UNIVERSITY OF CALIFORNIA ACADEMIC SENATE

COORDINATING COMMITTEE ON GRADUATE AFFAIRS

Notice of Meeting
Wednesday, April 3, 2013
10:00 a.m. – 4 p.m.
UCOP, 1111 Franklin Street, Oakland – Room 5320
Primary Dial-In: 1-866-740-1260 | Passcode: 9879466
http://www.universityofcalifornia.edu/senate/

Action	Item		Enclosures
Information/ Discussion 10:00-10:25	**I.**	**Chair's Report/Announcements/Updates** – *Chair Ruth Mulnard* • March 11 UCORP/CCGA Meeting in Sacramento with LAOs *(Donald Mastronarde)* • March 22 UCOP Budget Call Meeting *(Donald Mastronarde)* • March 27 Academic Council Meeting • March 28 Academic Planning Council iLinc Meeting	
Action 10:25-10:30	**II.**	**Consent Calendar** • Approval of the Agenda • Approval of the Meeting Minutes of March 6, 2013 ***ACTION REQUESTED:*** *Approve the agenda and minutes as noticed.*	**1** (to follow)
	III.	**Proposed Graduate Degrees and Programs for Review** *All program proposals and current reviews are posted on the CCGA SharePoint site; contact the committee analyst if you would like proposal materials or documents e-mailed to you.*	
Discussion 10:30-10:40		**A. Proposal for a Graduate Program leading to the M.A. and Ph.D. Degrees in Political Science at UC Merced** – *Lead Reviewer Kwai Ng (UCSD)*	
Discussion 10:40-10:50		**B. Proposal for a Program of Graduate Studies in the Interdisciplinary Humanities for the M.A. and Ph.D. Degrees at UC Merced** – *Lead Reviewer Bruce Schumm (UCSC)*	
Discussion 10:50-11:00		**C. Proposal for a Graduate Program leading to the Master of Information and Data Science (MIDS) at UC Berkeley** – *Lead Reviewer Divy Agrawal (UCSB)*	

Discussion 11:00-11:10		**D. Proposal to establish a Graduate Program leading to the Ph.D. in Public Health at UC Irvine** – *Lead Reviewer Donald Mastronarde (UCB)*	
Discussion 11:20-11:30		**E. Proposal for a Graduate Program leading to the M.S. degree in Games and Playable Media at UC Santa Cruz** – *Lead Reviewer Martin Olsson (UCB)*	**2** (pp. 5-9)
Information 11:30-noon	**IV.**	**Announcements from the President's Office, Academic Affairs** *Pamela Jennings, Graduate Studies Director, Office of Research and Graduate Studies* *Hilary Baxter, Interim Director, Academic Planning, Programs and Coordination*	
noon-1:00		**– Working Lunch –**	
Discussion/ Action 12:15-1:15	**V.**	**Updates/Inquiries from the Divisional Senates** – *Chair Mulnard and Members*	
		A. UC Irvine: Name Change Request for Graduate Program in Environmental Toxicology – *Jutta Heckhausen (UCI)*	**3** (pp. 10-51)
		B. UCLA: Recent Campus Enforcement of the "In absentia" Policy at UCLA – *Joseph Nagy (UCLA)*	**4** (pp. 52-53)
		C. UC Merced: Name Change Request for Mechanical Engineering and Applied Mechanics IIGP Emphasis to Mechanical Engineering IIGP Emphasis – *Valerie Leppert (UCM)*	**5** (p. 54)
		D. UC Merced: Name Change Request for Physics and Chemistry IIGP Emphasis to Physics IIGP Emphasis – *Valerie Leppert (UCM)*	**6** (p. 55)
		E. UCSB: "Simple" Name Change Request for the M.S. and Ph.D. in Geological Sciences and Proposed Discontinuation of the M.S. in Geophysics – *Divy Agrawal (UCSB)*	**7** (pp. 56-71)

Information 1:15-1:45	**VI.**	**Consultation with the Academic Senate Leadership –** *William Jacob, Academic Council Vice Chair*	
Discussion/ Action 1:45-2:30	**VII.**	**Draft PDST Policy Revision** – *Chair Mulnard and Members* ***ACTION REQUESTED:*** *Review draft comments/letter.*	**8** (pp. 72-75)
Discussion/ Action 2:30-3:15	**VIII.**	**Draft SSP Policy Revision** – *Chair Mulnard and Members* ***ACTION REQUESTED:*** *Review draft comments/letter.*	**9** (pp. 76-81)
Discussion *As time permits*	**IX.**	**New Business**	
Discussion *As time permits*	**X.**	**Executive Session** (members only please)	

Agenda Enclosures:

1. Draft CCGA Meeting Minutes of March 6, 2013 (to follow)
2. Background: Proposal for a Graduate Program leading to the M.S. degree in Games and Playable Media at UC Santa Cruz
3. Background: UC Irvine: Name Change Request for Graduate Program in Environmental Toxicology
4. Background: UCLA: Recent Campus Enforcement of the "In absentia" Policy at UCLA
5. Background: UC Merced: Name Change Request for Mechanical Engineering and Applied Mechanics IIGP Emphasis to Mechanical Engineering IIGP Emphasis
6. Background: UC Merced: Name Change Request for Physics and Chemistry IIGP Emphasis to Physics IIGP Emphasis
7. Background: UCSB: "Simple" Name Change Request for the M.S. and Ph.D. in Geological Sciences and Proposed Discontinuation of the M.S. in Geophysics
8. Background: Draft PDST Draft Policy Revision Comments/Letter
9. Background: Draft SSP Policy Revision Comments/Letter

Important Meeting Information

Location: The April meeting will convene in room 5320 at the UC Office of the President in downtown Oakland. UCOP is located at 1111 Franklin Street, between 11th and 12th Streets. Upon arrival, please check in at the security desk where you will be issued a visitor badge. Directions and a map are available online.

If you are arriving by way of the Oakland International Airport, you may taxi or BART to the UCOP building. For BART, purchase an AirBART ticket from the shuttle operator. The shuttle will take you to the Coliseum BART station. From there board a Richmond- or Pittsburg/Bay Point-bound BART train and exit at the 12th Street/Oakland City Center BART station.

Parking: Visitor parking is available at UCOP on the 12th Street side of the building. The rate is $11 per day if you enter the parking structure before 9 a.m. Daily parking is also available at a number of lots proximate to the building.

Travel Regs: Detailed travel information is available online. Please submit completed and signed travel voucher with original receipts within 21 days after the meeting to:

Business Resource Center – Team Blue
University of California Office of the President
1111 Franklin Street, 9th Floor
Oakland, CA 94607-5200

Account/Fund Number: M-430384-19900-33

CCGA 2012-13 Remaining Meeting Schedule:

May 1, 2013 – 5320 Franklin
June 5, 2013 – 5320 Franklin

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

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JACK BASKIN SCHOOL OF ENGINEERING
COMPUTER SCIENCE DEPARTMENT
ENGINEERING 2 BUILDING

SANTA CRUZ, CALIFORNIA 95064
(831) 459-2747
(831) 459-4829 FAX

14 March 2013

Martin Olsson
Coordinating Committee for Graduate Affairs

Re: Coordinating Committee for Graduate Affairs Reviews of Games and Playable Media M.S. Degree Proposal

Dear Martin —

We are pleased to have an opportunity to respond to the four reviews received by the Coordinating Committee for Graduate Affairs to our proposal for a Games and Playable Media MS at UC Santa Cruz.

It is particularly gratifying to see how positive all the reviews are at a high level. Professor Cristina Videira Lopes (UC Irvine) writes that the proposed degree is “well thought-out and appropriate for the goals.” She further states that “there is a real value/need for a program like the one proposed.” Professor Michael Young (North Carolina State University) writes that the proposed program “has a number of features that make it stand out from competitor programs” and calls our proposed administrative structure “an ideal design.” We are particularly pleased that Young characterizes the UC Santa Cruz faculty as “the very best collection of game faculty in the nation.” Associate Professor Victor Zordan (UC Riverside) says, “the program looks complete and will likely lead to success.” Professor of Engineering Practice Michael Zyda (University of Southern California) calls the proposal “well-designed and outstanding.”

Of course, as one would hope from thoughtful reviews, the documents from these reviewers also raise a number of questions and concerns, which we will address here. Rather than attempting to organize these thematically, we take them in alphabetical order (of reviewer) and in the order they appear in each document. We have assigned a number to each for future reference.

1) Reviewer Lopes raises a concern about the professional development courses. While she characterizes them as “good, valuable content for this program” she also expresses doubt about the number, saying “I'm still not convinced that it's worth 3 quarters” and suggesting “the program could stand with just 1 or 2 quarters, and use the freed slots for more of the other courses.”

Luckily, this appears to be an issue of communication, rather than of substance. While the professional development sequence, as proposed, does stretch over three quarters, each quarter's course is only two units. This means that the complete sequence is only six units, which is comparable with a single UC Santa Cruz quarter course (usually five units). So we believe we are in agreement with Lopes about the extent of material that should be included in the curriculum.

2) Reviewer Lopes asks how students in the program are going to take courses at the main UCSC campus, given that it is at some distance from the Silicon Valley campus, where the main program courses will be offered. We understand this concern, and have addressed it in a number of ways. First, we have designed the degree to be possible to complete entirely with courses at the Silicon Valley location, should students choose to do so. Second, we have made an effort to schedule the required courses for the degree (in Silicon Valley) and what we believe will be the most popular electives (in Santa Cruz) at times that will allow for ample travel windows between Santa Cruz and Silicon Valley. Third, we will be exploring the use of simultaneous video connections between the locations, given that both already have classrooms outfitted for video teleconferencing.

3) Reviewer Young suggests that "for the courses not focused on engineering … these *not* be taught by engineering faculty but instead be taught by practitioners with experience in this area." In general, this is an excellent suggestion, with which we agree. However, we also wish to note that UC Santa Cruz has a number of unusual engineering faculty. For example, Young suggests that the interactive storytelling course not be taught by engineering faculty, but we have a member of our faculty (Michael Mateas) whose story-oriented games have been widely recognized by the industry and by industry publications. In such unusual circumstances we believe it is appropriate to use engineering faculty for courses such as these, though in general we plan to follow Young's advice.

4) Reviewer Young makes a number of strong suggestions about how the program should be reviewed. These appear aimed at making sure that the goals of the program that are specific to the nature of computer games — and to a professional degree aimed at preparing students for the games industry — are foregrounded in the review process, rather than subsumed to the traditional review criteria of computer science departments. We agree wholeheartedly with Young's aims and we are happy to report that they mesh well with current UC Santa Cruz practice. In particular, UCSC program review expectations for interdepartmental programs (such as the proposed MS) meet the criteria suggested. Although reviewed in conjunction with the CS Department review, the Games and Playable Media MS will provide a separate self-assessment, including educational objectives/learning outcomes, a current charter, and may revise the charter to expect the advisory board be required to provide written evaluation as part of the review.

5) Reviewer Young suggests that the most appropriate candidate for the proposed Director of Professional Development would be a game industry veteran, rather than

someone who has primarily had experience inside universities. We agree, and plan to pursue such candidates when the position is advertised.

6) Reviewer Young also suggests that the program budget for pre-made art assets, given that the program will not be admitting students who are primarily creators of game art assets. We agree that this is an area of concern, and believe finding the best way to address it will be an important part of the degree's early years. One way that it is addressed in the current curriculum is by giving students the skills they need to create and integrate basic art assets themselves — both through classes in traditional art and sound and through classes on procedural graphics. We believe another promising route is through cross-institution collaboration. The Silicon Valley is host to a number of institutions that have students with strong game asset creation backgrounds but little engineering ability. This points to a natural collaboration opportunity. Finally, we also agree with Young that it may be necessary to budget for either buying pre-made assets or for working with asset creating contractors. But we believe that this should not be budgeted until the need is better assessed.

7) Reviewer Zordan raises a concern about students self-paying for the degree, especially the question of whether a target of 30–40 self-paying students is reasonable for the long term. On the one hand, this represents something of a misunderstanding of the degree's proposed finances. While the degree does call for students to pay tuition and PDST, a significant chunk of PDST is earmarked for financial aid. We completely agree that we should not expect all students to be 100% self-paying, and believe the existing financial aid plan is important for the degree's long term diversity and academic strength. On the other hand, it is also important to note that students paying tuition and PDST is quite common for professional degrees (of which this is one) and it has not proven a barrier to other programs admitting strong classes of students consistently. In fact, Carnegie Mellon University, though located much farther from a geographic center of prospective game industry employers, consistently admits many more self-paying students each year.

8) Reviewer Zordan raises the concern that the pool of incoming applicants may be too narrow — and that requiring experience with both computer science and games might be discarded in favor of only computer science experience. Unfortunately, we believe that a one year degree is most likely to be successful if students already have background in both areas. Of course, we are open to revision of the criteria for incoming students should this not prove to be the case. We are also open to the future possibility of a two year degree track, specifically designed for students who do not have sufficient background in games and/or computer science for the one year design.

9) Reviewer Zordan also raises the possibility that the curriculum's content may be under-developed. He suggests explicitly addressing topics such as "networks for multi-player games, game-console architecture and trends, mobile device development, and so on." This was a topic of active discussion during our development of this proposal. We believe the current design is one that is appropriate for the long term. The game industry is rapidly changing, as evidenced by Zordan's list itself. Five years ago, few would have

considered mobile device development as a central topic for a game degree, and now one can hardly imagine a game degree without it. Similarly, 10 years ago C++ would have been considered absolutely essential, and 10 years before that assembly language programming would have had a similar pride of place, but now many professional game developers do no day-to-day work with either. Given these rapid changes, we believe the best curricular design is a deliberately flexible core curriculum and access to a wide variety of electives that students can choose between based on industry changes and personal interests.

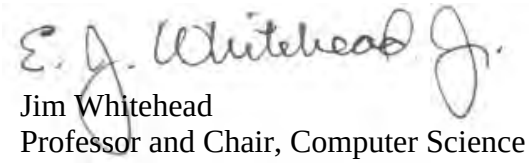
10) Reviewer Zordan also raises the issue that collaborative capstone projects are difficult to assess. In particular, that teasing out an individual's contributions to the whole can be a challenge. This is certainly correct, but we believe it is an inevitable outgrowth of the largely collaborative work done in the game industry. This is meant to be a professional degree, preparing students to work in an industry that is almost entirely organized around collaborative projects. One of the goals of the collaborative capstone projects is to help students learn important issues in team coordination and communication that will make them stronger candidates for the professional jobs they seek. Luckily, this is not entirely at odds with academic assessment. Many strong degrees exist (including within the UC system) that prepare students for work in collaborative professions, such as the film industry, through collaborative capstone projects. This is also the design of the capstone project for the successful undergraduate game degree at UC Santa Cruz. We believe that we will be able to perform appropriate assessment of individuals while organizing the capstone project in the collaborative form that will provide them with the best professional preparation.

11) Reviewer Zordan expresses concern about an "entry" exam for the degree. This appears to be an issue of insufficient clarity in our proposal. The proposal states, "Before entering the Game Production Intensive students must demonstrate knowledge of game art, game writing, and game sound." However, the proposal does not make clear, in this context, that Game Production Intensive is the final course in the proposed degree — taken in the summer after all other coursework has been completed. So demonstrating this knowledge this is not an entry examination, but rather closer to the kind of "qualifier" that Zordan suggests, and the most common way that it will be demonstrated is through successful completion of the proposed degree's curriculum.

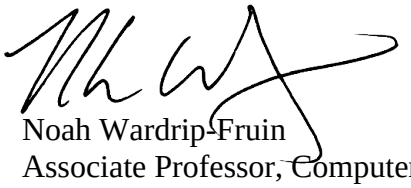
12) Reviewer Zyda's strongest concern is with the way our proposal characterizes his institution, the University of Southern California. In fact, he writes, "everything stated about USC in the document is completely wrong, obviously by someone who has not taken the time to see how we have achieved our #1 status." Unfortunately, Zyda's review is so brief that we are forced to speculate as to exactly what he would like to see changed in the proposal. One clue comes from the list of links he supplies, which begins with a video about how cross-disciplinary teams operate in the USC program. This leads us to speculate that Zyda believes the proposal does not sufficiently acknowledge ways that students work across disciplines at USC. Luckily, this type of problem with the proposal does not call into question any of the core curricular design proposed.

We hope that these responses appropriately address the questions and concerns raised by the reviewers. We appreciate CCGA taking the time to recruit reviewers with strong expertise and we are particularly gratified that, despite the minor concerns addressed above, they are unanimous in describing the proposed program as well designed and likely to be successful.

Sincerely,



Jim Whitehead
Professor and Chair, Computer Science
University of California, Santa Cruz



Noah Wardrip-Fruin
Associate Professor, Computer Science
Director, Digital Art and New Media
University of California, Santa Cruz

March 4, 2013

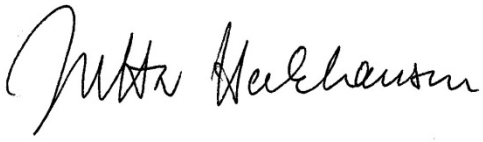
RUTH MULNARD, CHAIR
COORDINATING COMMITTEE ON GRADUATE AFFAIRS

Re: UCI Request to Change the Name and Degree Title of the Environmental Toxicology Graduate Program to the Environmental Health Sciences Graduate Program

At the February 7, 2013 meeting of the Graduate Council (GC), members reviewed the Request to Change the Name of Environmental Toxicology Graduate Program to the Environmental Health Sciences Graduate Program and approved the name change to the program as well as to the degree and major title. This action is being sent to CCGA for review as a simple change and is not associated with a fundamental change of the program.

If you have any questions or concerns, please do not hesitate to contact me.

On behalf of the Graduate Council,



Jutta Heckhausen, Chair

C: Eric Zarate, CCGA Analyst, Systemwide Academic Senate
Jill Kato, Graduate Council Analyst, Academic Senate

Division of Occupational and Environmental Medicine
Department of Medicine
School of Medicine

December 7, 2012

Professor Jutta Heckhausen
Chair, Graduate Council

Re: Environmental Toxicology Graduate Program

We submit a proposal to change the program name, to make minor modifications in required and elective courses, and to add a core faculty member, as follows.

1. **Change the name of the Environmental Toxicology graduate program to Environmental Health Sciences.** With the addition of the Exposure Sciences and Risk Assessment track in 2010, it has become confusing that the overall name of the program is the same as the name of one of the tracks, Environmental Toxicology. For this reason and because both Exposure Sciences and Risk Assessment and Environmental Toxicology are sub-disciplines within the broader discipline of Environmental Health Sciences, we would like to change the name of the program to Environmental Health Sciences. In addition, we feel that this change will help us in our recruitment efforts because potential applicants with an environmental health sciences background who want to pursue advanced studies in exposure sciences or risk assessment and do not want to pursue advanced studies in environmental toxicology might overlook our program with its current name.

This specific modification fits with a longer-term strategy to modify the degree program so it reflects the interests and strengths of the faculty, provides more options and opportunities for the students, and serves the academic interests of both the School of Medicine and the Program in Public Health. The important degree program revisions that were previously approved by Graduate Council in June 2010 (most importantly adding the second track in Exposure Sciences and Risk Assessment to the existing track in Environmental Toxicology) and have been implemented laid the foundation for the degree program serving a broader mission in environmental health sciences research training than the previous more narrow focus on laboratory-based environmental toxicology. This proposed modification is the next incremental step in the evolution of the degree program, so the program title will now more accurately reflect the broader scope of the degree program. We acknowledge that the program will have to continue to grow so the faculty and research underpinnings are sufficient for the scope of tracks and number of students. We do not propose to expand the number of tracks at this time, but we do believe it is an important next step to revise the degree program name to reflect the already expanded scope and to indicate the longer-term strategy and direction for the degree program.

The Division of Occupational and Environmental Medicine, in which the Environmental Toxicology Graduate Program is housed, and the Program in Public Health already work

together in many ways, including research collaborations and graduate education, and we are actively exploring ways to coordinate our programs even more closely. We are currently working with the Program in Public Health to craft an agreement that the Environmental Toxicology [Health Sciences] graduate program will formally be considered a degree program of both the School of Medicine and the Program in Public Health, while continuing to be based in the Division of Occupational and Environmental Medicine. We have already informally agreed that going forward, any modifications to the program will be reviewed and approved by SOM Graduate Studies and by the relevant Program in Public Health committees (see attached letter of support from Dr. Oladele Ogunseitan, the Director of the Program in Public Health).

2. **Replace core required course Human Exposure to Environmental Contaminants (TOX 270) with Environmental Health Sciences I (TOX 264).** TOX 264, taught by Dr. Jun Wu, provides an overview of the broad discipline of environmental health sciences, which is appropriate given the expanded focus of the two track program. Students who already have a strong background in environmental health sciences will be permitted to substitute TOX 270 with the consent of their advisor. We currently accept 1-2 doctoral students and 3-4 MS students per year. Dr. Wu's course would therefore be required for 4-6 Environmental Health Sciences students per year. This change is unlikely to bring the course enrollment above the 25 seat limit in the foreseeable future.

3. Update course numbers for newly cross-listed courses. The required core course, Target Organ Toxicology, Toxicology 206A,B, is in the process of being approved for cross-listing as Public Health 277. The elective course Industrial Toxicology, Toxicology 220, is in the process of being approved for cross-listing as Public Health 278.

4. **Update Geographic Information Systems course required for the Exposure Sciences and Risk Assessment PhD Track.** Our new Exposure Sciences and Risk Assessment track faculty member, Dr. Vieira (see below) will be teaching Public Health 283, Geographic Information Systems. This course will replace Planning, Policy, and Design 235, Geographic Information Systems. Dr. Vieira's course is more appropriate for a student in Environmental Health Sciences because it emphasizes environmental health applications of geographic information systems. This course will only be required for PhD students in the Exposure Sciences and Risk Assessment track, generally one per year and at most two in a given year.

5. **Update the sample programs to reflect the above changes, as well as the quarters when courses are presently offered.**

6. Add Dr. Veronica Vieira, Dept of Population Health and Disease Prevention, as a core faculty member of the Graduate Program. The faculty voted unanimously to add Dr. Vieira to the Program faculty on August 23, 2012. Dr. Vieira was recently recruited to UCI from Boston University. Her extensive knowledge of and research in the areas of geographic information systems, groundwater modeling, cluster detection methods, and persistent environmental contaminants make her a perfect addition to this track.

7. Remove the requirement for a minor course of study to provide doctoral students more flexibility in their choice of electives.

8. Clarify the amount of time required to complete the MS degrees. To avoid confusion about the amount of time required to complete the MS degrees under Plan I and Plan II, we would like to update the web copy, catalog copy, and program description to clarify that MS Plan II requires 4 quarters in residence and that MS Plan I requires one year of coursework and additional quarters of original research (minimum of 5 quarters and usually 7 quarters).

Sincerely,

Ulrike Luderer, M.D., Ph.D., M.P.H.
Associate Professor
Director, Environmental Toxicology Graduate Program

January 24, 2013

Professor Jutta Heckhausen
Chair, Graduate Council

Re: Environmental Toxicology Graduate Program

I am writing in support of the proposed changes to the Environmental Toxicology Program. I agree with Professor Luderer, the Director of the Environmental Toxicology Graduate Program, that the following changes will strengthen the graduate program and will assist in the program's recruitment efforts:

1) Change the name of the Environmental Toxicology graduate program to Environmental Health Sciences;
2) Replace core required course Human Exposure to Environmental Contaminants (TOX 270) with Environmental Health Sciences;
3) Update course numbers for newly cross-listed courses;
4) Update Geographic Information Systems course required for the Exposure Sciences and Risk Assessment PhD Track;
5) Update the sample programs to reflect the above changes, as well as the quarters when courses are presently offered;
6) Add Dr. Veronica Viera, Department of Population Health and Disease Prevention, as a core faculty member of the Graduate Program;
7) Remove the requirements for a minor course of study;
8) Clarify the amount of time required to complete the MS degrees.

Please don't hesitate to contact me if you have any questions about this proposal.

Sincerely,

Klemens Hertel, Professor
Associate Dean for Graduate Studies
School of Medicine
B233 Med Sci I
Irvine, CA 92697
Office (B233): (949) 824-2127
Lab (C290): (949) 824-2128
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4 January 2013

ULRIKE LUDERER, M.D., PH.D., M.P.H.
DIRECTOR
ENVIRONMENTAL TOXICOLOGY GRADUATE PROGRAM
CENTER FOR OCCUPATIONAL AND ENVIRONMENTAL HEALTH
UNIVERSITY OF CALIFORNIA IRVINE
ZOTCODE 1830

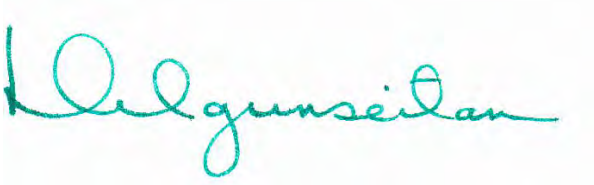
RE: Proposed Name Change and Modification of the Graduate Program in Environmental Toxicology

Thank you for the opportunity to review the proposal to modify and change the title of the current graduate program in Environmental Toxicology to **Environmental Health Sciences**. I am delighted to provide strong support for this timely initiative. "Environmental Health Sciences" represents the distinctive articulation of a core component of public health research, education, and professional service[1]. The "M.S. and Ph.D. in Environmental Health Sciences" will complement existing and successful research, academic and professional training programs already within the Program in Public Health, and we expect that these degrees will eventually form part of the emerging vision for a comprehensive School of Public Health at UC Irvine.

The new title should also be more attractive to potential applicants for research education at UC Irvine, and it should facilitate applications for extramural research awards and training grants. Our faculty and I look forward to continuing our collaboration to maintain the excellence of public health-related academic programs at UC Irvine.

Please do not hesitate to let me know if we can provide additional information regarding this endorsement.

Sincerely,



Oladele A. Ogunseitan, Ph.D., M.P.H.
Professor and Chair

[1] Association of Schools of Public Health – 2010 Annual Data Report - http://www.asph.org/UserFiles/DataReport2010.pdf

Request for Approval to Modify Graduate Degree Requirements

Program: Environmental Toxicology
Department/Academic Unit/School: Medicine/Occupational and Environmental Medicine/School of Medicine
Date 12/7/12
Proposed Effective Date: Winter 2013
Faculty Contact Person Ulrike Luderer tel 949-824-8081 email uluderer@uci.edu
Prepared by Ulrike Luderer Telephone 949-824-8081 E-Mail uluderer@uci.edu

Proposed Modification(s)(please check all that apply)

____ Admission requirements
_X_ Course requirements
____ Unit requirements
____ Examination requirements
____ Time-to-degree
_X_ Other (please describe) 1) Change name of program and officially make it a program of both SOM and PPH. 2) Add Dr. Veronica Vieira, Dept of Population Health and Disease Prevention, as a core faculty member of the Program. 3) Remove requirement for a minor from the doctoral program. 4) clarify the amount of time required to complete MS degree under Plan I and Plan II.

1. **In a cover letter from the Dean, Associate Dean, Chair, or Program Advisor as appropriate, briefly describe the proposed modifications and provide a justification for the request.**

2. **Existing Program Requirements** **Proposed Revisions**

Existing	Proposed: Underline the additions and ~~strike the deletions~~.
REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN ENVIRONMENTAL TOXICOLOGY **ADMISSION REQUIREMENTS:** In addition to meeting the general admission requirements set by the Graduate Division, students must be admitted by an Admissions Committee composed of faculty members of the Graduate Program in Environmental Toxicology. Candidates will be selected on the basis of a balanced evaluation of the following criteria (no cutoff for scores or grade point averages will be used): 1) prior scholastic performance, including consideration of grade point average, course load, nature of courses taken, and college attended, 2) recommendations by professors and others, 3) scores on the Graduate Record Examination (the aptitude test is required and the advanced test in either biology or chemistry is strongly recommended), and 4) an interview by the committee, when feasible. The applicant must have received the bachelor's degree in the biological or physical sciences or in a premedical curriculum; applicants with a bachelor's degree in engineering may qualify for admission into the program if they have had sufficient training in the biological and physical sciences. Undergraduate preparation of applicants should include 6 quarter units in general biology (or alternatively, zoology, bacteriology or	**REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN ENVIRONMENTAL HEALTH SCIENCES ~~TOXICOLOGY~~** **ADMISSION REQUIREMENTS:** In addition to meeting the general admission requirements set by the Graduate Division, students must be admitted by an Admissions Committee composed of faculty members of the Graduate Program in Environmental Toxicology. Candidates will be selected on the basis of a balanced evaluation of the following criteria (no cutoff for scores or grade point averages will be used): 1) prior scholastic performance, including consideration of grade point average, course load, nature of courses taken, and college attended, 2) recommendations by professors and others, 3) scores on the Graduate Record Examination (the aptitude test is required and the advanced test in either biology or chemistry is strongly recommended), and 4) an interview by the committee, when feasible. The applicant must have received the bachelor's degree in the biological or physical sciences or in a premedical curriculum; applicants with a bachelor's degree in engineering may qualify for admission into the program if they have had sufficient training in the biological and physical sciences. Undergraduate preparation of applicants should include 6 quarter units in

anatomy), 12 quarter units in mathematics (including calculus through vector analysis and differential equations), 12 quarter units of chemistry (including 8 quarter units in organic chemistry; 8 quarter units of physical chemistry in which calculus is used is recommended), 12 quarter units of physics (including optics), 4 quarter units of molecular biology or biochemistry. Outstanding applicants who lack one or two of these prerequisites may be given an opportunity to take the required course (s) either before admission or during the first year in the graduate program; in such circumstances, none of these required undergraduate courses will be used to satisfy the departmental elective or core course requirements. Upper division or graduate science courses may be considered as substitutes for the above prerequisites by the Admissions Committee. The Admissions Committee is composed of the faculty graduate advisors in the Graduate Program in Environmental Toxicology.

RESIDENCE REQUIREMENT:

Three quarters (Graduate Division)

LANGUAGE REQUIREMENT/ALTERNATIVE SKILLS REQUIREMENT(S):

The graduate program has no foreign language requirement.

TEACHING REQUIREMENT:

None.

COURSEWORK AND EXAMINATION REQUIREMENTS:

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, the student completes the Environmental Toxicology core program with an average grade of B or above and under the direction of a faculty advisor also prepares a thesis that is acceptable to the thesis committee. Under Plan II, the student completes the core program plus a minimum of eight additional credits (all with an average grade of B or above) from a pre-approved pool, prepares a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and satisfactorily passes the written comprehensive examination at the M.S. level.

Plan I

<u>The Curriculum</u>

The number of units required for the Environmental Toxicology Track M.S. degree in Plan I is 32 core units

general biology (or alternatively, zoology, bacteriology or anatomy), 12 quarter units in mathematics (including calculus through vector analysis and differential equations), 12 quarter units of chemistry (including 8 quarter units in organic chemistry; 8 quarter units of physical chemistry in which calculus is used is recommended), 12 quarter units of physics (including optics), 4 quarter units of molecular biology or biochemistry. Outstanding applicants who lack one or two of these prerequisites may be given an opportunity to take the required course (s) either before admission or during the first year in the graduate program; in such circumstances, none of these required undergraduate courses will be used to satisfy the departmental elective or core course requirements. Upper division or graduate science courses may be considered as substitutes for the above prerequisites by the Admissions Committee. The Admissions Committee is composed of the faculty graduate advisors in the Graduate Program in Environmental Toxicology.

RESIDENCE REQUIREMENT:

Three quarters (Graduate Division)

LANGUAGE REQUIREMENT/ALTERNATIVE SKILLS REQUIREMENT(S):

The graduate program has no foreign language requirement.

TEACHING REQUIREMENT:

None.

COURSEWORK AND EXAMINATION REQUIREMENTS:

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, the student completes the Environmental Toxicology core program with an average grade of B or above and under the direction of a faculty advisor also prepares a thesis that is acceptable to the thesis committee. Under Plan II, the student completes the core program plus a minimum of eight additional credits (all with an average grade of B or above) from a pre-approved pool, prepares a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and satisfactorily passes the written comprehensive examination at the M.S. level.

Plan I

<u>The Curriculum</u>

The number of units required for the Environmental

and 8 units of approved electives for a total of 40 units. The number of units required for the Exposure Sciences and Risk Assessment Track is 32 core units and 8 units of approved electives for a total of 40 units.

Core Courses – Environmental Toxicology and Exposure Sciences and Risk Assessment Tracks

TOX 206A-B Target Organ Toxicology (6,6) F,W

One of:
STATS 201 Statistical Methods for Data Analysis I (4)
or
PUBHLTH 207 Public Health Statistics
or
EPIDEM 204 Biostatistics

TOX 270 Human Exposure to Environ Contaminants (4)
EPIDEM 200 Epidemiology (4)
TOX 298A-B-C Env.Tox. Seminar (2,2,2) F,W,S
TOX 299A-B-C Res. Probs. (1 to 12) F,W,S

APPROVED ELECTIVES 8 units
A written research thesis is required.

Two of the following:
TOX 201 Principles of Toxicology (4)
TOX 202 Environmental Toxicology (4) S
TOX 204 Neurotoxicology (4) F, even years
TOX 212 Inhalation Toxicology (4) S, odd yrs
TOX 220 Industrial Toxicology (4), W
EPIDEM 244 Toxic Chemicals in the Environment (4)
MBB 203 Structure/Biosyn. Nucl. Acids (4) F
MBB 204 Structure/Biosyn. of Proteins (4) F
DCB 231B Cell Biology (4) W
PATH 225 Molecular Mechanisms of Disease (3)
STATS 202-203 Biostatistics (4,4)
PUBHLTH 235 Geographic Information Systems (4)
CRM/LAW 248 Geographic Information Systems (4)
TOX 275 Exposure Modeling and Risk Assessment (4)
EPIDEM 205 Environmental Epidemiology (4)
TOX 269 Air Pollution, Climate and Health (4)
PUBHLTH 244 Toxic Chemicals in the Environment (4)
*additional courses may be added to this pool upon approval of the Program Faculty

Plan II

The Curriculum

The number of units required for the M.S. degree in Plan II is 32 core units and 8 units of approved electives for a Toxicology Track M.S. degree in Plan I is 32 core units and 8 units of approved electives for a total of 40 units. The number of units required for the Exposure Sciences and Risk Assessment Track is 32 core units and 8 units of approved electives for a total of 40 units.

Core Courses – Environmental Toxicology and Exposure Sciences and Risk Assessment Tracks

TOX 206A-B Target Organ Toxicology (6,6) F,W

One of:
STATS 201 Statistical Methods for Data Analysis I (4)
or
PUBHLTH 207 Public Health Statistics
or
EPIDEM 204 Biostatistics

~~TOX 270 Human Exposure to Environ Contaminants (4)~~
TOX 264 Environmental Health Sci I (4)
EPIDEM 200 Epidemiology (4)
TOX 298A-B-C Env.Tox. Seminar (2,2,2) F,W,S
TOX 299A-B-C Res. Probs. (1 to 12) F,W,S

APPROVED ELECTIVES 8 units
A written research thesis is required.

Two of the following:
TOX 201 Principles of Toxicology (4)
TOX 202 Environmental Toxicology (4) S
TOX 204 Neurotoxicology (4) F, even years
TOX 212 Inhalation Toxicology (4) S, odd yrs
TOX 220 Industrial Toxicology (4), ~~W~~S
EPIDEM 244 Toxic Chemicals in the Environment (4)
MBB 203 Structure/Biosyn. Nucl. Acids (4) F
MBB 204 Structure/Biosyn. of Proteins (4) F
DCB 231B Cell Biology (4) W
PATH 225 Molecular Mechanisms of Disease (3)
STATS 202-203 Biostatistics (4,4)
PUBHLTH ~~235~~283Geographic Information Systems (4)
CRM/LAW 248 Geographic Information Systems (4)
TOX 275 Exposure Modeling and Risk Assessment (4)
EPIDEM 205 Environmental Epidemiology (4)
TOX 269 Air Pollution, Climate and Health (4)
PUBHLTH 244 Toxic Chemicals in the Environment (4)
*additional courses may be added to this pool upon approval of the Program Faculty

Plan II

The Curriculum

total of 40 units for both the Exposure Sciences and Risk Assessment Track and the Environmental Toxicology Track.

Core Courses

TOX 206A-B Target Organ Toxicology (6,6) F,W

One of:
STATS 201 Statistical Methods for Data Analysis I (4)
or
PUBHLTH 207 Public Health Statistics
or
EPIDEM 204 Biostatistics

TOX 270 Human Exposure to Environ Contaminants (4)
EPIDEM 200 Epidemiology (4)
TOX 298A-B-C Env.Tox. Seminar (2,2,2) F,W,S
TOX 290A-B-C Indep Study Environ Toxicol (4) F,W,S
Approved Electives (selected from same pool as above) 8 units
Comprehensive examination and paper are required.

ADVANCEMENT TO CANDIDACY:

The Master's student in Plan I is required to write a thesis based on research the student has done under faculty supervision in the area of Environmental Toxicology or Exposure Sciences and Risk Assessment. A committee of three faculty members is appointed to guide the student through the research problem and determine when a sufficient amount of work has been completed satisfactorily. At that time, the student presents the research results to the committee; after successful presentation of the results, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be awarded.

The Master's student in Plan II is required to write a scholarly paper based on individual study the student has done under faculty supervision. The student must also pass a written comprehensive examination based on the course work in the specific focus area taken. After completion of the examination, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be awarded.

ADVISING:

The number of units required for the M.S. degree in Plan II is 32 core units and 8 units of approved electives for a total of 40 units for both the Exposure Sciences and Risk Assessment Track and the Environmental Toxicology Track.

Core Courses

TOX 206A-B Target Organ Toxicology (6,6) F,W

One of:
STATS 201 Statistical Methods for Data Analysis I (4)
or
PUBHLTH 207 Public Health Statistics
or
EPIDEM 204 Biostatistics

~~TOX 270 Human Exposure to Environ Contaminants (4)~~
TOX 264 Environmental Health Sci I (4)
EPIDEM 200 Epidemiology (4)
TOX 298A-B-C Env.Tox. Seminar (2,2,2) F,W,S
TOX 290A-B-C Indep Study Environ Toxicol (4) F,W,S
Approved Electives (selected from same pool as above) 8 units
Comprehensive examination and paper are required.

ADVANCEMENT TO CANDIDACY:

The Master's student in Plan I is required to write a thesis based on research the student has done under faculty supervision in the area of Environmental Toxicology or Exposure Sciences and Risk Assessment. A committee of three faculty members is appointed to guide the student through the research problem and determine when a sufficient amount of work has been completed satisfactorily. At that time, the student presents the research results to the committee; after successful presentation of the results, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be awarded. Plan I requires a minimum of 5 quarters and usually 7 quarters to complete.

The Master's student in Plan II is required to write a scholarly paper based on individual study the student has done under faculty supervision. The student must also pass a written comprehensive examination based on the course work in the specific focus area taken. After completion of the examination, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be

The new student in Plan I is expected to get involved in research at the earliest possible time, usually in the first quarter of the program. When a student is unsure of where to work, that student is encouraged to take advantage of the lresearch rotation option. A rotation will consist of up to one quarter residence in a laboratory/research group of the student's choice; three or more rotations per academic year are possible. Professors will be responsible for acting as an advisor/mentor to the student and instructing the student in proper laboratory procedures, experimental design, and data analysis/scientific interpretation. If the entering student is sure of the area in which he/she wants to work, a research rotation is not necessary.

Sample Program for Masters Student in Plan I

1st yr. Fall	TOX 206A 6 units	EPID 200 4 units	TOX 298 2 units	
1st yr. Winter	TOX 206B 6 units	PUBHLTH 207, 4 units	TOX 298 2 units	
1st yr. Spring	TOX 270 4 units	elective, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall		elective, 4 units	TOX 298 2 units	TOX 299 6 units

TOX 206A,B Target Organ Toxicology
PUBHLTH 207 Public Health Statistics
TOX 270 Human Expos to Environ Contaminants
EPIDEM 200 Principles of Epidemiology
TOX 298 Environmental Toxicology Seminar
TOX 299 Research Problems

Sample Program for Masters Student in Plan II

1st yr. Fall	TOX 206A 6 units	EPID 200 4 units	TOX 298 2 units	
1st yr. Winter	TOX 206B 6 units	PUBHLTH 207, 4 units	TOX 298 2 units	
1st yr. Spring	TOX 270 4 units	elective, 4 units	TOX 298 2 units	TOX 290 2 units
2nd yr. Fall		elective, 4 units	TOX 298 2 units	TOX 2990 6 units

TOX 206A,B Target Organ Toxicology
PUBHLTH 207 Public Health Statistics
TOX 270 Human Expos to Environ Contaminants
EPIDEM 200 Principles of Epidemiology
TOX 298 Environmental Toxicology Seminar
TOX 290 Indep Study in Environ Toxicol

awarded. Plan II takes 4 quarters to complete.

ADVISING:

The new student in Plan I is expected to get involved in research at the earliest possible time, usually in the first quarter of the program. When a student is unsure of where to work, that student is encouraged to take advantage of the research rotation option. A rotation will consist of up to one quarter residence in a laboratory/research group of the student's choice; three or more rotations per academic year are possible. Professors will be responsible for acting as an advisor/mentor to the student and instructing the student in proper laboratory procedures, experimental design, and data analysis/scientific interpretation. If the entering student is sure of the area in which he/she wants to work, a research rotation is not necessary.

Sample Program for Masters Student in Plan I

1st yr. Fall	TOX 206A 6 units	EPID 200 4 units	TOX 298 2 units	
1st yr. Winter	TOX 206B 6 units	PUBHLTH 207, 4 units	TOX 298 2 units	TOX 264* 4 units
1st yr. Spring	~~TOX 270 4 units~~ elective, 4 units	elective, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall		~~elective, 4 units~~	TOX 298 2 units	TOX 299 6 units
2nd year Winter and Spring (if needed to complete thesis				

TOX 206A,B Target Organ Toxicology
PUBHLTH 207 Public Health Statistics
TOX 264 Environ Health Sci I
~~TOX 270 Human Expos to Environ Contaminants~~
EPIDEM 200 Principles of Epidemiology
TOX 298 Environmental Toxicology Seminar
TOX 299 Research Problems
*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

The first-year student in Plan II is expected to get involved in individual study of a specialty area in toxicology at the earliest possible time, usually in the first quarter of the

REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE IN ENVIRONMENTAL TOXICOLOGY

The predoctoral student must complete the following requirements to qualify for the degree of Doctor of Philosophy in Environmental Toxicology:

1. A major program of study (courses and research) including a comprehensive written preliminary examination and an oral qualifying examination.
2. A minor program of study in a field distinct from but relevant to toxicology.
3. Assist the Faculty in the teaching of one or more lecture courses in toxicology.
4. A written dissertation based on the student's original research, and a successful defense of the dissertation during an oral examination given by the student's doctoral committee.
5. Full-time residence for at least 6 regular academic quarters.

Ph.D. CURRICULUM PLAN: First and Second Years
CORE CURRICULUM
Core Courses – both Environmental Toxicology Track and Exposure Sciences and Risk Assessment Track

TOX 206A-B Target Organ Toxicology (6,6) F,W
TOX 270 Human Exposure to Environmental Contaminants (4)
EPIDEM 200 Epidemiology
TOX 298A-B-C Env.Tox. Seminar (2,2,2) F,W,S
TOX 299A-B-C Res. Probs. (1 to 12) F,W,S

Core Courses – Environmental Toxicology Track

TOX 201 Principles of Toxicology (4)
TOX 207 Exp Design and Interp of Toxicol Studies (2)
One of:
STATS 201 Statistical Meth for Data Analysis I (4)
or
PUBHLTH 207 Public Health Statistics (4)
or
EPIDEM 204 Biostatistics (4)
Approved Electives, 16 units
Minor, 8 units

Core Courses – Exposure Sciences and Risk Assessment Track

STATS 201-203 Statistical Methods for Data Analysis I,II, III (4,4,4)
One of:
PUBHLTH 235 Geographic Information Systems (4)
or
program. The student works under the supervision of a faculty member and is given credit for this work under course TOX 290 Independent Study in Environmental Toxicology.

Sample Program for Masters Student in Plan II

1st yr. Fall	TOX 206A 6 units	EPID 200 4 units	TOX 298 2 units	
1st yr. Winter	TOX 206B 6 units	PUBHLTH 207, 4 units	TOX 298 2 units	TOX 264* 4 units
1st yr. Spring	~~TOX 270 4 units~~ elective, 4 units	elective, 4 units	TOX 298 2 units	TOX 290 2 units
1st year summer	comprehensive exam	~~elective, 4 units~~	~~TOX 298 2 units~~	TOX 290 6 units

TOX 206A,B Target Organ Toxicology
PUBHLTH 207 Public Health Statistics
TOX 264 Environ Health Sci I
~~TOX 270 Human Expos to Environ Contaminants~~
EPIDEM 200 Principles of Epidemiology
TOX 298 Environmental Toxicology Seminar
TOX 290 Indep Study in Environ Toxicol
*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE IN ENVIRONMENTAL HEALTH SCIENCES ~~TOXICOLOGY~~

The predoctoral student must complete the following requirements to qualify for the degree of Doctor of Philosophy in Environmental Toxicology:

1. A major program of study (courses and research) including a comprehensive written preliminary examination and an oral qualifying examination.
~~2. A minor program of study in a field distinct from but relevant to toxicology.~~
~~3.~~2. Assist the Faculty in the teaching of one or more lecture courses in toxicology or serve as a teaching assistant for an undergraduate course in the School of Biological Sciences or the Program in Public Health.
43. A written dissertation based on the student's original research, and a successful defense of the dissertation during an oral examination given by the student's doctoral committee.
~~5~~4. Full-time residence for at least 6 regular academic quarters.

CRM/LAW 248 Geographic Information Systems (4)

PUBHLTH 275 Exposure Modeling and Risk Assessment (4)
Approved Electives, 16 units

Approved Elective Pool- Environmental Toxicology Track*

Four of the following:

TOX 202	Environmental Toxicology (4) S
TOX 204	Neurotoxicology (4) F, even years
TOX 212	Inhalation Toxicology (4) S, odd yrs
TOX 220	Industrial Toxicology (4), W
EPIDEM 244	Toxic Chemicals in the Environment (4)
MBB 203	Structure/Biosyn. Nucl. Acids (4) F
MBB 204	Structure/Biosyn. of Proteins (4) F
DCB 231B	Cell Biology (4) W
PATH 225	Molecular Mechanisms of Disease (3)

Anatomy 203A,B Human Microscopic Anatomy, 6 units
Physiology 206A,B Introduction to Medical Physiology, 11 units
*additional courses may be added to this pool upon approval of the Program Faculty

Approved Elective Pool- Exposure Sciences and Risk Assessment Track

Two of the following:

EPIDEM 205	Environmental Epidemiology (4)
EPIDEM 269	Air Pollution, Climate and Health (4)
PUBHLTH 244	Toxic Chemicals in the Environment (4)
TOX 264	Environmental Health Sci I (4)
PUBHLTH 265	Advanced Environmental Health Science (4)

*additional courses may be added to this pool upon approval of the Program Faculty

THIRD AND FOURTH YEARS

TOX 298A-B-C Environmental Toxicology Seminar 2 units/qtr.
TOX 299A-B-C Research Problems 1-12 units/qtr.
A sample program is given below for each track;

Sample Program – Environmental Toxicology Track

1st yr. Fall	TOX 206A 6 units	STATS 201, 4 units	TOX 298 2 units	
1st yr. Winter	TOX 206B 6 units	TOX 207, 2 units	TOX 298 2 units	TOX 299 2 units
1st yr. Spring	EPIDEM 270 4 units	TOX 201, 4 units	TOX 298 2 units	TOX 299 2 units

Ph.D. CURRICULUM PLAN: First and Second Years

CORE CURRICULUM

~~Core Courses – both Environmental Toxicology Track and Exposure Sciences and Risk Assessment Track~~

TOX 206A-B	Target Organ Toxicology (6,6) F,W
~~TOX 270~~	~~Human Exposure to Environmental Contaminants (4)~~
TOX 264	Environ Health Sci I (4)*
EPIDEM 200	Epidemiology
TOX 298A-B-C	Env.Tox. Seminar (2,2,2) F,W,S
TOX 299A-B-C	Res. Probs. (1 to 12) F,W,S

Core Courses – Environmental Toxicology Track

TOX 201	Principles of Toxicology (4)
TOX 207	Exp Design and Interp of Toxicol Studies (2)

One of:

STATS 201	Statistical Meth for Data Analysis I (4)
or	
PUBHLTH 207	Public Health Statistics (4)
or	
EPIDEM 204	Biostatistics (4)

*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

Approved Electives, 16 units
Minor, 8 units

Core Courses – Exposure Sciences and Risk Assessment Track

STATS 201-203 Statistical Methods for Data Analysis I,II, III (4,4,4)

One of:

PUBHLTH ~~235~~283 Geographic Information Systems (4)
~~or~~
~~CRM/LAW 248 Geographic Information Systems (4)~~

TOX 275 Exposure Modeling and Risk Assessment (4)
Approved Electives, 16 units

Approved Elective Pool- Environmental Toxicology Track*

Four of the following:

TOX 202	Environmental Toxicology (4) S
TOX 204	Neurotoxicology (4) F, even years
TOX 212	Inhalation Toxicology (4) S, odd yrs
TOX 220	Industrial Toxicology (4), ~~W~~S
EPIDEM 244	Toxic Chemicals in the Environment (4)
MBB 203	Structure/Biosyn. Nucl. Acids (4) F

2nd yr. Fall	EPIDEM 203, 4 units	elective, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Winter	elective, 4 units	minor, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Spring	Compre-hensive exam	minor, 4 units	TOX 298 2 units	TOX 299 6 units
Yr 3	Qualifiyng exam		TOX 298 2 units	TOX 299 10 units
Yrs 3-5			TOX 298 2 units	TOX 299 10 units

Sample Program – Exposure Sciences and Risk Assessment Track

1st yr. Fall	TOX 206A 6 units	STATS 201, 4 units	TOX 298 2 units	EPID 200 4 units
1st yr. Winter	TOX 206B 6 units	STATS 202, 4 units	TOX 298 2 units	
1st yr. Spring	TOX 270 4 units	STATS 203, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall		CRMLAW 248 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Winter	TOX 275, 4 units	elective, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Spring	Compre-hensive exam	elective, 4 units	TOX 298 2 units	TOX 299, 2 units
Yr 3	Qualifiyng exam		TOX 298 2 units	TOX 299 10 units

MBB 204 Structure/Biosyn. of Proteins (4) F
DCB 231B Cell Biology (4) W
PATH 225 Molecular Mechanisms of Disease (3)
Anatomy 203A,B Human Microscopic Anatomy, 6 units
Physiology 206A,B Introduction to Medical Physiology, 11 units
*additional courses may be added to this pool upon approval of the Program Faculty

Approved Elective Pool- Exposure Sciences and Risk Assessment Track

Two of the following:
EPIDEM 205 Environmental Epidemiology (4)
TOX 269 Air Pollution, Climate and Health (4)
PUBHLTH 244 Toxic Chemicals in the Environment (4)
~~TOX 264/PUBHLTH 264 Intro to Environmental Health Science (4)~~
TOX 270 Human Expos to Environ Contam (4)
PUBHLTH 265 Advanced Environmental Health Science (4)
*additional courses may be added to this pool upon approval of the Program Faculty

THIRD AND FOURTH YEARS

TOX 298A-B-C Environmental Toxicology Seminar 2 units/qtr.
TOX 299A-B-C Research Problems 1-12 units/qtr.
A sample program is given below for each track:

Sample Program – Environmental Toxicology Track

1st yr. Fall	TOX 206A 6 units	TOX 207, 2 units	TOX 298 2 units	EPID 200 4 units
1st yr. Winter	TOX 206B 6 units	PUBHLTH 207, 4 units	TOX 298 2 units	TOX 264* 4 units
1st yr. Spring	~~TOX 270/ EPIDEM 270 4 units~~ elective, 4 units	TOX 201, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall		elective, 4 units	TOX 298 2 units	TOX 299 ~~2~~ 6 units
2nd yr. Winter	elective, 4 units	elective~~minor~~, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Spring	Compre-hensive exam	~~minor, 4 units~~	TOX 298 2 units	TOX 299 6 units
Yr 3	Qualifiyng exam		TOX 298 2 units	TOX 299 10

				units
Yrs 3-5			TOX 298 2 units	TOX 299 10 units

Sample Program – Exposure Sciences and Risk Assessment Track

1st yr. Fall	TOX 206A 6 units	STATS 201, 4 units	TOX 298 2 units	EPID 200 4 units
1st yr. Winter	TOX 206B 6 units	STATS 202, 4 units	TOX 298 2 units	TOX 264* 4 units
1st yr. Spring	~~TOX 270/ EPIDEM 270 4 units~~	STATS 203, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall	elective, 4 units	~~CRMLAW 248~~ PUBHLTH 283 4 units	TOX 298 2 units	TOX 299, 2 ~~6~~ units
2nd yr. Winter	TOX 275 4 units	elective, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Spring	Compre-hensive exam	~~elective, 4 units~~	TOX 298 2 units	TOX 299, 2 units
Yr 3	Qualifiyng exam		TOX 298 2 units	TOX 299 10 units

3. **Relationship to competitive programs:** This specific modification fits with a longer-term strategy to modify the degree program so it reflects the interests and strengths of the faculty, provides more options and opportunities for the students, and serves the academic interests of both the School of Medicine and the Program in Public Health. The important degree program revisions that were previously approved by Graduate Council in June 2010 (most importantly adding the second track in Exposure Sciences and Risk Assessment to the existing track in Environmental Toxicology) and have been implemented laid the foundation for the degree program serving a broader mission in environmental health sciences research training than the previous more narrow focus on laboratory-based environmental toxicology. This proposed modification is the next incremental step in the evolution of the degree program, so the program title now more accurately will reflect the broader scope of the degree program. We acknowledge that the program will have to continue to grow so the faculty and research underpinnings are sufficient for the scope of tracks and number of students. We do not propose to expand the number of tracks at this time, but we do believe it is an important next step to revise the degree program name to reflect the already expanded scope and to indicate the longer-term strategy and direction for the degree program. We do not believe that having

an environmental health sciences MS/PhD program will be confusing to students interested in applying for the existing MPH program with an emphasis in environmental health because the MPH is a professional degree program, which emphasizes professional practicum training. The MPH attracts different applicants than does a research-oriented MS or PhD program like the Environmental Toxicology [Health Sciences] program. In fact it is common for universities with Schools of Public Health and public health programs to offer professional masters' degrees (MPHs), as well as research oriented MS degrees in related areas.

4. **Impact on TTD: None**

5. **Expected impact on quality of the program:** Will improve the quality of the program by 1) addition of a course during the first year that provides an introduction to the discipline of environmental health sciences and replacement of a required geographic information systems (GIS) course for PhD students in the Exposure Sciences and Risk Assessment track with a course that is focused on environmental health-related applications of GIS, 2) adding a new core faculty member with a well-funded research program, 3) providing clarity about the requirements for the Master of Science Plan I and II.

6. **Expected impact on employment prospects:** None

7. **Expected impact on recruitment:** Will improve recruitment by attracting more individuals with undergraduate backgrounds in and/or interest in Environmental Health Sciences, who may not have thought of applying to a program called Environmental Toxicology.

8. **Will current students be permitted to switch to take advantage of the revisions? If so, what will be the approval process?** Yes, upon approval by their academic advisor and the Program Director, the students may substitute for TOX 270 with TOX 264.

9. **Faculty vote ---- Include total number of eligible faculty, number voting, and date:** November 2012: Out of 10 eligible core faculty, all 10 voted in favor of the proposed changes. The faculty voted unanimously to add Dr. Vieira to the Core Program faculty on August 23, 2012.

Signatures (as appropriate)- Please type name(s), sign, and date

Program Director Ulrike Luderer, 12/7/12

Division Chief Dean Baker

Department Chair

Associate Dean Klemens Hertel 1/25/13

Dean Ralph Clayman 1/25/13

Required Appendices:
Revised and Dated Program Summary: attached

Revised Catalogue Copy: attached
Revised Website Copy: attached
Revised/New Course Action Forms: Not applicable.
Letter(s) of Support: attached from Dr. Oladele Ogunseitan, Chair Population Health and Disease Prevention
form_request to modify degree requirements.1/7/08

Graduate Degree Program Summary

Date: ___November 1, 2012_____

Degree Program:
Degree Objective: MS or PhD
Degree (Diploma) Title: MS or PhD in Environmental ~~Toxicology~~Health Sciences
Degree Concentration: Environmental Toxicology or Exposure Sciences and Risk Assessment
Degree Program Code: TOX

Specialization or Emphasis: Environmental Toxicology or Exposure Sciences and Risk Assessment

Academic Unit: Division of Occupational and Environmental Medicine, Department of Medicine, School of Medicine

Date Authorized:

Last Updated: September 27, 2011

Last Program Review: 2006

Normative Time: 5 years

Application Deadlines: January 15.

Admission Requirements:

A bachelor's degree in a biological, public health, or physical science, in a premedical curriculum, or have an acceptable equivalent. Applicants with a bachelor's degree in engineering may qualify for admission into the program if they have had sufficient training in biology and chemistry.
Undergraduate preparation of applicants should include six quarter units in general biology, zoology, bacteriology, or anatomy; 12 quarter units in mathematics, including calculus through vector analysis and differential equations; 12 quarter units of chemistry, including four quarter units of organic chemistry; 12 quarter units of physics, including optics; and four quarter units in molecular biology or biochemistry.

Advising:

All students are assigned a first year advisor based on their expressed academic interests. The first year advisor meets quarterly with the student, providing guidance about required and elective courses, monitoring progress on course work, and finding a research mentor, if applicable.
The first-year MS students in Plan I and all first year doctoral students ~~is~~ are expected to get involved in a research project at the earliest possible time, usually in the first quarter

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of the program. When a student is unsure of where to work, that student is encouraged to take advantage of the research rotation option. A rotation will consist of up to one quarter residence in a laboratory/research group of the student's choice; ~~three~~ two or more rotations per academic year are possible. Professors will be responsible for acting as an advisor/mentor to the student and instructing the student in proper research procedures, experimental design, and data analysis/scientific interpretation. If the entering student is sure of the area in which he/she wants to work, a research rotation is not necessary.

The first-year MS student in Plan II is expected to get involved in individual study of a specialty area in ~~toxicology~~ environmental health sciences at the earliest possible time, usually in the first quarter of the program. The student works under the supervision of a faculty member, who is generally also their first year advisor, ~~-~~and is given credit for this work under course TOX 290 Independent Study in Environmental Toxicology. The product of this independent study is the scholarly paper. The comprehensive examination is always held at the beginning of summer quarter.

Residence Requirement: ~~3~~ 4 quarters for MS students and 6 quarters for PhD students.

Language/Alternate Skills Requirement: None.

Teaching Requirement: None.

Coursework and Examination Requirements:

The predoctoral student must complete the following requirements to qualify for the degree of Doctor of Philosophy in Environmental ~~Toxicology~~Health Sciences:

1. A major program of study (courses and research) including a comprehensive written preliminary examination and an oral qualifying examination.

~~2.A minor program of study in a field distinct from but relevant to toxicology.~~

~~3.~~2. Assist the Faculty in the teaching of one or more lecture courses in toxicology, or serve as a teaching assistant for an undergraduate course in the School of Biological Sciences or the Program in Public Health.~~.~~

~~4.~~3. A written dissertation based on the student's original research, and a successful defense of the dissertation during an oral examination given by the student's doctoral committee.

Full-time residence for at least 6 regular academic quarters.

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, the student completes the Environmental ~~Toxicology~~ Health Sciences core program with all grades of B or above and, under the direction of a faculty advisor, prepares a thesis that is acceptable to the thesis committee. Under Plan II, the student completes the core program with all grades of B or above, prepares a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and satisfactorily passes the written comprehensive examination at the M.S. level.

Required Courses, Elective Courses:

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Ph.D. CURRICULUM PLAN: First and Second Years

CORE CURRICULUM – for both Environmental Toxicology PhD Track and Exposure Sciences and Risk Assessment PhD Track
TOX 206 A-B Target Organ Toxicology, 6 units/qtr.

TOX ~~270~~ 264 ~~Human Exposure to Environmental Contaminants~~Environ Health Sciences I, 4 units*
EPIDEM 200 Principles of Epidemiology, 4 units
TOX 298 A-B-C Environmental Toxicology Seminar, 2 units per quarter

*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

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Core Courses – Environmental Toxicology PhD Track
TOX 201 Principles of Toxicology (4), S

One of the following 3 introductory statistics courses:
STATS 201 Statistical Methods for Data Analysis I, 4 units
or
PUBHLTH 207 Public Health Statistics, 4 units
or
EPIDEM 204 Biostatistics, 4 units

TOX 207 Exp Design and Interp of Toxicol Studies (2)
Approved Electives, 16 units
Minor, 8 units

Core Courses – Exposure Sciences and Risk Assessment PhD Track
STAT 201-203 Statistical Methods for Data Analysis I, II, III (4,4,4)

One of the following two GIS courses:
PUBHLTH ~~235~~ 283 Geographic Information Systems (4), S
~~or~~
~~CRM/LAW 248 Geographic Information Systems (4), F~~

TOX 275 Exposure Modeling and Risk Assessment (4), W even years
Approved Electives, 8 units

Approved Elective Pool- Environmental Toxicology Track*

Four of the following:
TOX 202 Environmental Toxicology (4) S
TOX 204 Neurotoxicology(4) F, even years
TOX 212 Inhalation Toxicology (4) S, odd yrs
TOX 220 Industrial Toxicology (4), W
PUBHLTH 276 Toxic Chemicals in the Environment (4)
MBB 203 Structure/Biosyn. Nucl. Acids (4) F
MBB 204 Structure/Biosyn. of Proteins (4) F
DCB 231B Cell Biology (4) W
PATH 225 Molecular Mechanisms of Disease (3)
Anatomy 203A,B Human Microscopic Anatomy, 6 units
Physiology 206A,B Introduction to Medical Physiology, 11 units
*additional courses may be added to this pool upon approval of the Program Faculty

Approved Elective Pool- Exposure Sciences and Risk Assessment Track

One of the following:
TOX ~~264~~270 ~~Intro to Environmental Health Science~~Hum Expos Environ Contam (4), ~~W~~S
TOX 269 Air Pollution, Climate and Health (4)
EPIDEM 205 Environmental Epidemiology (4)
PUBHLTH 276 Toxic Chemicals in the Environment (4)
PUBHLTH 265 Advanced Environmental Health Science (4)
*additional courses may be added to this pool upon approval of the Program Faculty

THIRD AND FOURTH YEARS
TOX 298A-B-C Environmental Toxicology Seminar 2 units/qtr.
TOX 299A-B-C Research Problems 1-12 units/qtr.

M.S. CURRICULUM PLAN:
The core course requirements are given below for Plan I (original research thesis) and Plan II (comprehensive examination):

Plan I
TOX 206 A-B Target Organ Toxicology, 6 units/qtr.

One of the following 3 introductory statistics courses:
STATS 201 Statistical Methods for Data Analysis I, 4 units
or
PUBHLTH 207 Public Health Statistics, 4 units
or
EPIDEM 204 Biostatistics, 4 units

TOX ~~270~~ 264 ~~Human Exposure to~~ Environmental ~~Contaminants~~Health Sci I, 4 units*
EPIDEM 200 Epidemiology, 4 units
TOX 298 A-B-C Environmental Toxicology Seminar, 2 units per quarter

*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

Approved electives, 8 units selected from the pool below.
Total units required: 40 + thesis

Approved Elective Pool

TOX 201 Principles of Toxicology (4)
TOX 202 Environmental Toxicology (4) S
TOX 204 Neurotoxicology(4) F, even years
TOX 212 Inhalation Toxicology (4) S, odd yrs
TOX 220 Industrial Toxicology (4), W
TOX ~~264~~270 ~~Intro~~ Hum Expos to Environmental ~~Health Science~~Contam (4), ~~W~~S
TOX 275 Exposure Modeling and Risk Assessment (4), W, even years
PUBHLTH 276 Toxic Chemicals in the Environment (4)
MBB 203 Structure/Biosyn. Nucl. Acids (4) F
MBB 204 Structure/Biosyn. of Proteins (4) F
DCB 231B Cell Biology (4) W
PATH 225 Molecular Mechanisms of Disease (3)

Anatomy 203A,B Human Microscopic Anatomy, 6 units
Physiology 206A,B Introduction to Medical Physiology, 11 units
STAT 202, 203 Statistical Methods for Data Analysis II,III (4,4)
PUBHLTH 235 Geographic Information Systems (4), S
EPIDEM 205 Environmental Epidemiology (4)
EPIDEM 269 Air Pollution, Climate and Health (4)
PUBHLTH 265 Advanced Environmental Health Science (4)
CRM/LAW 248 Geographic Information Systems (4), F
*additional courses may be added to this pool upon approval of the Program Faculty

Plan II
TOX 206 A-B Target Organ Toxicology, 6 units/qtr.

One of the following 3 introductory statistics courses:
STATS 201 Statistical Methods for Data Analysis I, 4 units
or
PUBHLTH 207 Public Health Statistics, 4 units
or
EPIDEM 204 Biostatistics, 4 units

~~EPIDEM 270~~TOX 264 ~~Human Exposure to~~ Environmental ~~Contaminants~~Health Sci I, 4 units*
EPIDEM 200 Principles of Epidemiology, 4 units
TOX 298 A-B-C Environmental Toxicology Seminar, 2 units per quarter
TOX 290 Independent Study in Environmental Toxicology (4) F,W,S for Plan II

*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

Approved Electives (selected from the pool, same as above) 8 units
Total units required: 40 + comprehensive examination and paper

Advancement to Candidacy:

The Master's student in Plan I is required to write a thesis based on research the student has done under faculty supervision in the area of Environmental Toxicology or Exposure Sciences and Risk Assessment. A committee of three faculty members is appointed to guide the student through the research problem and determine when a sufficient amount of work has been completed satisfactorily. At that time, the student presents the research results to the committee; after successful presentation of the results, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be awarded. Plan I requires a minimum of 5 quarters and generally 7 quarters to complete.

The Master's student in Plan II is required to write a scholarly paper based on individual study the student has done under faculty supervision. The student must also pass a written comprehensive examination based on the course work in the specific focus area taken. After completion of the examination, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be awarded. Plan II takes 4 quarters to complete.

The Ph.D. student must pass the comprehensive examination, typically by the end of Year 2, and must pass the Qualifying Examination, typically during Year 3, to advance to candidacy.

Environmental ~~Toxicology~~Health Sciences

COEH, ~~5201 California Avenue~~100 Theory Drive, Suite 100; Irvine, CA 92617; (949) 824-~~8641~~9013
http://www.medicine.uci.edu/occupational/graduate.asp
Alpesh Amin, Chair, Department of Medicine

Faculty

Dean B. Baker: *Chief, Division of Occupational and Environmental Medicine;* Environmental medicine and clinical toxicology; epidemiology; clinical effects of heavy metals, pesticides, and hazardous waste
Scott M. Bartell: Probabilistic models and statistical methods for exposure assessment, environmental epidemiology, and risk/decision analysis
Stephen C. Bondy: Neurotoxicology; biochemical changes in membranes resulting from toxic exposures
Vincent J. Caiozzo: Structure and function of muscle with emphasis on exercise physiology; special interest in the role of environmental toxicants in modulating physiological responses in human muscle
Jefferson Y. Chan: Chemical pathology of tissue injury with focus on the oxidative stress response in cells exposed to toxic xenobiotics
Ralph J. Delfino: Air pollution health effects and air pollution exposure assessment; environmental epidemiology; gene-environment interactions
Derek Dunn-Rankin: Laser and optical diagnostics in practical systems, optical particle sizing; droplet formation and vaporization and application to human exposures
Rufus D. Edwards: Air pollution, particles, VOC, the developing world, greenhouse gases, European cities, Expolis, and environmental epidemiology
Chenyang (Sunny) Jiang: Application of molecular techniques to detect human pathogenic bacteria and viruses in aquatic environments; coastal water quality microbiology
Virginia Kimonis: Genetics of neuromuscular diseases, inherited muscle disorders that occur in combination with diseases of bone.
Michael T. Kleinman: Uptake and distribution of inhaled toxic materials in the respiratory tract; effects of air pollutants on cardiopulmonary function
Ulrike Luderer: *Graduate Program ~~Co-~~Director*; Reproductive and developmental toxicology; roles of oxidative stress in ovarian toxicity, ovarian aging, and ovarian cancer
Charles Limoli: Mechanisms by which cells perpetuate genomic instability in response to radiation and environmental toxicants and the role of oxidative stress in these processes; how DNA damage and oxidative stress might drive the progression of normal multipotent cells in the CNS to brain tumor stem cell
Oladele Ogunseitan: *Chair, Department of Population Health and Disease Prevention;* Microbial diversity and ecology; environmental pollution; industrial ecology; health and development
Betty H. Olson: Environmental microbiology and water chemistry; public policy issues in environmental toxicology
Kathryn E. Osann: Cancer epidemiology; applied biostatistics
Robert F. Phalen: Biophysics, aerosol science, and inhalation toxicology; toxicity of mixtures of particles and gases, lung defenses, and particle deposition in airways
J. Leslie Redpath: ~~Studies on the chemical and physical modification of radiation damage aimed at basic research in carcinogenesis~~Professor Emeritus.
Ronald C. Shank: ~~*Graduate Program Co-Director;* Biochemical mechanisms in toxic tissue injury with emphasis on chemical carcinogenesis; application of tools of molecular biology to study cytotoxicity~~*Professor Emeritus*
Veronica Vieira: Geographic information systems, groundwater modeling, cluster detection methods, and persistent environmental contaminants
Jun Wu: Air pollution exposure assessment and air pollution epidemiology

The Division of Occupational and Environmental Medicine in the Department of Medicine provides graduate training in environmental ~~toxicology~~ health sciences and offers the M.S. and Ph.D. degrees in Environmental ~~Toxicology~~Health Sciences. The PhD Program offers tracks in Environmental Toxicology and in Exposure Sciences and Risk Assessment. The program in Environmental ~~Toxicology~~ Health Sciences provides students with the knowledge and skills necessary and appropriate to teach and/or conduct basic and applied research programs in inhalation/pulmonary toxicology, biochemical neurotoxicology, reproductive and developmental toxicology, chemical pathology, toxicokinetics, radiation toxicology, exposure sciences, and risk assessment.

Environmental Toxicology involves the scientific study of the entry, distribution, biotransformation and mechanism of the action of chemical agents that are harmful to the body. The graduate program interprets environmental toxicology as the study of the effects and mechanisms of action of hazardous chemicals in food, air, water and soil in the home, the workplace and the community. It considers experimentally and theoretically such diverse research problems as:

- New scientific approaches to toxicological evaluation of environmental chemicals such as air and water pollutants, food additives, industrial wastes and agricultural adjuvants at the molecular, cellular and organism levels;
- Mechanisms of action in chemical toxicity;
- The molecular pathology of tissue injury in acute and chronic toxicity;

Exposure Sciences involves the study of human exposures to environmental contaminants in different media such as air, water, and food and via multiple routes including inhalation, ingestion, and dermal absorption. Risk Assessment combines knowledge obtained from toxicological and exposure studies to come to conclusions about the risks to human health. Research in the Exposure Sciences and Risk Assessment Track includes:

- New approaches to the evaluation of human exposures to environmental chemicals, including exposure modeling and biomonitoring.

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- Scientific principles involved in evaluating risks to human health from environmental exposures.

~~Toxicology involves scientific study of the entry, distribution, biotransformation, excretion, and mechanism of action of chemical agents harmful to the body. The program interprets environmental toxicology as the study of the exposures to, the effects of, and the mechanisms of action of hazardous chemicals in food, air, water, and soil, in the home, workplace, and community, and considers experimentally and theoretically such diverse research problems as (1) new scientific approaches to toxicological evaluation of environmental chemicals such as air and water pollutants, food additives, industrial wastes, and agricultural adjuvants at the molecular, cellular, and organism levels; (2) new approaches to the evaluation of human exposures to environmental chemicals; (3) mechanisms of action in chemical toxicity; (4) the molecular pathology of tissue injury in acute toxicity; and (5) scientific principles involved in evaluating risks to human health from environmental exposures.~~

Students entering the program have varied backgrounds, including chemistry, biology, and physiology. The curriculum is based on a foundation of basic and health sciences with applications of scientific principles to environmental exposures and their potential health effects. Formal course work is enriched by a strong commitment to student-professor interaction throughout the program. An important and integral part of the learning process is an early and intensive involvement of the student in ongoing original research projects in environmental toxicology, especially inhalation/pulmonary toxicology, reproductive and developmental toxicology, biochemical toxicology, chemical pathology, neurotoxicology, exposure sciences, and risk assessment.

In addition to meeting the general admission requirements set by the Graduate Division, applicants must be admitted by an Admissions Committee composed of faculty members of the program. Candidates are selected on the basis of a balanced evaluation of the following criteria: (1) prior scholastic performance, including a consideration of grade point average, course load, nature of courses taken, and college attended; (2) recommendations by professors and others; (3) scores on the Graduate Record Examination; the Subject Test in either Biology or Chemistry is strongly recommended; (4) an interview by the Admissions Committee, when feasible; and (5) experience in undergraduate research. The applicant must have received a bachelor's degree in a biological, public health, or physical science, in a premedical curriculum, or have an acceptable equivalent. Applicants with a bachelor's degree in engineering may qualify for admission into the program if they have had sufficient training in biology, chemistry, and physical sciences.

Undergraduate preparation of applicants should include six quarter units in general biology, zoology, bacteriology, or anatomy; 12 quarter units in mathematics, including calculus through vector analysis and differential equations; 12 quarter units of chemistry, including four quarter units of organic chemistry; 12 quarter units of physics; and four quarter units in molecular biology or biochemistry. Outstanding applicants who lack one or two of these prerequisites may be given an opportunity to take the required course(s) either before admission or during the first year in the graduate program; in such circumstances, none of these undergraduate courses may be used to satisfy the program elective or core course requirements. Upper-division or graduate science courses may be considered as substitutes for the above prerequisites by the Admissions Committee.

The graduate core curriculum for the Ph.D. degree includes Environmental Toxicology 206A-B, ~~270~~264, and 298A-B-C; ; and Epidemiology 200. The core curriculum for the Ph.D. degree track in Environmental Toxicology further includes one of Statistics 201, Public Health 207 or Epidemiology 204; Environmental Toxicology 201 and 207, and 16 units from an approved elective pool. This pool includes Environmental Toxicology 202, 204, 212, 220; Physiology 206A-B; Anatomy 203A-B; Molecular Biology and Biochemistry 203, 204; and Developmental and Cell Biology 231B, Public Health 276. The core curriculum for the track in Exposure Sciences and Risk Assessment further includes Statistics 201, 202, 203, Environmental Toxicology 275; ~~one of Policy, Planning, and Design 235~~Public Health 283 ~~or Criminology, Law and Society 248~~; and eight units from an approved elective pool. This pool includes Environmental Toxicology 269 and 270, Epidemiology 205 and 285, Public Health 276, 264, 265. Ph.D. students must also fulfill comprehensive examination, qualifying examination, teaching, and research dissertation requirements. The normative time for advancement to candidacy is three years. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, students complete the core program (including Environmental Toxicology 206A-B, 264~~70~~, 298A-B-C, 299A-B-C; one of Statistics 201, Public Health 207 or Epidemiology 204; and Epidemiology 200) and eight units from the approved elective pool with an average grade of B or better, and, under the direction of a faculty advisor, prepare a thesis that is acceptable to the thesis committee. Under Plan II, students complete the core program (including Environmental Toxicology 206A-B, ~~270~~264, 298A-B-C, 299A-B-C; one of Statistics 201, Public Health 207 or Epidemiology 204; and Epidemiology 200, and eight units from the approved elective pool) with an average grade of B or better, prepare a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and pass the written comprehensive examination.

Opportunities for individual training and independent research experience exist in inhalation and pulmonary toxicology, atmospheric chemistry and aerosol science, neurochemistry and neurotoxicology, reproductive and developmental toxicology, toxicology of naturally occurring compounds, exposure ~~sciences~~modeling, risk assessment, chemical pathology, environmental microbiology, and environmental chemistry. Research grants and contracts are available to support qualified doctoral students as research assistants.

GRADUATE COURSES IN ENVIRONMENTAL ~~TOXICOLOGY~~HEALTH SCIENCES

(Schedule of Classes designation: Tox)

201 Principles of Toxicology (4) S. Problem solving to demonstrate principles of toxicology; quantitative dose-response relationship; toxicant-target (receptor) interaction emphasizing interspecies differences in Ah receptor and dioxins; complete *in vivo* metabolism of xenobiotics by mammalian systems; integration of organ responses to toxic agents.

202 Environmental Toxicology (4) F. Analysis of real problems involving toxic chemicals and the human food, air, and water supplies, occupational exposures, and life styles. Formal problems will be considered by small groups of students and discussed by the class. Prerequisite: Environmental Toxicology 201.

204 Neurotoxicology (4) F, odd years. The effects of various harmful chemicals upon nervous system function. Emphasis given to the molecular events underlying neurological damage and to the relation of such processes to basic mechanisms of neurobiology.

206A-B Target Organ Toxicity (6-6) F, W. Analysis of responses occurring in twelve organ systems of humans exposed to environmental chemicals at toxic levels; distinctive cellular and tissue structure and physiological function; toxicological responses discussed in terms of phenomena, mechanisms of action, and methods of study. Same as Public Health 277.

207 Experimental Design and Interpretation of Toxicology Studies (2) F. Introduction to methods of structuring toxicology experiments and analyzing data including experimental design, data distributions, sample sizes, hypothesis testing, linear regression, analysis of variance, multiple comparison testing, and non-parametric tests.

212 Inhalation Toxicology (4) S, odd years. The principles and practice of laboratory inhalation toxicology. Topics include aerosols, gases, respiratory tract structure and function, lung defenses, aerosol deposition exposure techniques, characterization of exposure atmospheres, experimental designs, animal models, and regulations and guidelines.

220 Industrial Toxicology (4) S. Analysis of responsibilities toxicologists have in industry, including product safety, generating material safety data sheets, animal testing, ecotoxicological testing, risk/hazard communication, and assisting industrial hygienists and occupational physicians; emphasis on interdisciplinary nature of industrial toxicology and communication skills. Prerequisites: Environmental Toxicology 206A-B. Same as Public Health 2~~0~~78.

264 Introduction to Environmental Health Science (4) ~~W~~S. Convergence of agents (chemical, physical, biological, or psychosocial) in the environment can emerge as diseases influenced by social, political, and economic factors, allowing them to become rooted in society. How these agents from various spheres come together and impact human health. Prerequisite: graduate standing. Same as Public Health 264 and Epidemiology 264.

269 Air Pollution, Climate, and Health (4). Emission of air pollutants into the atmosphere, physical and meteorological processes that affect transport, and influence on global warming. Concepts of how and where people are most exposed, and how exposures and health effects differ in developed and developing regions. Same as Epidemiology 269 and Public Health 269.

270 Human Exposure to Environmental Contaminants (4) S. Introduces founders of conceptual thought that environmental contaminants can impact health. Theory and principles of exposure assessment, the continuum from emissions of a contaminant into the environment to evidence of health effects in a population. Same as Epidemiology 270 and Public Health 270.

275 ~~Environmental~~ Exposure Modeling and Risk Assessment (4) W, even years. Surveys the general principles, basic mathematical methods, and practices of environmental modeling and human health risk assessment. Topics include advection-dispersion models, risk management, and risk perception. Students conduct an original risk assessment as a final group project. Prerequisites: Mathematics 2A; Statistics 7 or equivalent introductory statistics course. Same as Public Health 275. Concurrent with Public Health 175.

290 Independent Study in Environmental Toxicology (4) F, W, S. With consent from a faculty member who will supervise the program, a student may receive credit for individual study in some area of toxicology, culminating in the completion of a scholarly paper on the subject. May be repeated for credit as the topics vary.

297 Advanced Topics in Occupational Toxicology (2) F, W, S. Discussions with clinical and research faculty in environmental toxicology and occupational medicine on current toxicology problems in the workplace and critical review of current publications in the field. Journal club/seminar format.

298A-B-C Environmental Toxicology Seminar (2) F, W, S. Presentation and discussion of current research problems and issues by students, postdoctoral fellows, faculty, and guests, covering the broad research and policy areas of environmental toxicology. Open to Environmental Toxicology graduate students only.

299 Research Problems (1 to 12) F, W, S. Research work for the M.S. thesis or Ph.D. dissertation.

Graduate Programs in Environmental ~~Toxicology~~ Health Sciences

UC Irvine's Division of Occupational and Environmental Medicine provides training in Environmental ~~Toxicology~~Health Sciences, culminating with the award of the ~~master's degrees of science or~~ doctor of philosophy degree~~s~~ in one of two tracks, Environmental Toxicology and Exposure Sciences and Risk Assessment, or the master of science degree.

The Environmental ~~Toxicology~~ Health Sciences program grew out of the Environmental Toxicology Graduate Program, which has trained PhD and MS students and postdoctoral scholars for more than 35 years at UC Irvine. The Environmental Health Sciences program~~s~~ provides students with the knowledge and skills necessary and appropriate to teach and/or conduct basic and applied research programs in inhalation/pulmonary toxicology, biochemical neurotoxicology, reproductive and developmental toxicology, exposure modeling, exposure assessment, chemical pathology, toxicokinetics, radiation toxicology, molecular carcinogenesis~~, exposure sciences,~~ and risk assessment.

Environmental Toxicology involves the scientific study of the entry, distribution, biotransformation and mechanism of the action of chemical agents that are harmful to the body. The graduate program interprets environmental toxicology as the study of the effects and mechanisms of action of hazardous chemicals in food, air, water and soil in the home, the workplace and the community. It ~~also~~ considers experimentally and theoretically such diverse research problems as:

- New scientific approaches to toxicological evaluation of environmental chemicals such as air and water pollutants, food additives, industrial wastes and agricultural adjuvants at the molecular, cellular and organism levels;
- ~~New approaches to the evaluation of human exposures to environmental chemicals;~~
- Mechanisms of action in chemical toxicity;
- The molecular pathology of tissue injury in acute and chronic toxicity;
- ~~Scientific principles involved in evaluating risks to human health from environmental exposures.~~

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Exposure Sciences involves the study of human exposures to environmental contaminants in different media such as air, water, and food and via multiple routes including inhalation, ingestion, and dermal absorption. Risk Assessment combines knowledge obtained from toxicological and exposure studies to come to conclusions about the risks to human health. Research in the Exposure Sciences and Risk Assessment Track includes:

- New approaches to the evaluation of human exposures to environmental chemicals, including exposure modeling and biomonitoring.
- Scientific principles involved in evaluating risks to human health from environmental exposures.

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The application deadline is Jan. 15, ~~2012~~2013. Admission offers will be made no later than June 30. The program begins in the fall quarter of ~~2012~~2013.

ENTRANCE REQUIREMENTS

General requirements for admission to graduate study are given in the UCI General Catalogue in the section "Research and Graduate Studies" and in the Graduate Division bulletin "UCI Graduate Application for Admission". The catalogue is on-line and can be read at http://www.editor.uci.edu/editor/catalogue.

The entrance requirements for graduate students in Environmental ~~Toxicology~~ Health Sciences are listed below. In cases where students with deficiencies in certain areas are admitted into the graduate program, those deficiencies will be made up during the first year of residence in the program. The student will be notified of any apparent deficiency at the time of acceptance into the graduate program.

Entrance Requirements for Students Majoring in Environmental ~~Toxicology~~Health Sciences

Subject	Suggested UCI Equivalent
Calculus	Math 2A-B-D Calculus (3D Elementary Differential Equations is recommended but not required)
Physics	Physics 3A-B-C Basic Physics
General Chemistry	Chem 1 A-B-C General Chemistry
Organic Chemistry	Chem 51 A-B-C; laboratory recommended
Biochemistry	BioSci 98 Biochemistry; laboratory recommended
General Biology	BioSci 94 Diversity of Life; BioSci 96 Ecology
Physical Chemistry (strongly recommended but not required)	any TWO of the following three courses: Chem 130A Chemical Thermodynamics Chem 130B Quantum Chem., Spectroscopy, Bonding Chem 130C Chem. Dynamics and MacroMolecules, OR OR any TWO of the following three courses: Chem 131A Quantum Principles Chem 131B Mol. Struct. & Elem. Statistical Mechanics Chem 131C Thermodynamics. and Chemical Dynamics

REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ENVIRONMENTAL ~~TOXICOLOGY~~HEALTH SCIENCES

COURSEWORK AND EXAMINATION REQUIREMENTS:

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, the student completes the Environmental Toxicology core program with all grades of B or above and, under the direction of a faculty advisor, prepares a thesis that is acceptable to the thesis committee. Under Plan II, the student completes the core program with all grades of B or above, prepares a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and satisfactorily passes the written comprehensive examination at the M.S. level. Plan I requires a minimum of 5 quarters and generally 7 quarters to complete. Plan II takes 4 quarters to complete.

The Curriculum

The core course requirements are given below for Plan I (original research thesis) and Plan II (comprehensive examination):

Plan I

TOX 206 A-B Target Organ Toxicology, 6 units/qtr.

One of the following 3 introductory statistics courses:
STATS 201 Statistical Methods for Data Analysis I, 4 units
or
PUBHLTH 207 Public Health Statistics, 4 units
or
EPIDEM 204 Biostatistics, 4 units

TOX 264 Intro to Environmental Health Science (4), W*
~~TOX 270 Human Exposure to Environmental Contaminants, 4 units~~
EPIDEM 200 Epidemiology, 4 units
TOX 298 A-B-C Environmental Toxicology Seminar, 2 units per quarter

*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

Approved electives, 8 units selected from the pool below.
Total units required: 40 + thesis

Approved Elective Pool

TOX 201 Principles of Toxicology (4)
TOX 202 Environmental Toxicology (4) S
TOX 204 Neurotoxicology(4) F, even years
TOX 212 Inhalation Toxicology (4) S, odd yrs
TOX 220 Industrial Toxicology (4), ~~W~~S
~~TOX 264 Intro to Environmental Health Science (4), W~~
TOX 269 Air Pollution, Climate and Health (4)
TOX 270 Human Exposure to Environmental Contaminants, 4 units
TOX 275 Exposure Modeling and Risk Assessment (4), W, even years
PUBHLTH 276 Toxic Chemicals in the Environment (4)
MBB 203 Structure/Biosyn. Nucl. Acids (4) F
MBB 204 Structure/Biosyn. of Proteins (4) F
DCB 231B Cell Biology (4) W

PATH 225 Molecular Mechanisms of Disease (3)
Anatomy 203A,B Human Microscopic Anatomy, 6 units
Physiology 206A,B Introduction to Medical Physiology, 11 units
STAT 202, 203 Statistical Methods for Data Analysis II,III (4,4)
PUBHLTH 235 Geographic Information Systems (4), S
EPIDEM 205 Environmental Epidemiology (4)
PUBHLTH 265 Advanced Environmental Health Science (4)
CRM/LAW 248 Geographic Information Systems (4), F
*additional courses may be added to this pool upon approval of the Program Faculty

Plan II
TOX 206 A-B Target Organ Toxicology, 6 units/qtr.

One of the following 3 introductory statistics courses:
STATS 201 Statistical Methods for Data Analysis I, 4 units
or
PUBHLTH 207 Public Health Statistics, 4 units
or
EPIDEM 204 Biostatistics, 4 units

TOX 264 Intro to Environmental Health Science (4), W*~~EPIDEM 270 Human Exposure to Environmental Contaminants, 4 units~~
EPIDEM 200 Principles of Epidemiology, 4 units
TOX 298 A-B-C Environmental Toxicology Seminar, 2 units per quarter
TOX 290 Independent Study in Environmental Toxicology (4) F,W,S for Plan II

*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

Approved Electives (selected from the pool, same as above) 8 units
Total units required: 40 + comprehensive examination and paper

ADVANCEMENT TO CANDIDACY – Plan I:

The Master's student in Plan I is required to write a thesis based on research the student has done under faculty supervision. A committee of three faculty members is appointed to guide the student through the research problem and determine when a sufficient amount of work has been completed satisfactorily. At that time, the student presents the research results to the committee; after successful presentation of the results, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be awarded.

ADVISING – Plan I:

The first-year student in Plan I is expected to get involved in a research project at the earliest possible time, usually in the first quarter of the program. When a student is unsure of where to work, that student is encouraged to take advantage of the research rotation option. A rotation will consist of up to one quarter residence in a laboratory/research group of the student's choice; ~~three~~ two or more rotations per academic year are possible. Professors will be responsible for acting as an advisor/mentor to the student and instructing the student in proper research procedures, experimental design, and data analysis/scientific interpretation. If the entering student is sure of the area in which he/she wants to work, a research rotation is not necessary.

Sample Program for Masters Student in Plan I

1st yr. Fall	TOX 206A 6 units	EPID 200 4 units	TOX 298 2 units	

1st yr. Winter	TOX 206B 6 units	PUBHLTH 207 4 units	TOX 298 2 units	TOX 264 4 units
1st yr. Spring	~~TOX 270~~264 elective 4 units	elective 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall		~~TOX 298~~ ~~2 units~~	TOX ~~299~~298 ~~10~~ 2 units	TOX 299 10 units
2nd year Winter			TOX 298 2 units	TOX 299 10 units
2nd year Spring			TOX 298 2 units	TOX 299 10 units

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TOX 206A,B Target Organ Toxicology
TOX ~~270~~ 264 I~~Human Expos to Environ Contaminants~~ntro to ~~Environmental Health Sciences I
EPI 200 Principles of Epidemiology
TOX 298 Environmental Toxicology Seminar
TOX 299 Research Problems
~~EPID 200 Principles of Epidemiology~~
PUBHLTH 207 Public Health Statistics

ADVANCEMENT TO CANDIDACY – Plan II:

The Master's student in Plan II is required to write a scholarly paper based on individual study the student has done under faculty supervision. The student must also pass a written comprehensive examination based on the required course work ~~in the specific focus area taken~~. After completion of the examination, the student can advance to candidacy for the Master of Science degree. The student must advance to candidacy no later than one quarter before the quarter in which the degree is expected to be awarded.

ADVISING – Plan II:

The first-year student in Plan II is expected to get involved in individual study of a specialty area in ~~toxicology~~ environmental health sciences at the earliest possible time, usually in the first quarter of the program. The student works under the supervision of a faculty member, who is generally also their first year advisor, and is given credit for this work under course TOX 290 Independent Study in Environmental Toxicology. The product of this independent study is the scholarly paper. The comprehensive examination is always held at the beginning of summer quarter.

Sample Program for Masters Student in Plan II

1st yr: Fall	TOX 206A 6 units	EPID 200 4 units	TOX 298 2 units	EPID 200 4 units
1st yr. Winter	TOX 206B 6 units	PUBHLTH 207 4 units	TOX 298 2 units	TOX 264 4 units
1st yr. Spring	~~TOX 270~~ 264 Elective 4 units	Elective 4 units	TOX 290 2 units	TOX 298 2 units
~~2nd~~ 1st yr. ~~Fall~~Summer	comprehensive exam		TOX 290 6 units	~~TOX 298~~ ~~2 units~~

TOX 206A,B Target Organ Toxicology
~~TOX 201 Principles of Toxicology~~
TOX 264 Environmental Health Sciences I~~TOX 270 Human Exposure to Environ Contaminants~~
TOX 298 Environmental Toxicology Seminar
TOX 290 Independent Study in Environmental Toxicology
EPID 200 Principles of Epidemiology
PUBHLTH 207 Public Health Statistics

REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE IN ENVIRONMENTAL ~~TOXICOLOGY~~HEALTH SCIENCES

The predoctoral student must complete the following requirements to qualify for the degree of Doctor of Philosophy in Environmental ~~Toxicology~~Health Sciences:

1. A major program of study (courses and research) including a comprehensive written preliminary examination and an oral qualifying examination.
~~2.A minor program of study in a field distinct from but relevant to toxicology.~~
~~3.~~2. Assist the Faculty in the teaching of one or more lecture courses in toxicology or serve as a teaching assistant for an undergraduate course in the School of Biological Sciences or the Program in Public Health.
~~4.~~3. A written dissertation based on the student's original research, and a successful defense of the dissertation during an oral examination given by the student's doctoral committee.
~~5.~~4. Full-time residence for at least 6 regular academic quarters.

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Ph.D. CURRICULUM PLAN: First and Second Years

CORE CURRICULUM – for both Environmental Toxicology Track and Exposure Sciences and Risk Assessment Track

TOX 206 A-B Target Organ Toxicology, 6 units/qtr.
TOX 264 Intro to Environmental Health Science (4), W*
~~TOX 270 Human Exposure to Environmental Contaminants, 4 units~~
EPIDEM 200 Principles of Epidemiology, 4 units
TOX 298 A-B-C Environmental Toxicology Seminar, 2 units per quarter

*TOX 270 may be substituted with the approval of the advisor if the student already possesses a background in environmental health sciences

Core Courses – Environmental Toxicology Track

TOX 201 Principles of Toxicology (4), S

One of the following 3 introductory statistics courses:
STATS 201 Statistical Methods for Data Analysis I, 4 units
or
PUBHLTH 207 Public Health Statistics, 4 units
or
EPIDEM 204 Biostatistics, 4 units

TOX 207 Experimental Design and Interpretation of Toxicological Studies (2)

Approved Electives, 16 units
Minor, 8 units

Core Courses – Exposure Sciences and Risk Assessment Track

STAT 201-203 Statistical Methods for Data Analysis I, II, III (4,4,4)

One of the following two GIS courses:
PUBHLTH ~~235~~ 283 Geographic Information Systems (4), ~~S~~W
~~or~~
~~CRM/LAW 248 Geographic Information Systems (4), F~~

TOX 275 Exposure Modeling and Risk Assessment (4), W even years
Approved Electives, 8 units

Approved Elective Pool- Environmental Toxicology Track*

Four of the following:
TOX 202 Environmental Toxicology (4) S
TOX 204 Neurotoxicology(4) F, even years
TOX 212 Inhalation Toxicology (4) S, odd yrs
TOX 220 Industrial Toxicology (4), ~~W~~S
TOX 270 Human Exposure to Environmental Contaminants, 4 units
PUBHLTH 276 Toxic Chemicals in the Environment (4)
MBB 203 Structure/Biosyn. Nucl. Acids (4) F
MBB 204 Structure/Biosyn. of Proteins (4) F
DCB 231B Cell Biology (4) W
PATH 225 Molecular Mechanisms of Disease (3)
Anatomy 203A,B Human Microscopic Anatomy, 6 units
Physiology 206A,B Introduction to Medical Physiology, 11 units
*additional courses may be added to this pool upon approval of the Program Faculty

Approved Elective Pool- Exposure Sciences and Risk Assessment Track

One of the following:
~~TOX 264 Intro to Environmental Health Science (4), W~~
TOX 269 Air Pollution, Climate and Health (4)
TOX 270 Human Exposure to Environmental Contaminants, 4 units
EPIDEM 205 Environmental Epidemiology (4)
PUBHLTH 276 Toxic Chemicals in the Environment (4)
PUBHLTH 265 Advanced Environmental Health Science (4)
*additional courses may be added to this pool upon approval of the Program Faculty

THIRD AND FOURTH YEARS
TOX 298A-B-C Environmental Toxicology Seminar 2 units/qtr.
TOX 299A-B-C Research Problems 1-12 units/qtr.

A sample program is give below for each track.

Sample Program – Environmental Toxicology Track

1st yr. Fall	TOX 206A 6 units	TOX 207, 2 units	TOX 298 2 units	EPID 200 4 units
1st yr. Winter	TOX 206B 6 units	PUBHLTH 207, 4 units	TOX 298 2 units	TOX 264 4 units
1st yr. Spring	~~TOX 270~~264elective 4 units	TOX 201, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall		elective, 4 units	TOX 298 2 units	TOX 299 6 units
2nd yr. Winter	elective, 4 units	~~minor~~elective, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Spring	Comprehensive exam (Summer)	~~minor, 4 units~~	TOX 298 2 units	TOX 299 6 units
Yr 3	Qualifiying exam		TOX 298 2 units	TOX 299 10 units
Yrs 3-5			TOX 298 2 units	TOX 299 10 units

Sample Program – Exposure Sciences and Risk Assessment Track

1st yr. Fall	TOX 206A 6 units	STATS 201, 4 units	TOX 298 2 units	EPID 200

				4 units
1st yr. Winter	TOX 206B 6 units	STATS 202, 4 units	TOX 298 2 units	TOX 264 4 units
1st yr. Spring	~~TOX 270~~264~~elective~~ 4 units	STATS 203, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Fall	elective, 4 units	~~CRM/LAW 248~~elective, 4 units	TOX 298 2 units	TOX 299, ~~6~~ 2 units
2nd yr. Winter	TOX 275 4 units	~~elective~~PUBHLTH 283, 4 units	TOX 298 2 units	TOX 299 2 units
2nd yr. Spring	Comprehensive exam (Summer)	~~elective, 4 units~~	TOX 298 2 units	TOX 299, ~~2~~ 10 units
Yr 3	Qualifiying exam		TOX 298 2 units	TOX 299 10 units

FACULTY

Ulrike Luderer, MD, PhD, MPH — Director, Environmental Toxicology Graduate Program
Luderer's research on reproductive and developmental toxicology is currently focused on understanding the role(s) of oxidative stress and antioxidants in ovarian toxicity, ovarian aging and ovarian cancer. A second area of focus is developmental toxicology of the reproductive system, specifically the developmental basis of premature ovarian failure and ovarian cancer.
Dean B. Baker, MD — Director, Center for Occupational and Environmental Health
Baker's epidemiologic research is focused on environmental studies of hazardous waste sites, childhood exposure to environmental pollutants, asthma among inner-city children, the role of irritant exposure in occupational asthma, occupational stress, indoor air pollution and the use of biological markers of exposure for subclinical effects.

Scott M. Bartell, PhD
Bartell's research in exposure sciences and risk assessment focuses on probabilistic models and statistical methods for exposure assessment, environmental epidemiology and risk decision analysis.

Stephen C. Bondy, PhD
Bondy's research in molecular neurotoxicology focuses on the potential role of toxic agents in the promotion of brain aging and neurological disease. Studies include evaluation of agents that accelerate or retard the aging process. Endpoints range from behavioral tests to assay of gene expression. In addition, the properties of aluminum that relate to neurotoxicity and its possible contribution to Alzheimer's disease are being investigated.
Vincent J. Caiozzo, PhD
Caiozzo's expertise is in structure and function of muscle with an emphasis on exercise physiology. He has a special interest in the role of environmental toxicants in modulating physiological responses in human muscle.
Jefferson Y. Chan, MD, PhD
Chan's research in chemical pathology focuses on the oxidative stress response in cells exposed to toxic xenobiotics.'
Ralph J. Delfino, MD, PhD
Delfino's research is focused on air pollution exposure assessment and health effects, chronic disease and environmental epidemiology, and gene-environment interactions.
Derek Dunn-Rankin, PhD
Dunn-Rankin's major research focus is on laser and optical diagnostics in practical systems, optical particle sizing, droplet formation and vaporization and their application to human exposures.
Rufus D. Edwards, PhD
Edwards' research in exposure sciences and risk assessment focuses on air pollution, particles, volatile organic compounds, greenhouse gases and environmental epidemiology in the developing world and European cities.
Chenyang (Sunny) Jiang, PhD
Jiang's research focus is in coastal water quality microbiology and the application of molecular techniques to detect human pathogenic bacteria and viruses in aquatic environments.
Virginia Kimonis, MD
Kimonis is a Clinical Geneticist-Scientist with a strong interest in the genetics of neuromuscular diseases. Her laboratory focuses on the genetic causes of muscle disease. She is particularly interested in inherited muscle disorders that occur in combination with diseases of bone.
Michael T. Kleinman, PhD — Co-director, Air Pollution Health Effects Laboratory
Kleinman's research focuses on the mechanisms of cardiopulmonary injury following inhalation of toxic compounds. His laboratory uses state-of-the-art methods to evaluate the roles of free radicals and oxidative stress in sensitive human volunteers and laboratory animals. In vitro methods are used to evaluate specific mechanisms. Other interests include analytical and atmospheric chemistry, environmental sampling and analysis, and the application of mathematical and statistical methods to environmental and occupational assessments of exposure and risk.
Charles E. Lambert, PhD

Lambert's research is in industrial and regulatory toxicology, pharmaceutical toxicology as it relates to impurities and degradants, green chemistry and life cycle evaluations, risk assessment and risk communication.

Charles L. Limoli, PhD

Limoli studies the mechanisms by which cells perpetuate genomic instability in response to radiation and environmental toxicants and the role of oxidative stress in these processes. He also explores how DNA damage and oxidative stress may drive the progression of normal multipotent cells in the central nervous system to brain tumor stem cell.

Oladele A. Ogunseitan, PhD — Chair, Department of Population Health and Disease Prevention

Ogunseitan's research is focused on microbial diversity and ecology, environmental pollution, industrial ecology, health and development.

Kathryn E. Osann, PhD

Osann's specialty is in cancer epidemiology and applied biostastics.

Robert F. Phalen, PhD — Co-director, Air Pollution Health Effects Laboratory

Phalen's research focus is on the aerodynamics of particle deposition in the developing lung and in the adult lung. Another area of interest is in the assessment of lung defense mechanisms using radio-labeled aerosol inhalation challenges. His lab uses quantitative morphometry to study the mechanism of interference with organogenesis and possible long-term consequences for chronic lung disease due to toxic inhalation exposure. Additional studies include evaluating the tolerance of animals to air pollution mixtures as a mechanism that may protect humans against ambient pollutants.

John Leslie Redpath, PhD

~~Redpath studies into the chemical and physical modification of radiation damage are aimed at basic research in carcinogenesis. His recent work is focused on radiation-induced neoplastic transformation and tumor suppression gene inactivation.~~Professor Emeritus.

Ronald C. Shank, PhD

~~The principal thrust of Shank's research is to elucidate mechanisms of action of environmental toxicants, especially carcinogens. The current focus is on the mechanisms in DNA adduct formation by multiple carcinogens and maintenance methylation of DNA in defined sequences using various tools of molecular biology. Of special interest are molecular mechanisms in the competition for binding sites on DNA~~Professor Emeritus.

Veronica Vieira, PhD

Vieira has an extensive knowledge of GIS, groundwater modeling, cluster detection methods, and on persistent environmental contaminants including tetrachloroethylene (PCE, a dry-cleaning solvent), perfluorooctanoic acid (PFOA, a perfluorinated compound (PFC) involved in the manufacturing of Teflon), and polybrominated diphenyl ethers (PBDEs, a common class of flame retardants). Components of her work include improving methods for geocoding rural addresses using GIS and examining the relationship between PFOA exposures and health outcomes. Vieira's research also includes method development for spatial epidemiology such as disease mapping, cluster detection, and space-time interactions.

Jun Wu, PhD

Wu's research focus is on air pollution exposure assessment and air pollution epidemiology.

Graduate Courses in Environmental ~~Toxicology~~Health Sciences

201 Principles of Toxicology (4) S. Problem solving to demonstrate principles of toxicology; quantitative dose-response relationship; toxicant-target (receptor) interaction emphasizing interspecies differences in Ah receptor and dioxins; complete *in vivo* metabolism of xenobiotics by mammalian systems: integration of organ responses to toxic agents. Prerequisite: TOX 206A-B, or consent of instructor. (Staff)

202 Environmental Toxicology (4) F. Analysis of real problems involving toxic chemicals and the human food, air and water supplies, occupational exposures, and life styles. Formal problems will be considered by small groups of students and discussed by the class. (Staff)

204 Neurotoxicology (4) W. The effects of various harmful chemicals upon nervous system function. Emphasis given to the molecular events underlying neurological damage and to the relation of such processes to basic mechanisms of neurobiology. (Bondy)

206A-B Target Organ Toxicology (6,6) F,W. Analysis of the responses occurring in individual organs of man and animals exposed to environmental chemicals at toxic levels; distinctive structural and functional features of ten organ systems are presented in terms of phenomena, mechanisms of action, and methods of study. Same as Public Health 277. (Staff)

207 Experimental Design and Interpretation of Toxicology Studies (2) F or W. Introduction to methods of structuring toxicology experiments and analyzing data including experimental design, data distributions, sample sizes, hypothesis testing, linear regression, analysis of variance, multiple comparison testing and non-parametric tests. (Kleinman)

212 Inhalation Toxicology (4) S, odd years. The principles and practice of laboratory inhalation toxicology. Topics include aerosols, gases, respiratory tract structure and function, lung defenses, aerosol deposition exposure techniques, characterization of exposure atmospheres, experimental designs, animal models, research ethics, and regulations and guidelines. (Phalen)

220 Industrial Toxicology (4) S. Analysis of responsibilities toxicologists have in industry, including product safety generating material safety, data sheets, animal testing, ecotoxicological testing, risk/hazard communication, and assisting industrial hygienists and occupational physicians; emphasis on interdisciplinary nature of industrial toxicology and communication skills. Prerequisite: TOX 206A-B or consent of the instructor. Same as Public Health 278. (Lambert)

264 Environmental Health Sciences I: Introduction to Environmental Health Science (4). Convergence of agents (chemical, physical, biological, or psychosocial) in the environment can emerge as diseases influenced by social, political, and economic factors, allowing them to become rooted in society. How these agents from various

spheres come together and impact human health. Prerequisite: graduate standing or consent of instructor. Same as Public Health 264/ Environmental Health, Science, and Policy E224/Epidemiology 264. (Wu)

269 Air Pollution, Climate, and Health (4). Emission of air pollutants into the atmosphere, physical and meteorological processes that affect transport, and influence on global warming. Concepts of how and where people are most exposed, and how exposures and health effects differ in developed and developing regions. Same as Epidemiology 270/Public Health 269 and Environmental Health, Science, and Policy E247. (~~Wu~~Edwards)

270 Human Exposure to Environmental Contaminants (4). Introduces founders of conceptual thought that environmental contaminants can impact health. Theory and principles of exposure assessment, the continuum from emissions of a contaminant into the environment to evidence of health effects in a population. Same as Epidemiology 270/Environmental Health, Science, and Policy E248/Public Health 270. (Edwards)

275 Exposure Modeling and Risk Assessment (4). This course surveys the general principles, basic mathematical methods, and practices of environmental modeling and human health risk assessment. Topics include advection-dispersion models for contaminants in air and water, uptake by plants and animals, dose-response modeling, risk management, and risk perception. Although the emphasis is on environmental toxicants, infectious disease transmission models are are briefly introduced. Students conduct an original risk assessment as a final group project. Same as Public Health 275 (Bartell).

290 Independent Study in Environmental Toxicology (4) F,W,S. With consent from a faculty member who will supervise the program, a student may receive credit for individual study in some area of toxicology, culminating in the completion of a scholarly paper on the subject. May be repeated for credit. (Staff)

297 Advanced Topics in Occupational Toxicology (2) F,W,S. Discussions with clinical and research faculty in environmental toxicology and occupational medical on current toxicology problems in the workplace and critical review of current publications in the field. Journal club/seminar format. (Bondy).

298A-B-C Environmental Toxicology Seminar (2) F,W,S. Presentation and discussion of current research problems and issues by students, postdoctoral fellows, faculty, and guests, covering the broad research and policy areas of environmental toxicology. (~~Bondy~~Luderer)

299 A-B-C Research Problems (1 to 12) F,W,S. Research work for the M.S. thesis or Ph.D. dissertation. (Staff)

Graduate Courses in Statistics

201 Statistical Methods for Data Analysis I (4). Introduction to statistical methods for analyzing data from experiments and surveys. Methods covered include two-sample

procedures, analysis of variance, simple and multiple linear regression. May not be taken for graduate credit by Statistics graduate students. Prerequisite: knowledge of basic statistics (at level of Statistics 7). Concurrent with Statistics 110.

202 Statistical Methods for Data Analysis II (4). Introduction to statistical methods for analyzing data from surveys or experiments. Emphasizes application and understanding of methods for categorical data including contingency tables, logistic and Poisson regression, loglinear models. May not be taken for graduate credit by Statistics graduate students. Prerequisite: Statistics 201 or equivalent. Concurrent with Statistics 111.
203 Statistical Methods for Data Analysis III (4). Introduction to statistical methods for analyzing longitudinal data from experiments and cohort studies. Topics covered include survival methods for censored time-to-event data, linear mixed models, non-linear mixed effects models, and generalized estimating equations. May not be taken for graduate credit by Statistics graduate students. Prerequisite: Statistics 202 or equivalent. Concurrent with Statistics 112.

Graduate Courses in Epidemiology

200 Principles of Epidemiology (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease in the general population, as these approaches apply to populations using different student designs and models from the literature. Prerequisite: graduate standing or consent of instructor.

204 Biostatistics (4). Designed to help students develop an appreciation for the statistician's view of the research process, emphasizing biomedical research. Instills an understanding of how statistical models are used to yield insights about the data that form evidence-based understanding of the world around us. Same as Public Health 204.

205 Environmental Epidemiology (4). Concentrates on epidemiological approaches to the assessment of community environmental hazards; issues involved in environmental exposure estimation; interdisciplinary approaches to environmental epidemiology, including the use of biomarkers of exposures and susceptibility; epidemiological studies within the context of risk assessment. Prerequisite: graduate standing or consent of instructor.

269 Air Pollution, Climate, and Health (4). Emission of air pollutants into the atmosphere, physical and meteorological processes that affect transport, and influence on global warming. Concepts of how and where people are most exposed, and how exposures and health effects differ in developed and developing regions. Same as Public Health 269 and Environmental Health, Science, and Policy E247/Environmental Toxicology 269.

270 Human Exposure to Environmental Contaminants (4). Introduces founders of conceptual thought that environmental contaminants can impact health. Theory and principles of exposure assessment, the continuum from emissions of a contaminant into the environment to evidence of health effects in a population. Same as Environmental Health, Science, and Policy E248/Public Health 270/Environmental Toxicology 270.

Graduate Courses in Public Health

207 Public Health Statistics (4). Surveys statistical methods for public health. Topics include descriptive statistics, probability models, likelihood functions, estimation, and hypothesis testing for categorical and continuous date. Student learn to use statistical software to perform epidemiologic data analysis. Prerequisites: Public Health 203 or similar introductory epidemiology course and Mathematics 2A or similar introductory calculus course; graduate standing or consent of instructor.

~~**235 Geographic Information Systems (4).** Basic geographic, cartographic, and GIS concepts including computer representation of physical, political, statistical, and social aspects of space using vector and grid-based maps. Experience with extensive geographic base map files and databases.~~

276 Toxic Chemicals in the Environment (4). Industrial ecology of toxicants and their impacts on environmental quality and human health. Explores theoretical basis of toxicity thresholds and regulatory issues. Uses classic and contemporary research articles to understand the legacy of traditional toxicants, and to identify emerging threats. Prerequisite: graduate standing or consent of instructor. Same as Epidemiology 244.

264 Environmental Health Sciences I: Introduction to Environmental Health Science (4). Convergence of agents (chemical, physical, biological, or psychosocial) in the environment can emerge as diseases influenced by social, political, and economic factors, allowing them to become rooted in society. How these agents from various spheres come together and impact human health. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E224/Epidemiology 264/Environmental Toxicology 264.

265 Environmental Health Sciences II: Advanced Environmental Health Science (4). Explores the complex relationships among exposure processes and adverse health effects of environmental toxins focusing on specific chemicals, sources, transport media, exposure pathways, and human behaviors. Techniques of environmental sampling for exposure assessment are discussed. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E225/Epidemiology 265.

283 Geographic Information Systems for Public Health (4). Basic geographic, cartographic, and GIS concepts including computer representation of physical, political, statistical, and social aspects of space using vector and grid-based maps. Experience with extensive geographic base map files and databases (Vieira).

~~Graduate Courses in Criminology Law and Society~~

~~**C248 Geographic Information Systems (4).** Prepares students to become proficient in the basic GIS functionality including visualization, data management, and spatial analysis. Prerequisite: graduate standing or consent of instructor.~~

UCLA GRADUATE DIVISION

In Absentia Registration Petition

Please return to Academic Services, 1255 Murphy Hall, MC 142801
Winter deadline: Friday, December 7, 2012. Spring deadline: Friday, March 8, 2013.
Graduate students whose research or coursework must be completed outside California may apply for *in absentia* registration. Please see page two of this petition for eligibility criteria.

Applicant Information

Name *(Last, First, Middle Initial)* _____ University ID # _____

Email _____ Citizenship/Visa Status _____

Major _____ Degree Objective _____

In Absentia Information

State / Country where study or research will be conducted _____

I request in absentia registration from: Term _____ Year _____ through Term _____ Year _____

You may only request *in absentia* registration for up to three terms at a time.

Explanation of request

Signatures

Student

Signature _____ Date _____

Student's Committee Chair

Name _____ Signature _____ Date _____

Department Chair

Name _____ Signature _____ Date _____

Office of International Students & Scholars

☐ Approve ☐ Deny

Name _____ Signature _____ Date _____

For Graduate Division use only:

☐ Approve ☐ Deny

Name _____ Signature _____ Date: _____

In-Absentia Eligibility Criteria

When a full time registered student who has an academic need to conduct research **outside** of California. Research must be:

- Directly related to the student's degree program
- Of a nature that makes it necessary to be completed outside of California for at least one full academic term
- Involve only indirect supervision appropriate to evaluating the student's academic progress and performance
- Involve no significant in-person collaboration with UC faculty during the *in absentia* period

Students must be enrolled full-time and in good academic standing (GPA of 3.0) to be eligible for the reduced *in absentia* fee. Students in self-supporting programs or exchange programs are not eligible for *in absentia* registration.

Research or coursework:
- Must be of a nature that makes it necessary to be completed outside of California for at least one full academic term.
- Must be directly related to your degree program as evidenced by faculty approval.
- Must involve only indirect supervision appropriate to evaluating the student's academic progress and performance from UC faculty during the *in absentia* period.
- Must involve no significant studying or in-person collaboration with UC faculty during the *in absentia* period.

Doctoral students:
- Must be advanced to candidacy by the time *in absentia* begins.
- May only use *in absentia* registration for a maximum of two years (6 quarters), with renewal after first year.

Master's and graduate professional students:
- Must have completed at least one year of coursework by the time *in absentia* begins.
- May only use *in absentia* for a maximum of one year.

Students registered *in absentia* will pay:
- 15% of the tuition and student services fee.
- The full health insurance fee associated with the UC campus of origin, if enrolled in the Student Health Insurance Plan (SHIP).
- 100% of nonresident supplemental tuition if it has been more than three years since the doctoral student advanced to candidacy.
- Any professional fees, if applicable.

Students may hold university fellowships and GSR appointments, but may not hold Teaching Assistant/Associate/Fellow, Reader/Special Reader and Tutor/Remedial Tutor appointments during the *in absentia* period.

Students are also eligible to receive a fellowship , maintain library privileges and are able to have access to all benefits associated with their student health insurance plan.

F-1 and J-1 non-immigrant students:
Approval of *in absentia* registration for international graduate students by the Dashew Center or Graduate Division does not necessarily guarantee the individual student will maintain their valid non-immigrant visa status or the benefits derived from that status (e.g. Academic Training or Optional Practical Training). These matters must be discussed in detail with an advisor in the Dashew Center to avoid a loss of status, inability to return to the U.S., or loss of benefits.

For answers to frequently asked questions about *in absentia* registration, please consult the Graduate Division web site: www.grad.ucla.edu/gasaa/library/degreeinfo.htm.

March 22, 2013

Chair Ruth Mulnard
Coordinating Committee on Graduate Affairs (CCGA)

Re: Approval of the Mechanical Engineering and Applied Mechanics IIGP Emphasis Name Change

Dear Chair Mulnard,

The Graduate and Research Council (GRC) unanimously approved a proposed name change to the Mechanical Engineering and Applied Mechanics (MEAM) Graduate Group Emphasis under the IIGP to that of Mechanical Engineering (ME) Graduate Group Emphasis under the IIGP. The name change was due to the group wishing to remove the redundancy in the old name, and did not result in any changes in faculty or student membership, by-laws, or policies & procedures.

Sincerely,

Valerie Leppert
Chair, Graduate and Research Council

CC: Eric Zarate, Senior Policy Analyst, Coordinating Committee on Graduate Affairs
Tom Peterson, Provost and Executive Vice Chancellor
Annette Garcia, Assistant Chancellor and Chief of Staff
Chris Kello, Acting Dean of the Graduate Division
Laurie Herbrand, University Registrar
Laura Martin, Accreditation Liaison Officer
Peggy O'Day, Chair, Academic Senate
Graduate Research Council

March 22, 2013

Chair Ruth Mulnard
Coordinating Committee on Graduate Affairs (CCGA)

Re: Approval of the Mechanical Engineering and Applied Mechanics IIGP Emphasis Name Change

Dear Chair Mulnard,

The Graduate and Research Council (GRC) unanimously approved a proposed name change to the Mechanical Engineering and Applied Mechanics (MEAM) Graduate Group Emphasis under the IIGP to that of Mechanical Engineering (ME) Graduate Group Emphasis under the IIGP. The name change was due to the group wishing to remove the redundancy in the old name, and did not result in any changes in faculty or student membership, by-laws, or policies & procedures.

Sincerely,

Valerie Leppert
Chair, Graduate and Research Council

CC: Eric Zarate, Senior Policy Analyst, Coordinating Committee on Graduate Affairs
Tom Peterson, Provost and Executive Vice Chancellor
Annette Garcia, Assistant Chancellor and Chief of Staff
Chris Kello, Acting Dean of the Graduate Division
Laurie Herbrand, University Registrar
Laura Martin, Accreditation Liaison Officer
Peggy O'Day, Chair, Academic Senate
Graduate Research Council

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ACADEMIC SENATE
Santa Barbara Division
1233 Girvetz Hall
Santa Barbara, CA 93106-3050

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Kum-Kum Bhavnani, Chair
Deborah Karoff, Executive Director

March 11, 2013

AIMÉE DORR, PROVOST AND EXECUTIVE VICE PRESIDENT FOR ACADEMIC AFFAIRS
ROBERT L. POWELL, CHAIR, ACADEMIC SENATE
RUTH MULNARD, CHAIR, COORDINATING COMMITTEE ON GRADUATE AFFAIRS

Re: Proposed Name Change for the M.S. and Ph.D. in Geological Sciences and Proposed Discontinuation of the M.S. in Geophysics

Dear Colleagues:

At its meeting of January 31, 2013, the Faculty Legislature of the Santa Barbara Division passed two separate motions by unanimous vote to approve the proposed name change for the M.S. and Ph.D. in Geological Sciences and the proposed discontinuation of the M.S. in Geophysics. The Faculty Legislature's discussion of the proposal followed endorsement by the Chancellor and approval of the Graduate Council, whose actions were informed by comments from the Graduate Dean, the Dean of Mathematics, Life, and Physical Sciences in the College of Letters of Science, the Council on Planning and Budget, the Undergraduate Council, and the College of Letters and Science Executive Committee.

The Department of Earth Science has proposed to change the name of both the M.S. and Ph.D. in "Geological Sciences" to "Earth Science" in order to bring the graduate degree names in line with the Department's name, which changed in 2005. Graduate Council has determined that the proposed action is a "simple" name change, as it does not involve a fundamental modification of the program, a change in the degree requirements, or a need for substantial new resources. The faculty have also proposed to discontinue the M.S. degree in Geophysics in order to simplify the Department's advanced degree offerings. Prospective students may continue to pursue advanced study in Geophysics under the M.S. and Ph.D. in Earth Science.

Enclosed are a set of supporting documents for your review. Per the Compendium, we are forwarding the name change for review by CCGA, and notifying all parties of the approved discontinuation.

Sincerely,

Henry T. Yang
Chancellor

Kum-Kum Bhavnani, Chair, Academic Senate
Santa Barbara Division

Copy: Deborah Karoff, Executive Director, Academic Senate
Toby Lazarowitz, Executive Assistant to the Executive Vice Chancellor
Carol Genetti, Acting Dean, Graduate Division
Christian Villaseñor, Assistant Dean, Graduate Division
Rickie Smith, Director, Academic Services, Graduate Division

Encl.

Office of the Chancellor
University of California, Santa Barbara

January 24, 2013

TO: Kum-Kum Bhavnani, Chair
Academic Senate

FROM: Henry T. Yang

RE: **Proposal from Earth Science to Change the Name of the M.S. and Ph.D. In Earth Science, and Proposal to Discontinue the M.S. Degree in Geophysics**

I have received, for administrative review and comment, the attached multi-action proposal from the Department of Earth Science. Earth Science is requesting a name change to both the M.S. and Ph.D. in "Geological Sciences" to "Earth Science" in order to bring the graduate degree names in line with the Department's name, which changed in 2005. In addition, the Earth Science faculty has proposed to discontinue the M.S. degree in Geophysics in order to simplify the Department's advanced degree offerings.

The proposal has been endorsed by the Graduate Dean, the Council on Planning and Budget, the Undergraduate Council, and the Letters and Science Executive Committee. The Department has the full support of Dean Wiltzius. The Graduate Council approved both the name change and the discontinuation at its meeting of January 14, 2013.

As has been noted by all reviewers, the name change is a simple one, changing the name of the graduate degrees to be consistent with the department name. The proposal to discontinue the M.S. degree in Geophysics is, as reviewers have noted, innocuous and will not negatively impact current students. As the Graduate Council has noted, students will still be able to pursue study in Geophysics within the "Earth Science" M.S. and Ph.D.

Executive Chancellor Lucas has recommended approval. I concur with his recommendation and provide administrative endorsement of the two proposals. These can be placed on the Agenda of the January 31, 2013 Faculty Legislature.

cc: Divyakant Agrawal
Deborah Karoff
Gene Lucas

Academic Senate
Santa Barbara Division
Graduate Council

January 16, 2013

To: Gene Lucas, Executive Vice Chancellor

From: Divyakant Agrawal, Chair, Graduate Council 

Re: Proposed Name Change for the M.S. and Ph.D. in Geological Sciences and Proposed Discontinuation of the M.S. in Geophysics

Attached for your review and consultation with the Chancellor is a multi-action proposal from the Department of Earth Science. Earth Science would like to change the name of both the M.S. and Ph.D. in "Geological Sciences" to "Earth Science" in order to bring the graduate degree names in line with the Department's name, which changed in 2005. In addition, the Earth Science faculty have proposed to discontinue the M.S. degree in Geophysics in order to simplify the Department's advanced degree offerings. The Department has the full support of Dean Wiltzius, his endorsement letter is attached.

The proposal was distributed to Graduate Dean Genetti, the Council on Planning and Budget, the Undergraduate Council, and the Letters and Science Executive Committee for review and comment. The Graduate Council voted unanimously to approve the proposed actions at its meeting of January 14, 2012. The full package of documents is available for your review.

Graduate Council has determined that the proposed name change is a "simple" name change, as it does not involve a fundamental modification of the program, a change in the degree requirements, or a need for substantial new resources. The Department expects the discontinuation of the M.S. in Geophysics to have little or no effect on enrolled students, and future students will continue to be able to pursue study in geophysics within the "Earth Science" M.S. and Ph.D.

CC: Kum-Kum Bhavnani, Chair, Academic Senate
Deborah Karoff, Executive Director, Academic Senate
Carol Genetti, Acting Dean, Graduate Division
Christian Villaseñor, Assistant Dean, Graduate Division
Rickie Smith, Director, Academic Services, Graduate Division
Toby Lazarowitz, Executive Assistant to the EVC
Steven Velasco, Director, Institutional Research, Office of Budget and Planning
Pierre Wiltzius, Dean, Division of Mathematical, Life, and Physical Sciences
Tracy Daggett, Executive Assistant to the Dean

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GRADUATE DIVISION
SANTA BARBARA, CA 93106-2070

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(805) 893-8259 FAX
http://www.graddiv.ucsb.edu

November 28, 2012

TO: Divyakant Agrawal, Chair
Graduate Council

FROM: Carol Genetti, Acting Dean
Graduate Division

RE: Request from Earth Science for proposed degree name change and elimination of MS degree

The Department of Earth Science has submitted two proposals for expedited review: to change the name of the M.S. and Ph.D. degree from "Geological Sciences" to "Earth Science" in line with the recently-changed name of the department; and to eliminate the M.S. in Geophysics. The result will be a streamlined representation of existing programs that will clarify the offerings in a way beneficial to students. It is worth noting that the elimination of the M.S. in Geophysics does not reduce available offerings as the requirements for the two M.S. degrees have been virtually identical.

I endorse the two proposals and commend the department for doing this work.

UNIVERSITY OF CALIFORNIA
ACADEMIC SENATE
SANTA BARBARA DIVISION
Council on Planning & Budget

November 29, 2012

To: Diyakant Agrawal
Chair, Graduate Council

From: William Warner
Vice Chair, Council on Planning & Budget

Re: Earth Science proposals

The Council on Planning & Budget has carefully reviewed the proposals from the Department of Earth Science to change the name of its M.S. and Ph.D. degrees and to discontinue the M.S. in Geophysics. The request to change the names of its graduate degrees to conform to the department name is innocuous. There was a prior review by agencies within the Academic Senate and from relevant departments regarding the name change for the department itself. Therefore, there would seem to be little reason to expect other agencies or departments within UCSB to raise concerns about this alignment of degree with department name.

Similarly, the request to eliminate a separate M.S. degree in Geophysics in light of requirements that are identical for their M.S. degree in Earth Science seems likewise innocuous, consistent with their department's reconceptualization, and more efficient with department and University resources.

CPB supports both of these proposals.

cc: John Foran, CPB Chair
Kum-Kum Bhavnani, Academic Senate Divisional Chair
Deborah Karoff, Academic Senate Executive Director
Shasta Delp, Academic Senate analyst

November 27, 2012

To: Diyakant Agrawal, Chair
Graduate Council

From: Scott Reid, Chair
L&S Faculty Executive Committee

Re: Proposed Name Change for the M.S. and Ph.D. in Geological Sciences and Proposed Discontinuation of the M.S. in Geophysics

At its meeting on November 15, 2012, the L&S Faculty Executive Committee reviewed the two-part proposal submitted by the Department of Earth Science.

The FEC agreed that the first request constituted a simple name change and unanimously endorsed the proposal. The FEC further endorsed the proposal to discontinue the M.S. in Geophysics, understanding this will have no negative impact on current students.

Copy: Executive Dean Melvin Oliver
Dean Mary Nisbet
Dean Pierre Wiltzius

Academic Senate
Santa Barbara Division

November 9, 2012

To: Kum-Kum Bhavnani, Chair
Academic Senate

From: Jan Frodesen, Chair
Undergraduate Council

Re: Earth Science Name Change and Discontinuation Proposal

During its meeting on November 8, the Undergraduate Council unanimously endorsed the Earth Science Department's proposal to:

1) change the name of the MS in Geological Sciences to MS in Earth Science;
2) change the name of the PhD in Geological Sciences to PhD in Earth Science;
3) discontinue the MS in Geophysics.

Cc: Deborah Karoff, Executive Director, Academic Senate

SANTA BARBARA: Division of Mathematical, Life, and Physical Sciences
COLLEGE OF LETTERS AND SCIENCE

September 25, 2012

TO: Divyakant Agrawal, Chair of the Graduate Council

FROM: Pierre Wiltzius, Susan and Bruce Worster Dean of Science
Division of Mathematical, Life, and Physical Sciences

RE: **Proposed name change for the M.S. and Ph.D. in "Geological Sciences" to "Earth Science" and discontinuance of the M.S. in Geophysics.**

I am writing to give my full endorsement of the proposal for the name change of the existing M.S. and Ph.D. in "Geological Sciences" to "Earth Science". I have no issue with the discontinuance of the M.S. degree program in Geophysics, with the provision that current students have the option of completing the degree in Geophysics if they desire. These changes are a logical and natural extension of the earlier renaming of the Geology Department to the Department of Earth Science.

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DEPARTMENT OF EARTH SCIENCE
SANTA BARBARA, CALIFORNIA 93106-9630
PHONE (805) 893-4499 FAX (805) 893-2314

M E M O R A N D U M

TO: Divyakant Agrawal, Chair, Graduate Council
CC: Pierre Wiltzius, Dean, Division of Mathematical, Life, and Physical Sciences
Carol Genetti, Dean, Graduate Division & Dean Wiltzius

FROM: Doug Burbank

DATE: 17 July, 2012

RE: Proposed Name Change for the M.S. and Ph.D. in Geological Sciences, and Proposed Discontinuation of the M.S. in Geophysics

PROPOSAL:
With the support of the faculty, as Department Chair, I would like to request ***expedited review*** of a proposal to:

1. Change the name of the M.S. and Ph.D. degrees in "Geological Sciences" to the M.S. and Ph.D. in "Earth Science."

2. Discontinue the M.S. degree in Geophysics.

The Department would like the proposed changes to be effective as soon as possible.

Eleven faculty members were present at the faculty meeting on April 5, 2011. The votes to (i) change the name of the M.S. and PhD. from Geological Sciences to Earth Science, and; (ii) discontinue the M.S. in Geophysics were 10 yes, 1 no, 0 abstain. Five faculty members were on leave and four were absent (field work/other commitments). On a subsequent email vote in December 2011, the vote to support the degree name change was 17 yes, 1 no, and 2 abstain (two abstentions due to absence).

The mismatch between the degree names and the foci of some of our graduates does them a disservice that we would like to remedy as soon as possible. In addition, our department is negatively impacted each year by confusion about the presence or absence of a doctoral program in the geophysics subject area, thus the request for an expedited review.

RATIONALE:
In 2003, the Department of Geological Sciences changed its name to the Department of Earth Science —a name that reflects both the breadth of the curriculum and research of our faculty. At that time, however, the Department was undecided about changing the name of its undergraduate and graduate degrees. Since then, the Department had successfully changed its undergraduate degrees to the B.S. and B.A. in Earth Science: a change that took effect in the Fall 2011. The Department would like to

make the same change to its graduate degrees (*see attached sheet*).

Concurrently, the faculty would like to simplify the department's advanced degrees by discontinuing the M.S. in Geophysics, and only offering an M.S. and a Ph.D. degree in Earth Science. The requirements of our current M.S. in Geophysics and M.S. in Geological Sciences are identical. All students are required to complete 30 units (including no fewer than 20 units of graduate courses in the major subject) with a grade of B or better, satisfactorily pass the Comprehensive Oral Examination, and file a completed thesis. (See attached requirement sheet). During their first year, all graduate students take two core courses (EARTH 201A and 201B), plus a weekly seminar with invited speakers (EARTH 260) and a seminar presentation (EARTH 268). All students then undertake a very specialized series of coursework pertinent to their research interests, planned in consultation with their faculty advisor and an advisory committee. Given the commonality of requirements both for courses and thesis research, it is logical to subsume both degrees under the same name (M.S. in Earth Science). The specialty of each student will be reflected in makeup of his/her committee and the nature of the research carried out.

The presence of an M.S. in Geophysics "on our books" has harmed our recruitment of Ph.D. students in geophysics. We consistently have potential applicants uncertain about whether it is possible to earn a Ph.D. within the research area of geophysics. Several viable candidates for admission tell us subsequently that they did not apply to the Ph.D. program, because they didn't think we offered study in their area. This confusion arises from the fact that we currently offer an M.S. degree in geophysics, but our Ph.D. in this research area bears a different sounding name: Ph.D. in Geological Sciences.

An M.S. or Ph.D. degree in Earth Science means a broader possibility of employment for students upon graduation. In many potential employers' minds, an M.S. in "Geological Sciences" would not lead them to suspect an applicant of being an expert in climate science, hydrology, or geophysics. Potential employers or recruiters commonly take only a quick glance at resumes, and they tend to prefer a more general degree, e.g., B.S. in Physical Science. The title "Earth Science" forces them out of a comfortable classification of "Geological Sciences" as the study of rocks and ancient Earth history, and it encourages them to consider broader possibilities for what expertise is encompassed within this degree. We contend that this less tradition-bound nomenclature will open more career possibilities for our students.

Some companies, including a few oil companies, draw somewhat arbitrary distinctions between applicants with degrees in geophysics versus those without them. The name changes proposed here will necessitate that our students who focus on geophysics make that focus clear to potential employers who are looking for geophysicists. This semantic issue should not present a barrier to consideration for appropriate jobs or pay scales. We note that among the various UC campuses (Table 1), the Department of Earth Science at UCSB is the only one that offers any graduate degree specifically in Geophysics: our MS degree.

Table 1. MS Programs in UC that include a focus on Geophysics

Campus	**Degree Name**
UCSB (at present)	MS in Geophysics, PhD in Geological Sciences
UCSB (proposed)	MS and PhD in Earth Science
UCLA	MS and PhD in Earth & Planetary Sciences
UCR	MS and PhD in Geological Sciences
UCD	MS and PhD in Geology
UCB	PhD in Earth and Planetary Science
UCI	PhD in Earth Systems Science

UCSC	MS and PhD in Earth and Planetary Science
UCSD	MS in Earth Science

Every one of UC's other campuses listed above trains graduate students in geophysics, but does not grant an MS degree in "Geophysics." If the absence of a degree entitled "MS in Geophysics" were a job detriment to those many students who obtain MS degrees at those other campuses, those campuses would presumably have worked to remedy that situation. The facts that these campuses have not done so, that many of their MS geophysicists have gone on to successful careers directly out of graduate school, and that very few students have enrolled in our MS program specifically in Geophysics implies that the absence of a degree entitled "MS in Geophysics" represents little or no impediment to the employment opportunities for these geophysical specialists.

We would also argue against any contention that, because UCSB is the only UC campus that offers an MS degree in Geophysics, we should be required to retain it in order to provide this apparently "rare" opportunity for an MS degree in this specialty. In fact, at eight UC campuses, graduate students can specialize and get graduate degrees in geophysics. Those degrees simply have another overarching name at seven other campuses (as depicted in Table 1 above), but provide the analogous education.

RESOURCE IMPLICATIONS:
The change in the degree names and the discontinuation of the M.S. in Geophysics will not affect current or future department resources.

EFFECTS OF THE PROPOSED ACTION ON THE FACULTY:
There will be no effect on the faculty, except that we expect to receive more applications for doctoral work in Geophysics following these changes. The coursework and exams for an M.S. in Geophysics are the same as that for an M.S. in Geological Science (pending name change to Earth Science). Students will continue to earn an M.S. under the direction of a primary mentor and an advising committee. Similarly, the requirements for the M.S. and Ph.D. degrees will remain the same.

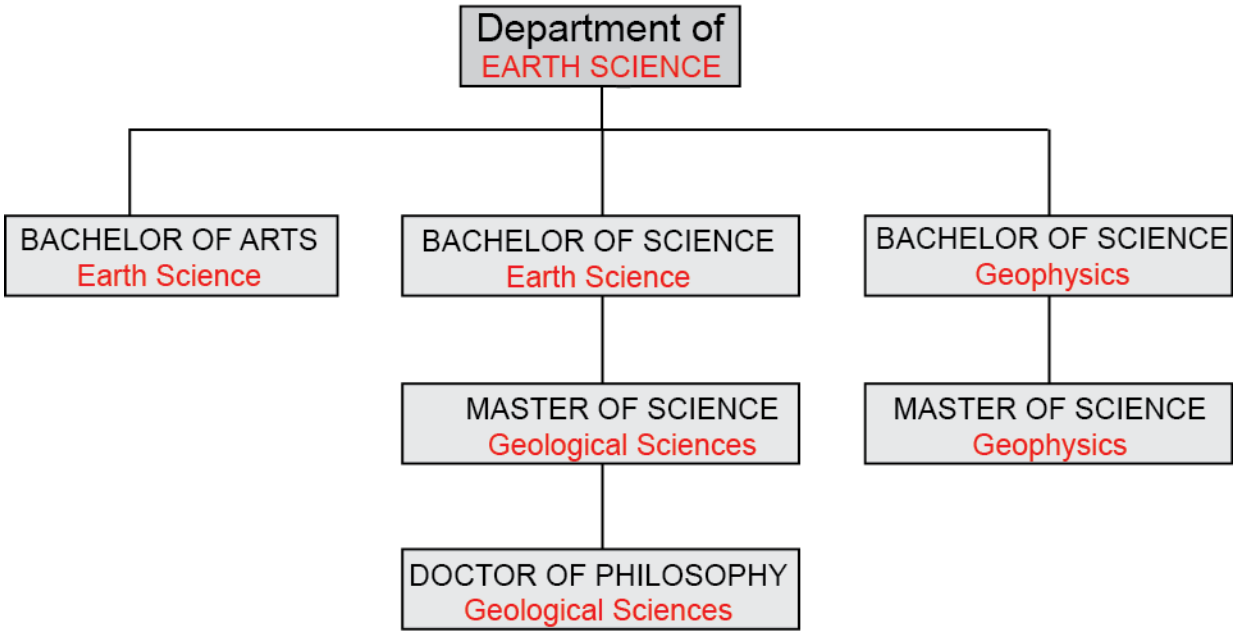
ON ENROLLED STUDENTS:
Over the past decade, only five students have earned an M.S. in Geophysics. Only one student is currently enrolled in the M.S. in Geophysics. All students currently enrolled in the Ph.D. and M.S. programs will continue with the same requirements, irrespective of any name change. The name appearing on the current students' degrees will be "Geological Sciences." They will be informed of the change to "Earth Science" and have the option of changing the degree name to "Earth Science."

Upon the approval of the degree name change, new students will pursue either an M.S. degree in Earth Science or a Ph.D. degree in Earth Science. However, the requirements will remain the same as at present. The students will be able to specify their specialization on their thesis or dissertation title page.

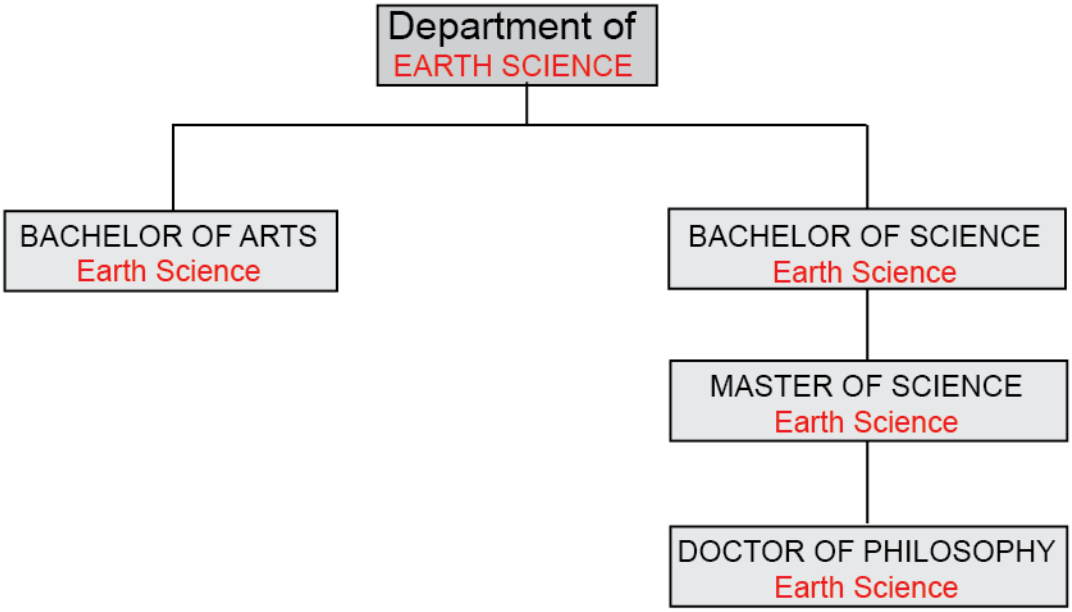
ON THE STAFF:
There will be no effect on the staff.

ON THE DEPARTMENT/COLLEGE/SCHOOL AND OTHER ACADEMIC PROGRAMS:
There will be no effect on the Department, College, or other academic programs.

Current Earth Science Degree Flow Chart



Proposed Earth Science Degree Flow Chart



DEPARTMENT OF EARTH SCIENCE
http://www.geol.ucsb.edu
College of Letters and Science
University of California, Santa Barbara

Student Name:_____ Perm: _____

MASTER OF SCIENCE – GEOLOGICAL SCIENCES/GEOPHYSICS – 2012-13

In addition to departmental requirements, candidates for graduate degrees must fulfill University requirements described in the "Graduate Education" section of the UCSB General Catalog.

*A total of **30.0 units** are required for the M.A./Ph.D. program – 20.0 units of 200 level courses (a maximum of 10 units of EARTH 596 may be counted) and 10 units of 200-level or 100-level courses. These courses must be passed with a grade of B or better with the exception of EARTH 596, which may be passed satisfactorily.*

Five year combined BS/MS Geological Science or Geophysics – Upon Completion of the requirements for a BS, student admitted to BS/MS. No undergraduate units which will be used for completion of the bachelor's degree will be counted toward master degree.

CORE COURSE REQUIREMENTS			
COURSE #	COURSE NAME	UNITS	GRADE
	THEORY (8.0 units total)		
EARTH 201A	Graduate Research and Field Seminar	4.0	
EARTH 201B	Graduate Research Seminar	4.0	
	PROFESSIONAL DEVELOPMENT		
EARTH 260	Seminar in Geology (taken every quarter, except when enrolled in EARTH 268)	1.0	
EARTH 268	Seminar in Geology – Presentation (taken once)	1.0	
	ELECTIVES (22.0 units total)		

CAPSTONE REQUIREMENT

All students must take and pass a Comprehensive Oral Examination after their first year. Following the exam, students are expected to start their thesis. Thesis must be filed during their last quarter in residence or on filing fee leave of absence on or before the deadline.

M.A. Committee: Chair: _____

Member: _____

Member: _____

COI Completed_____

Comprehensive Exam: _____/_____/_____ Thesis in Grad Div: _____/_____/_____

COMP EXAM CONDITIONS:

M.S. DEGREE REQUIREMENTS SATISFIED: _____
Quarter/Year

DEPT GRADUATE ADVISOR SIGNATURE: _____

_____
Print Name

FOR GRADUATE DIVISION USE ONLY	
Residence Requirement (3 quarters)	
Required Units Completed (30.0)	
No Incomplete Grades	
3.0 or Better GPA Overall	
B or Better in All Core Courses (200-level or 100-level)	
Registered Quarter of Degree or Paid Filing Fee	

COI Completed and entered _____

Thesis Submission Fee: _____ _____
Transaction number **Date**

M.S. Degree Awarded (quarter): _____
Date

DEPARTMENT OF EARTH SCIENCE
http://www.geol.ucsb.edu
College of Letters and Science
University of California, Santa Barbara

Student Name:_____ Perm: _____

DOCTORAL DEGREE– GEOLOGICAL SCIENCES– 2012-13

In addition to departmental requirements, candidates for graduate degrees must fulfill University requirements described in the "Graduate Education" section of the UCSB General Catalog.

*A total of **30.0 units** are required for the M.A./Ph.D. program – 20.0 units* of 200 level courses (a maximum of 10 units of EARTH 596 may be counted) and 10 units of 200-level or 100-level courses. These courses must be passed with a grade of B or better with the exception of EARTH 596, which may be passed satisfactorily.*

CORE COURSE REQUIREMENTS			
COURSE #	COURSE NAME	UNITS	GRADE
	THEORY (8.0 units total)		
EARTH 201A	Graduate Research and Field Seminar	4.0	
EARTH 201B	Graduate Research Seminar	4.0	
	PROFESSIONAL DEVELOPMENT		
EARTH 260	Seminar in Geology (taken every quarter, except when enrolled in EARTH 268)	1.0	
EARTH 268	Seminar in Geology – Presentation (taken once)	1.0	
	ELECTIVES (22.0 units total)		

*Geology 260, 268, and all 500-series courses (except 596) are excluded from these graduate course units.

CAPSTONE REQUIREMENT

All students must take and pass a Comprehensive Oral Examination after their first year. By coursework and research paper, students must also pass an Oral Qualifying Examination. Dissertation must be filed during their last quarter in residence or while on filing fee leave of absence on or before the deadline.

PhD Committee: Chair: _____

Member: _____

Member: _____

Comprehensive Exam: _____/_____/_____ Dissertation in Grad Div: _____/_____/_____

Oral Qualifying Exam: _____/_____/_____

COMP EXAM CONDITIONS:

PhD DEGREE REQUIREMENTS SATISFIED: _____
Quarter/Year

DEPT GRADUATE ADVISOR SIGNATURE: _____

_____
Print Name

DRAFT POLICY REVISIONS

Regents Policy 3103: POLICY ON PROFESSIONAL DEGREE SUPPLEMENTAL TUITION*

(1) Professional Degree Supplemental Tuition shall be assessed to students enrolled in graduate professional degree programs, as determined by The Regents, to sustain and enhance the quality of the professional schools' academic programs and services, as well as to assist programs in achieving and maintaining excellence.

(2) The Regents affirm the public mission of all of the University's academic programs and support achieving and maintaining the excellence that elevates programs charging Professional Degree Supplemental Tuition to be among the best programs in the country, public or private.

(3) The President, based on the recommendation of the Provost, shall submit for The Regents' approval Professional Degree Supplemental Tuition levels from the campuses, within the context of Presidential guidelines and requirements developed by the Provost and based on Regental principles articulated in this policy. Changes in these guidelines should be made in consultation with the students, faculty, and administrative leadership on the campuses and the Office of the President.

(4) Professional Degree Supplemental Tuition should not be charged by programs awarding a Master of Arts and/or Doctor of Philosophy degree. However, Master of Arts programs for which the Regents have approved Professional Degree Supplemental Tuition charges prior to June 2013 may continue to levy the charge given ongoing approvals by the Regents. If a program awarding a Master of Arts degree wishes to charge Professional Degree Supplemental Tuition for the first time after June 2013, the Provost will consider whether or not this is appropriate. Other characteristics of programs proposing to charge Professional Degree Supplemental Tuition for the first time are discussed further in the Presidential guidelines; program characteristics include but are not limited to requiring accreditation or meeting licensure requirements, as well as training graduates for very specific and targeted jobs.

(5) Revenue from Professional Degree Supplemental Tuition will remain with the campuses. It is the policy of The Regents that State support for professional schools should not decline, in the event that professional differential fees increase.

(6) The Regents adopt the principle that different professional programs in the same discipline at different campuses may have fees set at different levels; and that in doing so, The Regents confirm the commitment to maintaining a single fee level for in-state undergraduate students for all campuses across the system, a single fee level for out-of-state undergraduate students for all campuses across the system, a single fee level for in-state graduate academic students for all campuses across the system, and a single fee level for out-of-state graduate academic students for all campuses across the system.

(7) The Regents charge the Provost with responsibility for ensuring that the leadership of each campus engages in appropriate multi-year planning of Professional Degree Supplemental Tuition increases for each professional degree program in a manner that effectively advances the program's mission and strategic academic plan, and which adheres to the following principles articulated by the Regents:

(A) When setting Professional Degree Supplemental Tuition, programs consider the total cost of education as well as other market-based factors (such as scholarship and grant support) that permit the degree program to compete successfully for students;

(B) Access and inclusion are among the University's core commitments, and student affordability is a vitally important component to a public education system. Any increases in Professional Degree Supplemental Tuition must be justified by programmatic and financial needs, but also must not adversely affect the University's commitment to access, inclusion, and keeping the door open for students interested in pursuing public interest careers, with the understanding that the context of what is possible in terms of diversity varies from program to program;

(C) The University is committed to ensuring the inclusion of diverse populations in all its academic programs, including programs charging Professional Degree Supplemental Tuition, and that each have strategies for the inclusion of underrepresented groups including educationally and economically disadvantaged groups. In setting Professional Degree Supplemental Tuition, the Regents charge the Provost with developing guidelines that do not allow the institution of Professional Degree Supplemental Tuition which may adversely affect the representation of underrepresented students in professional programs. The Regents expect the Provost to not move forward for Regental approval Professional Degree Supplemental Tuition proposals for programs which have not demonstrated a commitment or articulated a plan related to these principles. Programs goals related to inclusion should be consistent with Regents Policy 4400 (Policy on University of California Diversity Statement) and include a range of efforts and initiatives that support the inclusion of underrepresented groups and consider the impact of institutional climate within programs on all community members.

(D) Each program is responsible for establishing and justifying a set of peer institutions to be used for all elements of its planning processes with regards to academic quality, total charges, financial aid, diversity, and faculty compensation. The University is committed to ensuring that total charges shall not substantially exceed those in similar programs across the country. The University is also committed to ensuring that expected student debt levels for the University's

programs remain at or below expected student debt levels at comparable degree programs at other comparable institutions;

(E) ***[Statement highlighted in green is still under consideration by the Task Force, and has not achieved consensus.]*** It is the policy of the Regents that financial aid sources should be supplemented by an amount equivalent to at least 33 percent of new Professional Degree Supplemental Tuition revenue, or by an amount necessary to ensure that financial aid sources are equivalent to at least 33 percent of all Professional Degree Supplemental Tuition revenue. Financial aid targeted for students enrolled in professional degree programs is necessary to ensure access to the degree program, as well as to minimize financial barriers to the pursuit of careers in public service. Debt from attending professional degree programs should not unduly restrict students' career decisions. Programs charging Professional Degree Supplemental Tuition shall have plans to address the financial aid needs of its students and campuses should regularly evaluate and report on the effectiveness of these financial aid measures.

(F) The Regents would view more favorably Professional Degree Supplemental Tuition proposals that enjoy the support of a unit's faculty and student body; therefore, programs are required to consult with students and faculty when determining proposed Professional Degree Supplemental Tuition. Consultation serves as an opportunity for engagement of students and faculty in program development and decision-making, provides an opportunity for understanding the impact of revenue increases or shortages on program quality and excellence, fosters open communication and transparency with administrative leadership, and provides timely notification of tuition levels for planning purposes.

(8) The Provost will provide further guidance and coordination as needed to the campuses, and coordinate submission of the Professional Degree Supplemental Tuition proposals to The Regents for action.

(9) Chancellors will carefully review Professional Degree Supplemental Tuition proposals and the supporting plans concerning financial aid, loan forgiveness, outreach, evaluation, and implementation of corrective measures if needed (such as a Professional Degree Supplemental Tuition rollback, freeze, limit on future increases, or other financial and/or non-financial measures), and forward the Professional Degree Supplemental Tuition proposals as revised to the Office of the President.

(10) The Regents shall approve Professional Degree Supplemental Tuition levels on a three-year basis in November whenever possible. Late approval of Professional Degree Supplemental Tuition levels adversely affects programs as they are unable to publicize actual tuition and fee levels to prospective students and unable to finalize financial and programmatic planning.

(11) Upon request of a professional program, with the concurrence of the Chancellor, the President, in consultation with the Provost, may consider and is authorized to reduce Professional Degree Supplemental Tuition for specific programs as the President deems appropriate and shall report those actions to The Regents.

** Nothing in this policy constitutes a contract, an offer of a contract, or a promise that any tuition or fees ultimately authorized by The Regents will be limited by any term or provision of this policy. The Regents expressly reserve the right and option, in its absolute discretion, to establish tuition or fees at any level it deems appropriate based on a full consideration of the circumstances, and nothing in this policy shall be a basis for any party to rely on tuition or fees of a specified level or based on a specified formula.*

Academic Planning Council
Comments on Self-Supporting Policy
November 2012

POLICY ON SELF -SUPPORTING GRADUATE DEGREE PROGRAMS
September 13, 2011

Self-supporting programs allow the University to serve additional students above and beyond the resources provided by the state while fulfilling demonstrated higher education and workforce needs. Currently, there are populations ~~of working adults~~ not served by UC state-supported programs who would be willing to enroll in self-supporting graduate degree programs. This policy is designed to facilitate the establishment of self-supporting programs by the University and its campuses while ensuring that these programs do not use state resources. These programs will receive no state-support; however, they have the potential to generate resources that would enhance the quality, access, and affordability of core academic programs and departments. For example, they could provide additional support for graduate students and students in state-supported programs.

1. General

~~A.~~ Self-supporting graduate degree programs must be financially independent and sustainable and not draw upon state resources or tution revenue generated by students enrolled in the University's state-supported degree programs. ~~should meet one or more of the following criteria, although meeting a single criterion is not necessarily sufficient justification for self-supporting status:~~

~~1. primarily serve a non-traditional population, such as full-time employees, mid-career professionals, international students, and/or students supported by their employers;~~

~~2. be offered through an alternative mode of delivery, such as online instruction or a hybrid model;~~

~~3. be alternatively scheduled, such as during evenings, weekends, and summers; and/or~~

~~4.~~A. ~~be offered in an alternative location (e.g., off-campus centers).~~

B. Such programs should not be undertaken if they strain the resources of the department that sponsors them or have an adverse effect on regular programs on campus. If the campus determines a graduate degree program should be offered on a self-supporting basis, such programs should be fully self-supporting upon inception or in no less than three years. Self supporting ~~within a short phase-in period, "self-supporting"~~ means that full program costs, including but not limited to faculty instructional costs, program support costs, student services costs, and overhead, should be covered by student tuition and fees or other non-state funds, including funds raised through private philanthropy. The sponsors of each proposed self-supporting program should submit a cost analysis and fiscal phase-in plan with their request for approval of proposed student tuition and fees as defined in the Implementation Guidelines.

C. By expanding self-supporting programming ~~that serves practitioners~~, the respective department may have access to additional field-based resources (working students, their employers, and field-based lecturers) that it might not otherwise be able to afford. Therefore, where appropriate, partnerships with the profession served are encouraged.

D. Courses may be offered on-campus, at appropriate off-campus locations, ~~or~~ in a combination of on-campus and off-campus facilities, or on line, using ~~. The programs may also use~~ distance technologies (computer and video-based, e-mail, etc.) as appropriate. As provided by Academic Senate Regulation 694, courses to satisfy the requirements of such programs may be given, either in whole or in part, at off-campus sites.[1]

[1] SR 694: *A school, department, or group of departments which offers a program leading to a Master's degree under the jurisdiction of a Graduate Division, may, in cooperation with University Extension, provide at a center or centers other than a*

Comment [rl1]: The University Policy Office oversees policy making at OP, revisions or redrafting of the SSP policy should be coordinated with them http://www.ucop.edu/ethics-compliance-audit-services/policy/

Comment [rl2]: Suggest this sentence be deleted, it sounds like the University is trying to justify offering SSPs, no justification is needed.

Comment [rl3]: Suggest this sentence be deleted also, examples of usefulness of SSPs to other constituencies is not necessary.

Comment [cs4]: Christina says: clearly state what a self-supporting program is, and what it is not. This is embedded in other sections but must be made clear. Ruth says the definition should differentiate between SSPs and PDSTs.

Comment [cs5]: I disagree. It is important to explicitly state the justification for SSPs. It seems to have shifted from serving "non-traditional" populations to broadening UC's reach to serve non-state funded students with the aim of generating income to support core programs.

Comment [cs6]: Christina says: The notion of "financial independence" can suggest that other things might be more "independent" as well -- and that ambiguity needs to be dealt with head-on.

Comment [cs7]: Consensus was that most of these criteria no longer fit current circumstances and are too prescriptive. The first two sentences of the policy describe the population that SSPs now aim to serve. Make intro paragraph I.A.? Any more specific criteria should be in implementation guidelines.

Comment [cs8]: Is there consensus on retaining this criterion?

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Comment [rl9]: The criteria rely on concepts that are not defined, e.g., non-traditional, alternative. Consider offering definitions before listing criteria; include "adverse effect."

Comment [rl10]: As asked in the Nov 8 APC meeting, is a self-supporting program a financial model or a delivery model? The criteria are about delivery. May need to clarify this to improve the policy.

Comment [cs11]: Define. It's defined elsewhere as 3 years. CCGA advises 2 years. Is this realistic?

II. Programs Ineligible for Self-Supporting Status

Doctor of Philosophy (Ph.D.) programs are not eligible to become self-supporting programs. In addition, an academic Master's degree program solely or primarily leading to a Ph.D. degree is not eligible to be self-supporting.

III. Relationship to State-Supported On-Campus Programs

A. Self-supporting graduate degree programs are ~~should~~ be held to the same standards of quality as regular programs, as determined by the appropriate Graduate Council. Standards of admission and performance for any student, regardless of whether the program is a self-supporting or state-supported graduate degree program are, ~~should be~~ demonstrably high. ~~, Just as in the case of state supported graduate degree programs, the standards of admission and performance~~ and are governed by the Academic Senate.

B. Any self-supporting programs should be established by academic departments or units and staffed with faculty on the same basis as state-supported programs. Teaching faculty should be appointed through regular campus processes irrespective of academic series. Certain practice oriented degree programs may warrant a higher proportion of non-regular faculty (e.g., clinical/adjunct faculty, lecturers, visitors), but that proportion must be in keeping with the standards of each campus' Graduate Council. Under no circumstances shall anyone teach in self-supporting programs whose appointment has not been subject to the appropriate academic review. Impact of the SSP on the existing graduate programs will be evaluated as a critical components of the review process.

C. The Dean of the school or college offering the self-supporting program is responsible for assuring that program publicity and marketing meet the highest standards of quality and accuracy, and the Dean is accountable to the Executive ~~Academic~~ Vice Chancellor or Provost for such representations.

D. Self-supporting graduate degree programs may be administered in cooperation with University Extension.[2] UC Extension's role is generally limited to assisting in activities that are part of the administration of the program (e.g., course enrollment, collecting tuition and fees, advertising, career services, and technical support) although UC Extension may provide more services when requested by the department. However, authority over courses, curriculum, and faculty appointment must be fully exercised by the academic unit responsible for the program.

IV. Initiation, Approval, and Review Procedures for New Self-Supporting Programs

A. Departments, groups of departments, or schools offering graduate degree programs under the jurisdiction of a Graduate Division may propose self-supporting programs.

B. Self-supporting programs should originate with an academic unit that is already authorized to conduct graduate work on the campus at the level that is at least equal to the level of the proposed graduate program.

C. The establishment of any new self-supporting graduate program shall be approved by the campus Graduate Council, Divisional Senate, Systemwide Academic Senate, campus administrators, the Chancellor, and the UC President according to established procedures and requirements as specified in the Compendium of Universitywide Review Processes for Academic Programs, Academic Units, & Research Units.[3]

Comment [cs12]: Question at Nov. 8 meeting: Should policy apply to combined undergraduate/graduate degree programs?

Comment [cs13]: Christina says: At this point, I would vote to exclude combined undergraduate/graduate degree programs, at least until we get the SSP grad programs figured out.

Comment [cs14]: Move I.B. to this section. The impact of SSPs on existing programs is one of the Senate's main concerns and should be included here.

Comment [rl15]: Revise to read "are to be held", not "should be held". "Should" is guideline language, not policy language.

Comment [rl16]: See comment above.

Comment [r17]: I made these sentences black and white, as far as quality and senate oversight of this quality.

Comment [cs18]: Faculty workload issue must be addressed here and more explicitly in guidelines.

Comment [cs19]: Christina agrees. She says: There is still an unresolved tension between whether SSP is "regular" teaching or "overload" -- and the consequences need to be thought through (e.g. requests for new faculty FTE as a result of a growing demand for the SSP).

Comment [cs20]: Incorporate points in CCGA's March 2011 memo to Divisional Graduate Councils on the review of proposed new SSPs.

campus o/the University, a program of graduate instruction designed to satisfy, in full or in part, the requirements for that degree. See http://www.universityofcalifomia.edulsenate!manuallrpart3.html#r690

[2] SR 694. See footnote 1

[3] *The UC Office of the President (UCOP) and the CCGA review proposals for all new graduate degree programs, including self-supporting and professional degree programs. Self-supporting graduate degree programs must adhere to the same UC academic standards as do other graduate degree programs* (Compendium, January 2011).

E. Graduate Councils or other duly appointed campus review bodies appointed by the Academic Senate shall review such programs as part of regularly scheduled campus program reviews, on the same basis on which regular academic programs are reviewed. Once established, the self-supporting program will be under the purview of the divisional Graduate Division, if appropriate,[4] to ensure adequate progress of students according to campus criteria.

E. If approved, such programs shall be conducted in accordance with this Policy.

F. Courses for self-supporting programs are subject to normal campus procedures for approval (i.e., approval by Committee on Courses [see Implementation Guidelines]).

V. Admission and Enrollment

A. Admission standards for self-supporting programs should be comparable ~~in effect~~ to those in effect for the state-supported programs. In many cases, there will be no comparable state-supported programs.

B. Students must be admitted to a Graduate Division through the regular admissions process in order to enroll in any program established under this policy.

C. Access to courses offered as part of these programs must be equally available to all qualified students. No preference in enrollment may be given to members of any non-University organization.

D. Admissions criteria may specify some type or period of work experience in the field, as applicable to the specific graduate degree proposed.

VI. Program Funding and Student Tuition and Fees

A. Self-supporting programs will not be funded from State General Funds and reports of state funded enrollments will exclude students in self-supporting programs. However, these enrollments will be reported to the Office of the President as a separate category which is not counted against the campus budgeted (state-funded) enrollment target. During the approved phase-in period, distribution of enrollment between state and non-state targets will conform to specifications of the phase-in plan.

B. The President is responsible for reviewing and approving any proposed program tuition and fees for self-supporting graduate degree programs and subsequent increases or decreases. The President will report annually to ~~T~~the Regents on self-supporting graduate programs and their tuition and fee levels.

C. Programs administered in cooperation with UC Extension shall follow all requirements of this policy, and tuition and fees must be set to cover all program costs as defined in ~~LB~~I.B, above.

D. Self-supporting program tuition and fees should be levied such that they will cover all program costs after a short phase-in period.

E. Self- supporting program tuition and fees should be based on a full and accurate assessment of all program costs as defined in ~~LB~~I.B. The proposed self-supporting program tuition and fees, its phase-in plan, and its justification shall be submitted with the proposal for the program to the President. When the self-supporting program tuition and fees have been fully implemented, no State General Funds (including student tuition and/or fee revenue from sources other than the program) will be provided to the program. Non-State funds can be used for a self-supporting program if a campus determines that it is necessary to meet a critical strategic need. If the program fails to reach self-support in line with its phase-in plan, state funds will be withdrawn from its support. Self-supporting programs will be periodically

[4] Some degrees in professional schools are under Graduate Council and CCGA jurisdiction.

Comment [r21]: what does LB refer to here and in the paragraph below?

Comment [cs22]: It is Roman numeral "I", section B on adverse effect.

Comment [r23]: clarification needed here - does this imply that partial state support can continue during the phase-in period?

reviewed by campus and/or systemwide audit to assure compliance to policy.

F. University employees enrolled in self-supporting degree programs are not eligible for reduced course tuition and fees. However, this provision does not preclude the option of the employee's department subsidizing a portion of the tuition and fees.

G. Program deficits including any deficits during the phase-in period, will be covered by the campuses; state funds cannot be used to cover any deficit. Campuses are encouraged to identify in advance one fund source to be used to cover deficits.

H. State-supported and self-supporting programs must separately account for their use of resources. Campuses shall not charge a "blended" tuition and fee level for any course or program (i.e., a program tuition and fee level that combines state-supported and self-supported students). However, self-supporting and state-supported students can be enrolled in the same courses so long as there is separate accounting for the self-supporting and state-supplied costs.

I. Self-supporting programs must have an articulated financial accessibility goal for their students and a student financial support plan for achieving their goal. Examples of possible student financial support plan components include providing scholarships or grants from the program's own resources (e.g., return-to-aid from program tuition and fees assessed but not from state funds or tuition and/or fees charged to students in state-supported programs, or funds raised through private philanthropy), providing tuition and fee waivers, participation in federal and/or private loan programs, and participation in other external support programs such as veterans benefits. Self-supporting programs are responsible for meeting the administrative requirements and costs of financial aid program participation.

VII. **Conversions of State-Supported Programs to Self-Supporting Programs**

REVISION HISTORY

This policy supersedes the Presidential policy of the same name dated June 24, 1996 and any guidance issued by the Budget Office prior to the issuance date of this revision.

Implementation Guidelines for the Policy on Self-Supporting Graduate Degree Programs

Program Approval

For new self-supporting graduate degree programs, campuses should obtain required program approvals. The establishment of any new self-supporting graduate program shall be approved by the campus Graduate Council, Divisional Senate, Systemwide Academic Senate, campus administrators, the Chancellor, and the UC President according to established procedures and requirements as specified in the *Compendium of Universitywide Review Processes for Academic Programs, Academic Units, & Research Units.*

Cost Analysis and Tuition & Fee Approval Request

All programs must submit an annual cost analysis to Budget and Capital Resources. This analysis includes an estimate of average costs for the campus and school in addition to direct program costs. Program costs include the direct costs of staff and faculty salaries and benefits, supplies and equipment, and financial aid. Campus and school costs are the indirect costs for items such as instruction, research, public services, academic and administrative support, and operation and maintenance of the plant.

Programs are expected to demonstrate that student tuition and fees cover full direct and indirect costs, and, to the extent that program tuition and fee revenue is insufficient to cover these costs, that only non-State fund sources (excluding student tuition and/or fee revenue from sources other than the program) are used to subsidize the program.

In addition to the cost analysis, campuses must submit a program tuition and fees approval request letter to the

Comment [r24]: we need to consider adding more detail about this issue of combining state-supported and self-supported students in the same course, at least in the implementation guidelines - this is not well understood by program proposers and reviewers.

Comment [cs25]: Christina agrees. She says: we need pro-active statements that might serve as guidelines.

Comment [cs26]: Consensus at the Nov. 8 meeting was that conversions should have different criteria and the policy should be distinct from the establishment of new SSPs.

Comment [r27]: I would like to suggest that this is a component of the policy that requires the most work, and that CCGA should be very involved in recommending language for this component. If we want to avoid difficulties with future programs that propose conversion, it is best to work with CCGA so that the committee "owns" the language that becomes policy.

Comment [cs28]: Christina agrees that CCGA should draft this section and again, wants a clear statement defining SSPs.

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Comment [cs29]: Implementation guidelines should provide a clear set of steps to be followed and perhaps an Appendix with budget templates.

Comment [cs30]: See Feb. 11, 2011 Dan Simmons letter to Provost Pitts. Although it is a response to an earlier draft of the SSP policy, it details the Senate's main concerns and makes specific implementation suggestions for alleviating those concerns.

Vice President – Budget and Capital Resources for all of their proposed self-supporting programs. Campuses must provide requested program tuition and fee levels and the percentage tuition and fee increases for each program, as well as provide information about upcoming new programs and programs operated by University Extension.

Newly proposed self-supporting programs submit the same cost analysis to Budget and Capital Resources.
Programs are expected to become fully self-supporting within three years, though campuses may continue to subsidize programs with non-State funds (excluding student tuition and/or fee revenue from sources other than the program) at their discretion. Program deficits including any deficits during the phase-in period, will be covered by the campuses; state funds cannot be used to cover any deficit. Campuses are encouraged to identify in advance one fund source to be used to cover deficits.

Faculty FTE

All faculty must be funded directly from the revenue of self-supporting programs in proportion to the faculty member's workload commitment to the program, or the program must reimburse an amount equivalent to the cost of faculty time. This includes the involvement of faculty from other departments. Alternatively, faculty can be paid for overload teaching within the 120% salary limitation that governs teaching in University Extension. Appropriate campus review committees should be vigilant to ensure that the overload option and 120% salary limitation are used appropriately. CAN WE ADD IN HERE THAT FACULTY CAN ALSO BE COMPENSATED BY DIRECTING THE FUNDS TO THEIR RESEARCH ACCOUNT?

Enrollments

Because enrollments in these programs are self-supported, they should not be included in counts of state-supported enrollment. Programs should be identified in the Corporate Student System by a separate major code and attribute flagging the enrollment as self-supporting.

Timeline

Campuses receive cost analysis templates for the next academic year in December, as well as the previous year's actual self-supporting enrollment numbers from the Corporate Student System. Campus financial statements, used in the preparation of the cost analysis, are posted online late in the month. Detailed instructions for the program tuition and fees approval request letter are also given at this time.

Templates and letters are due back to Budget and Capital Resources (BCR) by March 1. After review by BCR, templates and a summary of program tuition and fee requests are given to the President for approval, which usually happens by April. Campuses are then notified of approved program tuition and fee levels for the upcoming academic year. This information is also reported to The Regents annually.

CCGA – Discussion of SSP policy revision
March 8, 2013

The Coordinating Committee on Graduate Affairs (CCGA) discussed the current draft of the Self-Supporting Program (SSP) policy revisions at our convened meeting on March 6, 2013. All campuses had representation that participated in this discussion. While the committee focused on the delivered charge from the Academic Planning Council (APC) that concerned review criteria and process for graduate programs proposing to convert from a state-supported program to a self-supporting program, it should be noted that the committee also deliberated on two key systemwide issues/questions that require further discussion by the APC:

- **Why should any state-supported program ever be allowed to convert to a SSP?** CCGA supported strongly the view espoused by the Academic Senate members at the February 28th APC meeting, concerning.
- **To what extent should SSPs be supported to flourish in the UC system?** Significant concern was raised about the proliferation of new SSPs, and how the creation of these new stand-alone programs are being controlled within each campus and within the system.

For newly approved SSPs, CCGA's assumption has been that the graduate program would be disestablished entirely if unsuccessful in achieving the financial sustainability goals that are required of an SSP by the end of the third year of operation. However, with this in mind, the future guideline that CCGA will issue, in follow-up to the future issue of the Presidential SSP Policy, will include a requirement that each new SSP provide detailed information about procedures for closing of the program if it is unsuccessful, including, but not limited to the exit strategy for students who may be enrolled at the time the program is deemed unsuccessful. Additionally, all future SSP proposals will require review by UCPB.

If conversions are allowed in the future, CCGA will expect the following:

- Concurrent review of the proposal by UCPB
- Degree programs that are proposing to convert must be aware that reconversion back to a state-supported program is not guaranteed if the SSP fails to be sustainable.
- Complete proposals that address and justify their responses to each of the following areas (including proposals without any changes in curriculum of the previously approved state-supported program):
    - Impact on accessibility of the program to students.
    - Financial aid plan for the new program.
    - Provision that students already enrolled in the state-supported program at the time of conversion are not adversely affected financially by the change in fees.
    - Impact on existing and future faculty; instructional plan for the converted program.
    - Impact on other programs within the department, school, and campus.
    - Impact on the UC system, as it relates to similar degree programs at other campuses.
    - Context of this conversion within the overall campus plan.
    - Inclusion of a "fallback" plan if the SSP is unsuccessful, including documentation from the campus to support this plan. CCGA acknowledged that revenues to be gained from a successful SSP will reward the program/department/school, but the unsuccessful attempt to convert to an SSP will create burden not only on the program/department/school, but likely on the entire campus (ultimately the EVC's budget that may disadvantage other programs to re-establish the state-support again for the failed program).
    - Detailed information about procedures for closing of the program if it is unsuccessful, including, but not limited to the exit strategy for students who may be enrolled at the time the program is deemed unsuccessful.
    - **Conversions would only be considered for academically meritorious programs.** To assure this criterion is met, the proposal must include most the recent Academic Review (by external peer reviewers, as per the campus usual review process for academic programs) of the program and the program's response to any deficiencies / concerns that were raised in the review process (if done within the last five years). If an academic review has not been done within the past five years, the program is not eligible for consideration of conversion until a rigorous review has been completed, which must be submitted with the proposal.