March 23, 2015

Melissa Rolls, Ph.D.
Chair, Molecular, Cellular and Integrative Biosciences Graduate Program
Associate Professor of Biochemistry and Molecular Biology
Eberly College of Sciences
Pennsylvania State University
0118 Life Sciences Building
University Park, PA 16802

Dear Melissa,

We are delighted to give our enthusiastic support for the creation of a dual degree program between the Penn State MD/PhD Program and the Molecular, Cellular and Integrative Biosciences Graduate Program. This new opportunity for our students to perform their thesis work with the outstanding faculty members in the MCIBS Program enriches the program and provides exciting options for our students when choosing a research mentor at Penn State.

As Associate Program Director of the MD/PhD Program, you already play an important leadership role in the program. We are extremely excited about forming this partnership with you and your colleagues in this new dual degree graduate program. We look forward to working with you in this collaborative effort to expand the options for the MD/PhD students.

Best regards,

[Signature]

Robert Levenson, Ph.D.
Co-Director, MD/PhD Program

[Signature]

Leslie J. Parent, M.D.
Co-Director, MD/PhD Program
March 20, 2015

Melissa Rolls, Ph.D
Chair, Molecular, Cellular, and Integrative Biosciences Graduate Program
Associate Professor of Biochemistry and Molecular Biology
Eberly College of Sciences
Pennsylvania State University
0118 Life Sciences Building
University Park, PA 16802

Dear Dr. Rolls,

I am pleased to provide my support for the establishment of an MD-PhD dual degree program in Molecular, Cellular and Integrative Biosciences (MCIBS). This program represents an important addition to our MD-PhD program as it will provide opportunities for our students to consider many of the outstanding laboratories at University Park for their doctoral studies. In addition, creating this program now is timely as we prepare an application to establish an NIH funded Medical Scientist Training program.

Thank you for working with Professors Parent and Levenson in preparing this proposal, and I look forward to its approval in the near future.

Sincerely,

A. Craig Hillemeier, M.D.
Dean, Penn State College of Medicine
Chief Executive Officer, Penn State Milton S. Hershey Medical Center and Health System
Senior Vice President for Health Affairs, Penn State

AHC/cal
March 18, 2015

Melissa Rolls, PhD
Chair, Molecular, Cellular, and Integrative
Biosciences Graduate Program
Associate Professor of Biochemistry and Molecular Biology
Eberly College of Sciences

Dear Melissa,

I am pleased to support this proposal to create an MD-PhD dual degree program with the Molecular, Cellular, and Integrative Biosciences (MCIBS) Graduate Program. As you know, the College of Medicine has been committed to offering our MD/PhD students a broad range of disciplines from which to choose. Having opportunities on the University Park campus will allow students to choose areas of study not available at Hershey, for example, a broad range of bioinformatics projects. In addition, such expanded opportunities will be viewed favorably when our application to NIH for a Medical Scientist Training Program grant is reviewed later this year.

I thank you and the faculty of MCIBS for working to make this opportunity available to our MD-PhD students, and look forward to working with you to ensure its success.

Best wishes,

Michael F. Verderame, PhD
Associate Dean for Graduate Studies
Professor of Medicine
College of Medicine Distinguished Educator
From: Chuck Fisher cfisher@psu.edu
Subject: MD/PhD Joint degree proposal with MOIBS
Date: March 13, 2015 at 2:43 PM
To: Melissa Rolls mur22@psu.edu

Dear Melissa,

I have reviewed your proposal for an MOIBS MD/PhD joint degree program and I enthusiastically endorse the program. This will be important to sustain the momentum we have been building for more collaborations and beneficial interactions between UP and Hershey labs, as well as continuing an excellent program for graduate students.

Thanks and Cheers
Chuck Fisher

Charles Fisher
Professor of Biology
Associate Dean for Graduate Education
Office, 219 Mueller Laboratory
814 865-3355
Mailing Address:
206 Mueller Laboratory
The Pennsylvania State University
University Park, PA 16802
From: Gary Thompson gat10@PSU.EDU
Subject: RE: Joint degree proposal between MCIBS and MD/PhD
Date: March 16, 2015 at 6:08 PM
To: Melissa Rolls mur22@PSU.EDU
Cc: Rachel Unger rh12@PSU.EDU, Val Beasley vbeasley@PSU.EDU

Dear Melissa,

Thank you for sending me the joint degree proposal for MCIBS and the MD/PhD program. I have reviewed the proposal and requested comments from Dr. Val Beasley, Department Head of Veterinary and Biomedical Sciences. We both support moving the proposal forward and appreciate the opportunity for input that you have provided at this stage.

Best regards,
Gary

Gary A. Thompson, Ph.D.
Associate Dean for Research and Graduate Education
Director, Pennsylvania Agricultural Experiment Station
College of Agricultural Sciences
Penn State University
217 Agricultural Administration Building
University Park, PA 16802-2600
TEL: 814-865-3136
FAX: 814-863-7905
Email: gat10@psu.edu
http://agsci.psu.edu/research
Hi Melissa,

Thanks for sending this information. This and your earlier email addressed nearly everything that I had raised.

My suggestion about care and feeding so that they can stay upbeat and have fun as they go probably has merit. Of course, selection of the right students — with the sharp mind, fire in the belly and the tenacity built on curiosity and drive to help others — is paramount.

I appreciate your reaching out to CAS for input!

Kind regards,

Val

Val Beasley DVM, PhD, Diplomate ABVT
Professor and Head
Department of Veterinary and Biomedical Sciences
College of Agricultural Sciences
The Pennsylvania State University
115D Henning Building
University Park, PA 16802

Phone:
814-865-7696 (Department); 814-863-8520 (Direct); 217-621-4079 (Mobile)
Fax:
814-863-6140

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From: Melissa Rolls <mur22@psu.edu>
Date: Monday, March 16, 2015 at 6:10 PM
To: Gary Thompson <gat10@PSU.EDU>, Val Beasley <vbeasley@psu.edu>
Subject: Re: Joint degree proposal between MCIBS and MD/PhD

hi Val

Gary Thompson forwarded your thoughts to me. I think most of your questions relate to the MD/PhD program itself and not specifically the joint degree program with MCIBS. The MD/PhD program has been in existence for many years and works pretty well. The med school years are paid for by the med school, including a stipend for the students. The PI picks up the stipend for the student during the PhD years, just as they would for any MCIBS student. The time for PhD is not totally rigid- the goal is 4 years, but this is not always possible.

The rotations are for the students to find a lab and are done during the summers in the first two years of med school- again this is general for the MD/PhD program and not specific to this joint degree proposal.

Most MD/PhD students stay at Hershey for their PhD, but there has always been an option for students to come to UP for their thesis. and I think this is great! We get an influx of students with a different background.
and they get more labs to choose from. Right now we have 4 MD/PhD students working on their theses at UP. The rationale for this proposal is the reorganization of graduate programs up here. The students used to be able to come into programs like Genetics and Molecular Medicine, but these were all merged into MCIBS last summer, so if we want to maintain the ability for students to work in labs up here we need this joint degree program in place.

Does that answer your questions?
thanks for going through it!!

Melissa

Melissa Rolls  
Associate Professor of Biochemistry and Molecular Biology  
Penn State  
118 Life Sciences Building  
University Park, PA 16802  
814-867-1395, 814-933-6432  
Chair, Molecular, Cellular and Integrative Biosciences program  
http://www.huck.psu.edu/education/molecular-cellular-and-integrative-biosciences/  
Director, Center for Cellular Dynamics  
http://www.huck.psu.edu/center/cellular-dynamics

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From: Val Beasley  
Sent: Monday, March 16, 2015 1:01 PM  
To: Gary Thompson  
Subject: Re: Joint degree proposal between MCIBS and MD/PhD

Hi Gary,

In general, I am supportive.

This description seems rather rigid. If the students will need very many courses for the PhD, they may be short on time to complete a high quality PhD project. What if a study or two doesn’t work? Could 6 months or a year be added? If so, when?

I think there should be some elaboration on when they would do rotations during the first two years and where as well. Apparently, these are one-month long, but that is not 100% clear. Are they normally to be done during break times (e.g., if they are one month in length, they could easily be done during the summer). Is there a quality piece — high case load, research focus, related to their area of interest. The aims of the rotations are not spelled out. It would help if they related to the application of the research focus.

Are there any carrots for the faculty members who will taken on these students?

There should be some attention to counseling the students in this marathon – and encouragement of them to take breaks, have some fun, stay healthy, progress with their personal lives. It helps such students and it
I think that there should be a separate document that addresses the budgetary implications of the program. As we discussed today, some proponents of rigorous DVM/PhD programs hold that students of such prolonged education endeavors need waivers of tuition for all 8 years, plus stipends (should be provided by mentors for students in research laboratories). In that regard, here is probably some need for students to sign a paper that indicates if they fail to complete both degrees, they will have to refund $.

All the best,

Val

From: Gary Thompson <gat10@psu.edu>
Date: Monday, March 16, 2015 at 8:43 AM
To: Val Beasley <vbeasley@psu.edu>
Cc: Rama Radhakrishna <brr100@psu.edu>
Subject: FW: Joint degree proposal between MCIBS and MD/PhD

Val,
I am back in the office and catching up after two weeks on the road. I received this proposal from Melissa Rolls, and I assume that you have received it as well. I wanted to get some feedback from you prior to responding to Melissa. Are you and your faculty supportive of this proposal as written? If not, what are some of the concerns.

Thanks,
Gary

Gary A. Thompson, Ph.D.
Associate Dean for Research and Graduate Education
Director, Pennsylvania Agricultural Experiment Station
College of Agricultural Sciences
Penn State University
217 Agricultural Administration Building
University Park, PA 16802-2600
TEL: 814-865-3136
FAX: 814-863-7905
Email: gat10@psu.edu
http://arec.psu.edu/research

From: Melissa Rolls [mailto:mr22@psu.edu]
Sent: Monday, March 02, 2015 3:50 PM
To: Gary Thompson
Subject: Joint degree proposal between MCIBS and MD/PhD

Dear Gary

I am writing to you in your role as associate dean for grad ed in the college of agriculture, which has faculty that participate in the Molecular, Cellular and Integrative Biosciences (MCIBS) Graduate Program.
One way UP and the College of Medicine have interfaced successfully is through the MD/PhD program. Students in this program apply through the College of Medicine. They do 2 years of medical school at Hershey, and in the summers around this do three rotations, which can include labs at UP. After the first 2 years they join a thesis lab and a graduate program. They typically do a few courses that complement the courses done in the medical school years and take their comprehensive exam after the first year- most programs count success on the first medical board exam and med school in lieu of the candidacy. The comprehensive exam, thesis expectations and defense are the same as for PhD students. After 4-5 years of the thesis the students return for the last two years of medical school. In the past MD/PhD students have had access to labs at UP through inter-college graduate programs (IGDPs). Right now we have 4 MD/PhD students working on their theses at UP. However, with the replacement of most of the IGDPs at Hershey with the Biomedical Sciences Graduate Program and the merger of 5 IGDPs at UP into MCIBS last year, this door is largely closed. So, I am asking for your support on a nice solution!

I have prepared a joint degree proposal for MCIBS and the MD/PhD program. This proposal is based on the joint degree program recently approved between Biomedical Sciences (the main Hershey grad program) and the MD/PhD program. I aim to get the MCIBS joint degree program in place by FA15 so that MD/PhD students still have access to labs at UP. I have attached the proposal, and would like to ask whether you could send me an email/letter of support to be submitted with it. I am happy to meet with you to go through it if you like!

best wishes

Melissa
Hello Melissa,

I have now received feedback from two departments that would be most relevant for the MD/PhD joint degree with MCIBS IGDP. The two emails are included below, and they are both very supportive.

The College of Engineering fully supports your proposal.

Catherine

Catherine M. Harmonosky, Ph.D.
Interim Associate Dean
Office of Undergraduate and Graduate Education
Associate Professor of Industrial Engineering
College of Engineering
Penn State University
102A Hammond Building
University Park, PA 16802
814-863-3750
cmhie@engr.psu.edu
www.engr.psu.edu

From: MICHAEL T LANAGAN [mailto:mxl46@psu.edu]
Sent: Friday, March 20, 2015 4:14 PM
To: Catherine M. Harmonosky
Cc: Judith Todd; Al Segall
Subject: Re: Consultation for MD/PhD joint degree with MCIBS IGDP

Hi Catherine, I support this proposal which is geared toward cellular biology, and see no conflicts with the ESM MD/PhD program. Mike Lanagan

From: William Hancock
Sent: Friday, March 20, 2015 2:35 PM
To: Catherine M. Harmonosky
Subject: Re: Consultation for MD/PhD joint degree with MCIBS IGDP
Importance: High

Catherine,

I looked over the MCIBS MD/PhD proposal and I approve. I am pretty familiar with MD/PhD programs. This dual degree program is particularly suited to the MCIBS PhD program due to the overlap of courses. The requirement for one first author publication before graduating with the PhD is an excellent addition. I fully support the proposal.

Will

William O. Hancock, Ph.D. wohbi@engr.psu.edu
Professor of Biomedical Engineering
Chair of Interdepartmental Graduate Degree Program in Bioengineering
229 Hallowell Building Office: (814) 863-0492
Penn State University Lab: (814) 863-6216
University Park, PA 16802 Fax: (814) 863-0490
http://www.bioe.psu.edu/Faculty/hancock.html
From: Eric Silver esilver@psu.edu
Subject: Re: Joint degree proposal: MD/PhD and MCIBS
Date: March 6, 2015 at 1:38 PM
To: Melissa Rolls mur22@psu.edu
Cc: Christopher Long longc@psu.edu

Hi Melissa, thank you for the opportunity to review the proposal. The program is well thought out and will surely bring value to the students involved. You have the support of Liberal Arts to proceed. Best of luck with the process. Eric

On Fri, Mar 6, 2015 at 12:06 PM, Melissa Rolls <mur22@psu.edu> wrote:
Dear Chris and Eric

thanks!! I am looking forward to feedback, and am happy to answer any questions!

Melissa

Melissa Rolls
Associate Professor of Biochemistry and Molecular Biology
Penn State
118 Life Sciences Building
University Park, PA 16802
814-867-1365, 814-865-5432
Chair, Molecular, Cellular and Integrative Biosciences program
http://www.huck.psu.edu/education/molecular-cellular-and-integrative-biosciences/
Director, Center for Cellular Dynamics
http://www.huck.psu.edu/center/cellular-dynamics

On Mar 6, 2015, at 10:42 AM, Christopher Long <longc@psu.edu> wrote:

Dear Melissa:

I have been in conversation with Eric Silver, Associate Dean for Research in the College, about this program. Eric is in charge of graduate curriculum development, so I am copying him here. He will be able to weigh in on the specifics of the proposal.

Sincerely,
Chris

Christopher P. Long
Professor of Philosophy and Classics
Associate Dean for Graduate and Undergraduate Education
College of the Liberal Arts
The Pennsylvania State University
www.cdlong.org

On Mon, 2 Mar 2015 at 15:46 Melissa Rolls <mur22@psu.edu> wrote:

Dear Christopher

I am writing to you in your role as associate dean for graduate in the college of liberal arts, which has faculty that participate in the Molecular, Cellular and Integrative Biosciences (MCIBS) Graduate Program.

One way UP and the College of Medicine have interfaced successfully is through the MD/PhD program. Students in this program apply through the College of Medicine. They do 2 years of medical school at Hershey, and in the summers around this do three rotations, which can include labs at UP. After the first 2 years they join a thesis lab and a graduate program. They typically do a few courses that complement the courses done in the medical school years and take their comprehensive exam after the first year- most programs count success on the first medical board exam and med school in lieu of the candidacy. The comprehensive exam, thesis expectations and defense are the same as for PhD students. After 4-5 years of the thesis the students return for the last two years of medical school. In the past MD/PhD students have had access to labs at UP through inter-college graduate programs (IGDPs). Right now we have 4 MD/PhD students working on their theses at UP. However, with the replacement of most of the IGDPs at Hershey with the Biomedical Sciences Graduate Program and the merger of 5 IGDPs at UP into MCIBS last year, this door is largely closed. So, I am asking for your support on a nice solution!

I have prepared a joint degree proposal for MCIBS and the MD/PhD program. This proposal is based on the joint degree program recently approved between Biomedical Sciences (the main Hershey grad program) and the MD/PhD program. I aim to get the MCIBS joint degree program in place by Fall so that MD/PhD students still have access to labs at UP. I have attached the proposal and
Melissa

Melissa Rolls
Associate Professor of Biochemistry and Molecular Biology
Penn State
118 Life Sciences Building
University Park, PA 16802
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Chair, Molecular, Cellular and Integrative Biosciences program
http://www.huck.psu.edu/education/molecular-cellular-and-integrative-biosciences/
Director, Center for Cellular Dynamics
http://www.huck.psu.edu/center/cellular-dynamics

Eric Silver
Professor of Sociology and Criminology
Associate Dean for Research
College of the Liberal Arts, 105 Sparks Building
Pennsylvania State University
Web Page: http://sociology.la.psu.edu/people/esx44
Creativity, Productivity, Grant Activity
Hi Melissa,

We've had a chance to take a look at the proposal for the MCIBS MD/PhD program. We feel it is a well-designed and rigorous program and the College of Health and Human Development is happy to support the proposal and, when appropriate, participate as a UP PhD part of the students' program. Let me know if you need a formal letter of support and I'll be happy to provide that.

Kathy

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Kathryn Drager, PhD, CCC-SLP
Associate Dean for Research and Graduate Education
Professor of Communication Sciences and Disorders
College of Health and Human Development
The Pennsylvania State University
201 Henderson Building
University Park, PA 16802

(p) 814-863-2426  |  (f) 814-865-3282
http://www.hhdev.psu.edu/research  |  http://aac.psu.edu/

From: "Melissa Rolls" <mur22@psu.edu>
To: kdd5@psu.edu
Sent: Monday, March 2, 2015 3:52:31 PM
Subject: Joint degree proposal between MCIBS and MD/PhD

Dear Kathryn

I am writing to you in your role as associate dean for graduate education in the college of HHD, which has faculty that participate in the Molecular, Cellular and Integrative Biosciences (MCIBS) Graduate Program.

One way UP and the College of Medicine have interfaced successfully is through the MD/PhD program. Students in this program apply through the College of Medicine. They do 2 years of medical school at Hershey, and in the summers around this do 3 rotations, which can include labs at UP. After the first 2 years they join a thesis lab and a graduate program. They typically do a few courses that complement the courses done in the medical school years and take their comprehensive exam after the first year. Most programs count success on the first medical board exam and med school in lieu of the candidacy. The comprehensive exam, thesis expectations and defense are the same as for PhD students. After 4-5 years of the thesis the students return for the last two years of medical school. In the past MD/PhD students have had access to labs at UP through inter-college graduate programs (IGDPs). Right now we have 4 MD/PhD students working on their theses at UP. However, with the replacement of most of the IGDPs at Hershey with the Biomedical Sciences Graduate Program and the merger of 5 IGDPs at UP into MCIBS last year, this door is largely closed. So, I am asking for your support on a nice solution!
a nice solution!

I have prepared a joint degree proposal for MCIBS and the MD/PhD program. This proposal is based on the joint degree program recently approved between Biomedical Sciences (the main Hershey grad program) and the MD/PhD program. I aim to get the MCIBS joint degree program in place by FA15 so that MD/PhD students still have access to labs at UP. I have attached the proposal, and would like to ask whether you could send me an email/letter of support to be submitted with it. I am happy to meet with you to go through it if you like!

best wishes

Melissa

Melissa Rolls
Associate Professor of Biochemistry and Molecular Biology
Penn State
118 Life Sciences Building
University Park, PA 16802
814-867-1395, 814-933-6432
Chair, Molecular, Cellular and Integrative Biosciences program
http://www.huck.psu.edu/education/molecular-cellular-and-integrative-biosciences/
Director, Center for Cellular Dynamics
http://www.huck.psu.edu/center/cellular-dynamics
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Curriculum Coordinator, University Faculty Senate, 101 Kern Graduate Building, University Park. The proposals will be transmitted to the Office of the Dean of the Graduate School for entry into the Graduate Council curricular review process; for more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: College of Agricultural Sciences
Department or Instructional Area: Food Science

New Graduate Program, Option, or Minor: □ Add

Indicate effective semester:
□ First semester following approval
□ Second semester following approval

Existing Graduate Program Option, or Minor: □ Change  □ Drop

Current designation of graduate program: Grad Program in Food Science
Current designation of graduate option:
Current designation of graduate minor:

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above):
adding CTS dual title option

Indicate effective semester:
□ First semester following approval
□ Second semester following approval

Submitted by Graduate Program Head

Printed name

Signature

Date: 3-14-15

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:

Printed name

Signature

Date: 3-19-15

Approved by College/School Dean/Chancellor (or Designee):

Printed name

Signature

Date: 3-26-15
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<tr>
<th>Role</th>
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<tr>
<td>On Behalf of C. Andrew Cole</td>
<td>Ududekitt</td>
<td>9/4/2015</td>
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<td>Recommended by Chair, Graduate Council Committee on Programs and Courses:</td>
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<td>On Behalf of Joan Redwing</td>
<td>Ududekitt</td>
<td>9/4/2015</td>
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<tr>
<td>Noted by Dean of the Graduate School:</td>
<td>Ududekitt</td>
<td>9/4/2015</td>
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<td>On Behalf of Regina Vasilatos-Younken</td>
<td>Ududekitt</td>
<td>9/4/2015</td>
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Graduate Program in Food Science change proposal

Adoption of the dual-title Ph.D. degree program in Clinical and Translational Sciences

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2. Justification for Program Change ................................................................. 1
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1. Objectives of Program Change

This document proposes a Dual-Title Ph.D. in Food Science (FD SC) and Clinical and Translational Sciences (CTS). A dual-title Ph.D. in FD SC and CTS will expand the educational experience of students studying in the Graduate Program in Food Science (GPFS) by including training via a unique curriculum and research focus. This training prepares students for career paths in research, teaching, or policy roles that bridge university environments, including health care settings within medical schools, private research laboratories in the food industry, and government agencies. The FD SC component of the dual-title focuses on the varied scientific disciplines needed to provide an abundant supply of affordable, safe, nutritious, and appealing food; these disciplines include but are not limited to chemistry, engineering, and microbiology. The CTS component of the dual-title provides an emphasis on epidemiological, behavioral science, health outcomes, and health services research that moves laboratory findings to the clinical setting to best practices in the community. Pairing the two training experiences in the Dual-Title Ph.D. in FD SC and CTS yields opportunities for interdisciplinary scholarship at the interface of basic science, clinical science, the food supply, diet, and human health. This new offering does not duplicate other degree programs within the Department of Food Science, the College of Agricultural Sciences, or the University.

2. Justification for Program Change

The existing Graduate Certificate Program in Clinical Research offered through the Department of Public Health Sciences at the College of Medicine provides limited exposure to the field of CTS. The certificate is an important adjunct for a small pool of professionals, most of whom have completed their doctoral program, but it does not offer the same integrated training and research experiences offered by a dual-title Ph.D. degree. The Dual-Title Ph.D. in FD SC and CTS is part of a national effort, led by the National Institutes of Health (NIH) Roadmap, to encourage interdisciplinary team-based science by reducing program compartmentalization.

Interdisciplinary training in CTS prepares students for successful careers in industry (ranging from the study of bioactivity at the lab bench to the execution of human clinical trials on putatively beneficial ingredients in food) and community and public health, as well as more traditional academic and clinical venues. Of particular interest is the explosive growth of clinical
research sponsoring organizations, which now employ more than 66,000 people worldwide and account for $20 billion of industry revenue in 2010.¹

The expected benefits of the Dual-Title Ph.D. in FD SC and CTS include:

- Value-added training and scholarship for current students rather than competition between graduate programs for an applicant pool;
- Addition of novel course work and training not offered in an existing (primary) graduate degree program;
- Integration of clinical/translational research training into thesis and dissertation work (e.g., Candidacy and Comprehensive Examinations, original research);
- Enhanced methodological/analytical skills and training; and
- Expanded employment and career opportunities.

The Dual-Title Ph.D. in FD SC and CTS will encourage interdisciplinary scholarly work at the interface of many domains by focusing on food, diet, and health. Using practicum, course work and research, the proposed program of study is designed to extend students’ knowledge beyond their primary area of study within FD SC to foster a greater understanding and competence in clinical and health-related research. This translational training is critical given the growing emphasis on bioactivity, functional foods, and health. Ultimately, this approach should enable a new breed of scientists capable of targeting their research programs to address the unmet preventative, therapeutic, and diagnostic needs of the future.

The Dual-Title Ph.D. Degree in FD SC and CTS has four general features.

1. Basic and clinical science didactic course work in each of the following areas:
   - Statistics (3 credits);
   - Epidemiology (3 credits);
   - Bioinformatics (3 credits);
   - Experimental design and interpretation (3 credits);
   - The regulatory environment (3 credits); and
   - Scientific communication (3 credits).
2. Co-mentoring by basic and clinical scientists during students’ dissertation research.
3. Structured experiences in clinical research or other health care settings.
4. Exposure to opportunities afforded by focusing basic sciences, clinical sciences, and community engagement on both treatment and prevention to enhance human diet and health.

The FD SC Ph.D. program requires 6 credits of required courses and 6 credits of graduate-level electives, some of which could be accrued toward requirements of both (i.e., FD SC and CTS) programs. Thus, the minimum number of additional credits added to the curricular experience of FD SC doctoral students accepted to the dual-title program would be 12 (plus CTS Seminar and at least 1 credit of clinical rotation or practicum). This additional course work would be

¹ [http://www.acrohealth.org/fact-sheet.html](http://www.acrohealth.org/fact-sheet.html)
achievable by the end of the third year of graduate studies. Students will select these additional courses from a list of pre-existing courses (see chart below). No new FD SC courses are required to support the Dual-Title Ph.D. Degree in FD SC and CTS.

Prospective dual-title trainees will express an interest in the program as early as during the recruitment process and will apply to the dual-title program no later than the end of the spring semester of the first year of study in the Food Science Ph.D. program. Students interested in the dual-title program will be considered for admission to the CTS program by a committee consisting of the CTS program co-directors and faculty affiliated with the Dual-Title Ph.D. Degree in FD SC and CTS. Typically, students in the FD SC graduate program complete the Candidacy Examination no later than the end of their 3rd semester in the doctoral program. To allow exposure to the CTS curriculum and to assure commitment of an appropriate dissertation mentor, graduate FD SC students accepted to the Dual-Title Ph.D. Degree in FD SC and CTS will take the Candidacy Examination by the end of the 4th semester of doctoral training.

Requirements for the Dual-Title Ph.D. Degree in FD SC and CTS include 18 credits from the list of approved electives in the following areas. Students in the dual-title program may also petition the Directors of the CTS dual-title graduate degree program to fulfill these requirements with courses not currently listed.

<table>
<thead>
<tr>
<th>Statistics (3 credits)</th>
<th>Epidemiology (3 credits)</th>
<th>Bioinformatics (3 credits)</th>
<th>Experimental Design and Interpretation (3 credits)</th>
<th>The Regulatory Environment (3 credits)</th>
<th>Scientific Communication (3 credits)</th>
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</thead>
<tbody>
<tr>
<td>HD FS 519 (3) Methods of Statistical Analysis in Human Development</td>
<td>PHS 550 (3) Principles of Epidemiology</td>
<td>H P A 528 (3) Health Data Analysis for Research</td>
<td>BMS 551 (3) Molecular and Translational Approaches to Human Disease</td>
<td>BIOET 502 (3) Perspectives in Macro-Bioethics</td>
<td>KINES 588 (3) Scientific writing in Kinesiology</td>
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<tr>
<td>H P A 564 (3) Research Methods in Health Services Research</td>
<td>PHS 551 (3) Advanced Epidemiological Methods</td>
<td>PHS 516 (3) Statistical Genetics</td>
<td>HD FS 506 (3) Design and Evaluation of Prevention and Health Promotion Programs Across the Life Span</td>
<td>MCIBS 591 (1) Ethics in the Life Sciences</td>
<td>PHS 518 (2) Scientific Communication</td>
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<tr>
<th>Statistics (3 credits)</th>
<th>Epidemiology (3 credits)</th>
<th>Bioinformatics (3 credits)</th>
<th>Experimental Design and Interpretation (3 credits)</th>
<th>The Regulatory Environment (3 credits)</th>
<th>Scientific Communication (3 credits)</th>
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<tbody>
<tr>
<td>PHS 520 (3) Principles of Biostatistics</td>
<td>PHS 552 (3) Molecular Epidemiology of Chronic Disease</td>
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<tr>
<td>PHS 521 (3) Applied Biostatistics</td>
<td>PHS 553 (3) Infectious Disease Epidemiology</td>
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<td>PHARM 520 (2) Principles of Drug Action</td>
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<td>PHS 522 (3) Multivariate Biostatistics</td>
<td>VS SC 444 (3) Epidemiology of Infectious Diseases</td>
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<td>PHS 504 (3) Behavioral Health Intervention Strategies</td>
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<td>PHS 523 (3) Multivariate Analysis</td>
<td>VS SC 445 (3) Molecular Epidemiology of Infectious Disease</td>
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<td>PHS 505 (3) Public Health Program Planning and Evaluation</td>
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<td>PHS 524 (3) Longitudinal Data Analysis</td>
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<td>PHS 511 (1) Methods used in Translational Research</td>
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<td>PHS 525 (3) Biostatistics for Lab Scientists</td>
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<td>PHS 519 (2) Patient-Centered Research</td>
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<td>PHS 527 (3) Survival Analysis</td>
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<td>PHS 535 (3) Quality of Care Measurement</td>
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<td>PHS 528 (3) Bayesian Methods</td>
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<td>PHS 536 (3) Health Survey Research Methods</td>
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<td>STAT 500 (3) Applied Statistics</td>
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<td>PHS 540 (1) Decision Analysis I</td>
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<td>STAT 501 (3) Regression Methods</td>
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<td>PHS 580 (3) Clinical Trials: Design and Analysis</td>
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<td>STAT 502 (3) Analysis of Variance and Design of Experiments</td>
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<td>PSY 583 (3) Designing Research in Social Psychology</td>
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<td>H P A 561 (3) Introduction to Research Design in Health Services Research</td>
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<td>H P A 551 (3) Quality Improvement in Healthcare</td>
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<tr>
<td>Statistics (3 credits)</td>
<td>Epidemiology (3 credits)</td>
<td>Bioinformatics (3 credits)</td>
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<td>Scientific Communication (3 credits)</td>
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<td>STAT 504 (3) Analysis of Discrete Data</td>
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<td>STAT 503 (3) Design of Experiments</td>
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<tr>
<td>STAT 505 (3) Applied Multivariate Statistical Analysis</td>
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<td>STAT 509 (3) Design and Analysis of Clinical Trials</td>
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<td>STAT 506 (3) Sampling Theory and Methods</td>
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In addition to mandatory Scholarship and Research Integrity (SARI) and Institutional Review Board (IRB) or Institutional Animal Care and Use Committee (IACUC) training (as appropriate), CTS Seminar (two semesters), and one to six credits of clinical rotation or practicum approved by the Directors of the CTS Graduate Program (e.g., BMS 571), are required to complete the curriculum.

Graduate trainees accepted to the Dual-Title Ph.D. Degree in FD SC and CTS and trainees in the CTS program will be served by the CTS Institute’s (CTSI) Mentoring and Career Advisory and Development Panel (MCDAP). The MCDAP approves the elective courses that a student selects and provides mentoring and guidance beyond that offered by the primary research mentor in FD SC. MCDAP members are selected by the CTSI Education and Training Co-Directors, due to their experience with mentoring and training graduate students and junior faculty in clinical, behavioral, and applied sciences. High priority is given to experience with cross-campus training. As CTS Program trainees are accepted, they identify a lead mentor from the MCDAP roster. Together, the trainee, FD SC mentor, and MCDAP mentor will comprise a three-person mentoring team that will monitor student progress and identify areas for development that are aligned with the core competencies of the Dual-Title Ph.D. Degree in FD SC and CTS. Areas for development may include “soft skills” such as leadership, diversity, and teamwork that are expected competencies for successful translational scientists but are not formally evaluated in the Candidacy Examination, Comprehensive Examination, or other required elements of the primary or dual-title degree.

**Fiscal Resources and Extramural Support.** The program is supported through the Penn State CTSI, sponsored by the University and the NIH. Currently, CTSI support is available for eight semesters per year, with an additional four semesters of support matched by the College of Health and Human Development and two semesters by the College of Medicine. Each student will be provided 12 months of graduate stipend support. Up to seven trainees per year (four grant-funded and three institutional matches) are supported.
The proposed program will minimally impact current course offerings, faculty loads, and faculty advising duties. Trainees must complete a Final Examination in which the dissertation research is accepted by their mentors and doctoral committee. Thus, a Ph.D. is requested as the degree title for this dual-title program.

There is no accrediting body for the proposed program area. A proposed sequence of study for students seeking the Dual-Title Ph.D. in FD SC and CTS is presented below.

**Year One**
- FD SC Course work (including a graduate-level statistics class)
- CTS Course work (statistics and epidemiology; select classes from list)
- Complete Scholarship and Research Integrity (SARI) Training [1st semester]
- Apply to Dual-Title program
- Establish CTS mentors
- Language Proficiency
- Residency Requirement Fulfilled

**Year Two**
- FD SC Course work
- CTS Course work (bioinformatics, experimental design, regulatory environment; select classes from list)
- CTS 590 (Seminar in Clinical and Translational Sciences)
- CTS 595 or BMS 571 (Clinical Rotation / Internship)
- Complete Candidacy Examination (scheduled by the FD SC and CTS program) during 2nd semester
- Form Doctoral Committee
- Identify Dissertation Topic

**Year Three and Beyond**
- CTS 590 (Seminar in Clinical and Translational Sciences)
- CTS course work (scientific communication; select class from list)
- Complete Comprehensive Examination (schedule with FD SC and CTS program) [no later than 2nd semester]
- Work on Dissertation Topic (e.g., review literature, collect data)
- Write Dissertation
3. Proposed Bulletin Listing (with changes tracked)

Food Science (FD SC)

Program Home Page (Opens New Window)

ROBERT F. ROBERTS, Head of the Department
202 Rodney A. Erickson Food Science Building
814-865-5444

Degrees Conferred:

Ph.D., M.S.

The Graduate Faculty

- Ramaswamy C. Anantheswaran, Ph.D. (CORNELL UNIVERSITY), Professor of Food Science
- Rodolphe Barrangou, Ph.D. (NORTH CAROLINA STATE UNIVERSITY), Adjunct Professor of Food Science
- Robert B. Beelman, Ph.D. (OHIO STATE UNIVERSITY), Professor Emeritus of Food Science
- J. Lynne Brown, Ph.D. (MASSACHUSETTS INSTITUTE OF TECHNOLOGY), Professor Emeritus of Food Science
- Jonathan Campbell, Ph.D. (IOWA STATE UNIVERSITY OF SCIENCE AND TEC), Assistant Professor of Animal Science and Food Science
- John Neil Coupland, Ph.D. (UNIVERSITY OF LEEDS), Professor of Food Science
- Catherine Cutter, Ph.D. (CLEMSON UNIVERSITY), Professor of Food Science
- Stephanie Doores, Ph.D. (UNIVERSITY OF MARYLAND COLLEGE PARK), Associate Professor of Food Science
- Edward G. Dudley, Ph.D. (UNIVERSITY OF WISCONSIN-MADISON), Associate Professor of Food Science
- Ryan J Elias, Ph.D. (UNIVERSITY OF MASSACHUSETTS IN AMHERST), Associate Professor of Food Science
- Hassan Gourama, Ph.D. (UNIVERSITY OF NEBRASKA, LINCOLN), Associate Professor of Food Science
- Federico Harte, Ph.D. (WASHINGTON STATE UNIVERSITY), Associate Professor of Food Science
- John Hayes, Ph.D. (UNIVERSITY OF CONNECTICUT), Associate Professor of Food Science
- Kerry Kaylegian, Ph.D. (CORNELL UNIVERSITY), Dairy Foods Research and Extension Associate
• Kathleen Keller, Ph.D. (RUTGERS, STATE UNIVERSITY OF NEW JERSEY), Assistant Professor of Nutritional Sciences and Food Science
• Stephen J. Knabel, Ph.D. (IOWA STATE UNIVERSITY), Professor of Food Science
• Luke La Borde, Ph.D. (UNIVERSITY OF WISCONSIN-MADISON), Associate Professor of Food Science
• Joshua D Lambert, Ph.D. (UNIVERSITY OF ARIZONA), Associate Professor of Food Science
• Sara Milillo, Ph.D. (CORNELL UNIVERSITY), Instructor
• Robert F. Roberts, Ph.D. (UNIVERSITY OF MINNESOTA MINNEAPOLIS), Professor of Food Science
• Robert Steele, Ph.D. (UNIVERSITY OF WISCONSIN-MADISON), Professor Emeritus
• Jairam Vanamala, Ph.D. (TEXAS A & M UNIVERSITY), Associate Professor of Food Science
• Gregory R. Ziegler, Ph.D. (CORNELL UNIVERSITY), Professor of Food Science

The Programs

Graduate work leading to the M.S. and Ph.D. degrees in Food Science is directed toward a multidisciplinary and integrated approach to teaching and research relevant to processing and manufacture of value-added foods from agricultural commodities. Through integration of the disciplines of chemistry, microbiology, engineering, and nutrition, students learn to ensure that consumers can make healthful choices from an abundant supply of affordable, safe, nutritious, and appealing foods.

Admission Requirements

Requirements listed here are in addition to requirements stated in the GENERAL INFORMATION section of the Graduate Bulletin.

Scores from the Graduate Record Examinations (GRE) are required for admission.

Students with a 3.00 junior/senior average (on a 4.00 scale) will be considered for admission to the program. Exceptions may be made for students with special backgrounds, abilities, and interests.

Best preparation for graduate work would be the completion of an undergraduate degree in food science, biochemistry, microbiology, or other related areas. The undergraduate program must include calculus, organic chemistry, microbiology, and general physics. Students may be admitted with deficiencies but are required to make them up without degree credit.

Students are generally admitted directly to a master's program unless they have previously earned an M.S. degree in food science or an appropriate related area; in such cases, admission can be made directly to the doctoral program by approval of the graduate program committee.
Master's Degree Requirements

Requirements listed here are in addition to requirements stated in the DEGREE REQUIREMENTS section of the Graduate Bulletin.

Minimum course requirements for the M.S. degree are as follows:

- Fundamentals of Food Science (FD SC 500A, FD SC 500B, FD SC 500C, and FD SC 500D), 4 credits
- Research Methods in Food Science (FD SC 501), 2 credits
- Supervised Experience in College Teaching (FD SC 602), 1 credit
- Other 500-level FD SC courses, 6 credits (3 credits of the requirement can be satisfied by 400 level Food Science courses with permission of the adviser.)
- Additional 400 or 500-level courses, 6 credits
  - Must include Statistics (STAT 500 Applied Statistics or equivalent)
- Thesis Research (FD SC 600), 6 credits

The M.S. degree also requires the formation of a master’s committee, the writing of a satisfactory thesis accepted by the master’s committee and the Graduate School, and the passing of a final oral examination.

Doctoral Degree Requirements

Requirements listed here are in addition to requirements stated in the DEGREE REQUIREMENTS section of the Graduate Bulletin.

Minimum course requirements for the Ph.D. degree are as follows:

- Fundamentals of Food Science (FD SC 500A, FD SC 500B, FD SC 500C, and FD SC 500D), 4 credits (Not needed if student received credit for these courses during master’s degree program at Penn State.)
- Research Methods in Food Science (FD SC 501), 2 credits (Not needed if student received credit for this course during master’s degree program at Penn State.)
- Supervised Experience in College Teaching (FD SC 602), 2 semesters of 1 credit each
- Other 500-level FD SC courses, 6 credits (3 credits of this requirement can be satisfied by 400-level Food Science courses with permission of the adviser.)
- Additional 400 or 500-level courses, 12 credits
- Additionally, students must have satisfactorily completed at least one 400 or 500-level course in statistics (i.e., STAT 500 Applied Statistics or equivalent) during their undergraduate or graduate program
Except in special cases, an M.S. in Food Science is earned before pursuing a Ph.D. degree. Although most applicants to the Ph.D. program have already obtained a Master’s degree in Food Science or a related program, the M.S. degree is not a prerequisite for entrance into the doctoral program. For students entering the Ph.D. program without having earned an M.S. degree in Food Science, there are two additional course requirements:

- Thesis Research (FD SC 600), 6 credits
- Additional 400 or 500-level FD SC courses, 6 credits

The Ph.D. degree also requires the passing of a candidacy examination, the formation of a doctoral committee, the passing of a comprehensive examination, the writing of a satisfactory dissertation accepted by the doctoral committee, the head of the graduate program, and the Graduate School, and the passing of a final oral examination. In addition, all Food Science Ph.D. candidates are assessed for English competency. International students who plan to be teaching assistants must also take the American English Oral Communicative Proficiency Test (AEOCPT).

Dual-Title Ph.D. in Clinical and Translational Sciences

Doctoral students with research and educational interests in clinical and translational science must apply for the Dual-Title Ph.D. Degree in Food Science and Clinical and Translational Sciences following admission to the Graduate School and Food Science and prior to taking the candidacy examination in Food Science. An admissions committee comprised of faculty affiliated with the dual-title program will evaluate applicants. Applicants must have a graduate GPA of at least 3.5 in a research area related to human health. Prospective dual-title program students must include in their application a statement of purpose that addresses the ways in which their research and professional goals will be enhanced by an interdisciplinary course of study in clinical and translational sciences.

The Dual-Title Ph.D. Degree in Food Science and Clinical and Translational Sciences emphasizes interdisciplinary scholarship at the interface of basic sciences, clinical sciences, and human health. Students in the dual-title program are required to have two advisers from separate disciplines: one individual serving as the primary mentor from the Graduate Program in Food Science and another individual serving as the secondary mentor from an area covered by the dual-title program who is a member of the Clinical and Translational Sciences faculty.

Degree Requirements

Requirements listed here are in addition to requirements stated in the DEGREE REQUIREMENTS section of the Graduate Bulletin.

The Dual-Title Ph.D. Degree in Food Science and Clinical and Translational Sciences requires the completion of 18 credits of course work from an approved list of courses covering the areas of
epidemiology, bioinformatics, experimental design and interpretation, statistics, the regulatory environment, and scientific communication. Approximately 6 credits of course work may overlap with elective courses required by the Ph.D. Program in Food Science.

For students in the dual-title program, the candidacy examination consists of the standard Food Science candidacy exam with one modification. A member of the CTS faculty will join the standing FD SC candidacy committee during the normal FD SC exam and assess the student’s CTS knowledge. This occurs by assigning the student a paper that has clinical relevance, or by asking the student questions that required him or her to extend the assigned paper into a clinical/translational context. This examination must be completed before the end of the second year, within four semesters (summer sessions do not count) of entry into the doctoral program.

The student’s doctoral committee will include graduate faculty from the major program of study and faculty with expertise in clinical and translational science. In accordance with Graduate Council policy, the doctoral committee of a Food Science and CTS dual-title doctoral degree student must include at least one member of the CTS graduate faculty. Faculty members who hold appointments in both programs’ graduate faculty may serve in a combined role. If the chair of the doctoral committee representing Food Science is not also a member of the graduate faculty in CTS, the member of the committee representing CTS must be appointed as co-chair.

The fields of food science and clinical and translational sciences will be integrated in the student’s comprehensive examination. All students are required to conduct dissertation research that contributes fundamentally to the fields of food science and clinical/translational sciences.

**Student Aid**

Graduate assistantships available to students in this program and other forms of student aid are described in the [STUDENT AID](#) section of the *Graduate Bulletin*.

**Courses**

Graduate courses carry numbers from 500 to 599 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.
Subject: Re: Support Email for CTS / FDSC dual title
Date: Monday, June 29, 2015 at 10:26:37 AM Eastern Daylight Time
From: Rob Turrisi
To: John Hayes

Hi John,

AS PIC of the BBH department I support you program’s addition to the Dule-title program and welcome your students to our classes.

See also attached.

Rob

On Mon, Jun 29, 2015 at 9:26 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Rob,

The FDSC faculty has voted to offer our students a dual title in Clinical and Translational Sciences and Food Science. As this potentially affects BBH, Graduate Council has requested we consult with your program before listing BBH courses in the table of approved electives for the CTS program.

A one line email indicating your support should sufficient. If you have any additional questions or concerns, I am happy to discuss this further.

Thanks!

John

--
Rob Turrisi, Ph.D.
Professor and Professor in Charge of the Graduate Program
Department of Biobehavioral Health
Director, Prevention Research to Optimize (PRO) Health Lab
Edna Bennett Pierce Prevention Research Center
The Pennsylvania State University
210 Biobehavioral Health Building
For mail: 219 Biobehavioral Health Building
University Park, PA 16802-6504
Phone(814)865-7808
Fax: (814)865-0612
rturrisi@psu.edu
URL: http://bbh.hhdev.psu.edu/lab/prcasp/index.html
Subject: Re: Support Email for CTS / FDSC dual title
Date: Wednesday, July 1, 2015 at 6:50:34 AM Eastern Daylight Time
From: Ralph L. Keil
To: John Hayes

Dear John,

The Biomedical Sciences (BMS) Graduate Program fully supports Food Science including BMS courses as electives for the CTS dual-title program. If necessary, would be happy to work with Food Science to help make arrangements for students to take these courses at UP via distance technology.

Ralph

Ralph L. Keil, PhD
Chair, Biomedical Sciences Graduate Program; med.psu.edu/bms
Chair, Biosafety & Recombinant DNA Committee; http://infonet.hmc.psu.edu/safety/biological/rDNA/index.htm

Dept of Biochemistry & Molecular Biology H171 | 500 University Dr. Rm. CS715 | Penn State College of Medicine | Hershey, PA 17033
Phone: 717-531-8595 | E-mail: rkeil@psu.edu | Fax: 717-531-7072

On Jun 29, 2015, at 9:29 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Dr. Keil,

The FDSC faculty has voted to offer our students a dual title in Clinical and Translational Sciences and Food Science. As this potentially affects BMS, Graduate Council has requested we consult with your program before listing BMS courses in the table of approved electives for the CTS program.

A one line email indicating your support should suffice. If you have any additional questions or concerns, I am happy to discuss this further.

Thanks!

jh
--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40
Subject: Re: Consultation on CTS / FDSC dual title
Date: Tuesday, June 30, 2015 at 3:30:36 PM Eastern Daylight Time
From: David Gilmour
To: John Hayes

Hi John,

Since the only course that should be affected is BMMB 852 - Applied Bioinformatics, I support the CTS dual title.

*********************************************
David S. Gilmour
Professor of Biochemistry and Molecular Biology
Co-director of the BMMB graduate program
Center for Eukaryotic Gene Regulation
Department of Biochemistry and Molecular Biology
465A North Frear
Penn State University
University Park, PA 16802

Office: 814-863-8905
Lab: 814-865-3795
Fax: 814-863-7024
Cellphone: 814-777-4166
Research web page: http://bmb.psu.edu/directory/dsg11
BMB Department: http://bmb.psu.edu/
Center for Eukaryotic Gene Regulation: http://www.huck.psu.edu/institutes-and-centers/cgr

On Jun 29, 2015, at 9:35 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Dr. Gilmore,

The FDSC faculty has voted to offer our students a dual title in Clinical and Translational Sciences and Food Science. As this potentially affects BMMB, Graduate Council has requested we consult your program before listing BMMB courses in the table of approved electives for the CTS program. Given your program’s prior support for the CTS dual title, I am assuming this shouldn’t require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh
--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
Subject: Re: Consultation on CTS / FDSC dual title
Date: Tuesday, June 30, 2015 at 10:43:33 AM Eastern Daylight Time
From: Jonathan H. Marks
To: eah28@psu.edu
CC: John Hayes

Dear John,

I concur. We would be happy to have all BIOET/bioethics courses listed as electives!

Best wishes,
Jonathan

Jonathan H. Marks
Director, Bioethics Program
Senior Fellow, Rock Ethics Institute, Penn State;
Network Fellow, Edmond J. Safra Center for Ethics, Harvard

814-865 5938
jonathanmarks.info
bioethics.psu.edu

From: "Erin Heidt-Forsythe" <eah28@psu.edu>
To: "John Hayes" <jeh40@psu.edu>, "Jonathan H. Marks" <jhm20@psu.edu>
Sent: Tuesday, June 30, 2015 2:45:07 AM
Subject: Re: Consultation on CTS / FDSC dual title

Hi Dr. Hayes,

This sounds good to me. A quick note that today is my last day as interim director; I've cc:d Jonathan Marks who will take over as director of Bioethics July 1.

Best

Erin

On Mon, Jun 29, 2015 at 3:39 PM, John Hayes <jeh40@psu.edu> wrote:

Dear Dr. Heidt-Forsythe,

The FDSC faculty has voted to offer our students a dual title in Clinical and Translational Sciences and Food Science. As this potentially affects BIOET, Graduate Council has requested we consult your program before listing BIOET courses in the table of approved electives for the CTS program. Given your program's prior support for the CTS dual title, I am assuming this shouldn't require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions
or concerns, I am happy to discuss this in more detail.

Thanks!

jh
--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40

--
Erin Heidt-Forsythe
Assistant Professor, Departments of Women's Studies and Political Science
Interim Director, Bioethics Program
Penn State University
123 Willard Building
University Park, PA 16803
Subject: Re: Consultation on CTS / FDSC dual title
Date: Thursday, July 2, 2015 at 12:38:35 AM Eastern Daylight Time
From: Eva S. Lefkowitz
To: John Hayes

Dear John,

The HDFS department supports your pursuit of adding the option of a dual title in Clinical and Translational Sciences and Food Science.

Let me know if you have further questions.

Eva S. Lefkowitz, Ph.D.
Professor of Human Development
Professor-in-Charge, HDFS Graduate Program
Human Development and Family Studies
Penn State University
119 Health and Human Development Building
University Park, PA 16802
phone: 814-663-7005
fax: 814-663-7963

my web sites:

http://www.hhdev.psu.edu/hdfs/faculty/lefkowitz.html
http://www.evalefkowitz.com/prof-dev-blog.html
https://twitter.com/EvaLefkowitz

departmental website:

http://www.hhdev.psu.edu/hdfs/

On Mon, Jun 29, 2015 at 9:42 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Eva,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences and Food Science. As this potentially affects HDFS, Graduate Council has requested we consult your program before listing HDFS courses in the table of approved electives for the CTS program. Given your program's prior support for the CTS dual title, I am assuming this shouldn't require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh
--
John E. Hayes, Ph.D.
Subject: Re: Consultation on CTS / FDSC dual title

Date: Thursday, July 2, 2015 at 12:39:38 PM Eastern Daylight Time

From: CHRISTOPHER ALAN CALKINS
To: John Hayes

Dear John,

I need to share this with Marianne Hillemeier, our department head. As for the MHA programs we are in agreement with your proposal.

Chris

----- Original Message ----- 
From: "John Hayes" <jeh40@psu.edu>
To: cxc20@psu.edu
Sent: Monday, June 29, 2015 9:46:40 AM
Subject: Consultation on CTS / FDSC dual title

Dear Chris,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences and Food Science. As this potentially affects HPA, Graduate Council has requested we consult your program before listing HPA courses in the table of approved electives for the CTS program. Given your program’s prior support for the CTS dual title, I am assuming this shouldn’t require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh

--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40
--
Chris Calkins, Ph.D.
Outreach Assistant Professor and
Executive Director, World Campus MHA
Department of Health Policy and Administration
118F Keller Building
University Park, PA 16802
Main Office: 814 863-4821
Direct: 814 863-4791
Cell: 814 360-9858
Fax: 814 863-7372
email: cxc20@psu.edu
Skype Address: christopher.calkins1
http://www.worldcampus.psu.edu/degrees-and-certificates/health-policy-and-administration-masters/overview
Hi John,

I'm sorry I didn't respond to your earlier email - I received it when I was on vacation and failed to follow up on it when I got back.

Your plans to list KINES 588 among the electives in your dual-title with CTS has our full support.

Best regards,
Steve

--
Stephen Piazza, PhD
Professor
Departments of Kinesiology, Mechanical Engineering (by courtesy),
and Orthopaedics & Rehabilitation (by courtesy)
Graduate Program Professor-in-Charge, Department of Kinesiology
Biomechanics Laboratory
29 Recreation Building
The Pennsylvania State University
University Park, PA 16802

----- Original Message ----- 
| From: "John Hayes" <jeh40@psu.edu> 
| To: piazza@psu.edu 
| Cc: "Jim Pawelczyk" <jap18@psu.edu> 
| Sent: Friday, July 24, 2015 4:54:06 PM 
| Subject: Re: Consultation on CTS / FDSC dual title 
| 
| Dear Dr. Piazza, 
| 
| Just following up to see if you had time to consider my request regarding 
| the CTS program. 
| 
| Thank you. 
| 
| jh 
| 
| On 6/29/15, 10:07 AM, "John Hayes" <jeh40@psu.edu> wrote: 
| 
| >Dear Dr. Piazza, 
| >
| >The FDSC faculty has voted to offer our students the option of a dual 
| >title in Clinical and Translational Sciences. As this potentially affects 
| >KINES, Graduate Council has requested we consult your program before 
| >listing KINES 588 in the table of approved electives for the CTS program. 
| >Given your program's prior support for the CTS dual title, I am assuming 
| >this shouldn't require much if any discussion.
If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40
Subject: Re: consultation on CTS/FDSC dual title

Date: Wednesday, July 1, 2015 at 12:27:05 PM Eastern Daylight Time

From: Melissa Rolls

To: Cooduvalli Shashikant

CC: John Hayes, tlo12@psu.edu

Dear John

I am very supporting of the CTS Dual Degree Program, and it is great you are adding this as an option with FDSC!

best

Melissa

Melissa Rolls
Associate Professor of Biochemistry and Molecular Biology
Penn State
118 Life Sciences Building
University Park, PA 16802
814-867-1395, 814-933-6432
Chair, Molecular, Cellular and Integrative Biosciences program
http://www.huck.psu.edu/education/molecular-cellular-and-integrative-biosciences/
Director, Center for Cellular Dynamics
http://www.huck.psu.edu/center/cellular-dynamics

On Jun 30, 2015, at 11:46 AM, Cooduvalli Shashikant <css13@psu.edu> wrote:

I am okay with this. I am copying to Melissa Rolls for her approval as well.

On Tue, Jun 30, 2015 at 11:35 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Cooduvalli,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences. As this potentially affects two MCIBS courses (551 and 591), Graduate Council has requested we consult program chairs before listing them in the table of approved electives for the CTS / FDSC dual title.

Given the previous support of the IBIOS program for the CTS dual title, I am assuming this shouldn’t require much, if any, discussion. If you could please send me a one line email indicating the support of MCIBS, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40

--

Cooduvalli S Shashikant
Associate Professor of Molecular and Developmental Biology
Department of Animal Science, College of Agricultural Sciences

Program Director, CBIOS Predoctoral Training Program
Co-Director, MCIBS Graduate Program Option in Bioinformatics and Genomics
The Huck Institutes of the Life Sciences
The Pennsylvania State University

Mail: 324 Henning Building, University Park, PA 16802.
Office: 323 ASI, Lab: 308 Henning, Tel no. 814-863-0658 (O); 814-863-6042 (Fax)
814-883-5572 (cell)
Subject: RE: Consultation on CTS / FDSC dual title
Date: Friday, July 24, 2015 at 5:27:19 PM Eastern Daylight Time
From: Kristen Kjerulff
To: John Hayes, khk2@psu.edu
CC: Jim Pawelczyk

Hi John,

Yes, I support the listing of PHS courses in the table of approved electives for the dual title program in Clinical and Translational Sciences.

Thank you,

Kris

Kristen H. Kjerulff, Ph.D., M.A.
Professor
Departments of Public Health Sciences and Obstetrics and Gynecology
Director, Master of Science Program, Department of Public Health Sciences
College of Medicine, Penn State University
90 Hope Drive
Hershey, PA 17033
717-531-1258 (Phone)
717-531-0188 (Fax)
khk2@psu.edu

-----Original Message-----
From: John Hayes [mailto:jeh40@psu.edu]
Sent: Friday, July 24, 2015 4:55 PM
To: khk2@psu.edu
Cc: Jim Pawelczyk
Subject: Re: Consultation on CTS / FDSC dual title
Importance: High

Dear Dr. Kjerulff,

Just following up to see if you had time to consider my request regarding the CTS program.

Thank you.

jh

On 6/29/15, 10:10 AM, "John Hayes" <jeh40@psu.edu> wrote:

Dear Dr. Kjerulff,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences. As this potentially affects PHS, Graduate Council has requested we consult your program
before listing PHS courses in the table of approved electives for the CTS program. Given your program’s prior support for the CTS dual title, I am assuming this shouldn’t require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh

--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40
Subject: Re: Consultation on CTS / FDSC dual title

Date: Monday, June 29, 2015 at 9:46:11 PM Eastern Daylight Time

From: Kristin

To: John Hayes

CC: kab37@psu.edu

Dear John,

Yes you can continue to list PSY 583 as an approved elective for the CTS program.

Best,

Kristin

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Kristin A. Buss, PhD
Professor of Psychology
Director of Graduate Training
The Pennsylvania State University
Director of Harrisburg Center for Healthy Child Development and PACT
256 Moore Bldg.
814-863-1715
kbuss@psu.edu

On Jun 29, 2015, at 9:15 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Dr. Buss,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences. As this potentially affects your program, Graduate Council has requested we consult you before listing PSYCH 583 in the table of approved electives for the CTS program. Given your program's prior support for the CTS dual title, I am assuming this shouldn't require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh
--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
Subject: Consultation on CTS / FDSC dual title
Date: Friday, July 3, 2015 at 11:58:33 AM Eastern Daylight Time
From: Bronson, Sarah
To: John Hayes
CC: Gill, Donald, Lynch, Christopher

Hi John,
Thank you for giving us the opportunity to review your program change to adopt the Dual-Title in Clinical and Translational Science.
The opportunities that the Biomedical Sciences doctoral trainees have had via the Dual-Title are exciting and valuable; and increasing the number of graduate degree programs that offer the Dual-Title increases the interdisciplinary composition of the classes and improves the education for all so we are happy to support your initiative.
In the event that PSIO 501 is the appropriate course for an FDSC student due to their location on the Hershey campus they would be very welcome to register and participate.
Sarah

Sarah K. Bronson, Ph.D
Associate Professor of Cellular & Molecular Physiology
Director, Research Development and Interdisciplinary Research Co-Director, Junior Faculty Development Program
The Penn State University College of Medicine
500 University Drive; H166; Room C1742A
Hershey, PA 17033-0850
717 531-5194 (voice)
717 531-7667 (facs)
sbronson@psu.edu
http://www.pennstatehershey.org/web/researchdevelopment/home
http://www2.med.psu.edu/researchconcierge/

-----Original Message-----
From: John Hayes [mailto:jeh40@psu.edu]
Sent: Monday, June 29, 2015 5:04 PM
To: Bronson, Sarah
Subject: Re: Consultation on CTS / FDSC dual title

Sarah,

Yes, in theory we are talking about PSIO 501 per the menu of courses that were previously negotiated between UP and HMC for the CTS program.
Candidly, it is very unlikely one of our UP based students would travel down for this course, but Graduate Council is requesting that we contact all programs that are potentially affected by this program change. And since PSIO 501 is on the list that the CTS program put together, I did some googling and figured you were the best person to contact.

Cheers.

John
On 6/29/15, 4:51 PM, "Bronson, Sarah" <sbronson@hmc.psu.edu> wrote:

John,
What program are you looking to receive consultation from? Biomedical Sciences? IGDP in Physiology?
You did not attach your proposal but I am assuming that the table on pages 3-5 is what you are referring to?
Those courses were added to the table primarily for students on the Hershey campus and are examples of reciprocity between the degrees.
Please advise.
Sarah

-----Original Message-----
From: John Hayes [mailto:jeh40@psu.edu]
Sent: Monday, June 29, 2015 10:27 AM
To: skb8@psu.edu
Subject: Consultation on CTS / FDSC dual title

Dear Dr. Bronson,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences. As this potentially affects your program, Graduate Council has requested we consult you before listing PSIO courses in the table of approved electives for the CTS program.
Given your program's prior support for the CTS dual title, I am assuming this shouldn't require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh
--
John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40
Subject: RE: Consultation on CTS / FDSC dual title
Date: Monday, June 29, 2015 at 10:56:08 AM Eastern Daylight Time
From: Vrana, Kent
To: John Hayes
CC: Yun, Jong

John -
Your plan to participate in the CTSI dual-title program has the full support of the Department of Pharmacology.

Good luck.

Cheers,
Kent

Kent E. Vrana, Ph.D.
Elliot S. Vesell Professor & Chair
Department of Pharmacology

Editor-in-Chief, PHARMACOLOGY –
International Journal of Experimental and Clinical Pharmacology (Karger Press)

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Co-Director, Clinical Learning and Competencies (PBL)
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Fax: 717-531-0419
e-mail: kvrana@psu.edu

-----Original Message-----
From: John Hayes [mailto:jeh40@psu.edu]
Sent: Monday, June 29, 2015 10:27 AM
To: kev10@psu.edu
Subject: Consultation on CTS / FDSC dual title

Dear Dr. Vrana,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences. As this potentially affects your program, Graduate Council has requested we consult you before listing PHARM 520 in the table of approved electives for the CTS program.

Given your program's prior support for the CTS dual title, I am assuming this shouldn't require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!
jh

--

John E. Hayes, Ph.D.
Associate Professor, Food Science
Director, Sensory Evaluation Center
The Pennsylvania State University
220 Erickson Food Science Building
University Park, PA 16802
(814) 863-7129
http://foodscience.psu.edu/directory/jeh40
Subject: Re: Consultation on CTS / FDSC dual title
Date: Monday, June 29, 2015 at 11:02:30 AM Eastern Daylight Time
From: Anthony Schmitt
To: John Hayes
CC: Val Beasley

Hi John,

Glad to hear of your interest in adding the dual title CTS program for Food Science. I think it is a great opportunity for programs like FDSC and VBS that have strong basic science focus that relates to human health and disease.

May I ask which VBSC courses you will list as electives? I don't anticipate that there will be any difficulties or objections at all, but I should notify those instructors so that they are aware of the situation.

Thanks,

Tony

________________________________________________________
Anthony P. Schmitt, Ph.D.
Associate Professor of Molecular Virology
Center for Molecular Immunology and Infectious Disease
Department of Veterinary and Biomedical Sciences
The Pennsylvania State University
115 Henning Building
University Park, PA 16802

phone: (814) 863-6781
e-mail: aps13@psu.edu

On Jun 29, 2015, at 10:33 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Dr. Schmitt,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences. As this potentially affects your program, Graduate Council has requested we consult you before listing VBSC courses in the table of approved electives for the CTS program.

Given your program's prior support for the CTS dual title, I am assuming this shouldn't require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh
Subject: Re: Consultation on CTS / FDSC dual title
Date: Friday, August 21, 2015 at 3:00:11 PM Eastern Daylight Time
From: Aleksandra Slavkovic
To: John Hayes
CC: sesa@stat.psu.edu, MOSUK CHOW

Dear John,

I apologize for a delay in responding! I hope this is still in time for you to process everything.

Statistics will support the CTS dual title.

I am also cc-ing on this email Dr. Mosuk Chow, the director of our Masters of Applied Statistics program as many classes you have listed are typically taken by the MAS students.

Please let me know if you need any other info at this point.

Best,
Aleksandra

On Jun 29, 2015, at 10:29 AM, John Hayes <jeh40@psu.edu> wrote:

Dear Dr. Slavkovic,

The FDSC faculty has voted to offer our students the option of a dual title in Clinical and Translational Sciences. As this potentially affects your program, Graduate Council has requested we consult you before listing STAT courses in the table of approved electives for the CTS program.

Given your program's prior support for the CTS dual title, I am assuming this shouldn't require much if any discussion.

If you could send me a one line email indicating your support, I would greatly appreciate it. Alternatively, if you have any additional questions or concerns, I am happy to discuss this in more detail.

Thanks!

jh
--
John E. Hayes, Ph.D.
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http://foodscience.psu.edu/directory/jeh40
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Aleksandra (Sesa) Slavkovic, Ph.D.
Professor
Associate Head for Graduate Studies
Departments of Statistics and Public Health Sciences
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Phone: (814) 863-4918
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Web: http://www.stat.psu.edu/~sesa