# Agenda

**Graduate Council**  
**Thursday, June 4, 2015**  
**9:10 – 11:00 am**  
**Academic Senate Conference Room**  
**Room 220 University Office Building**

## Action

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:10 – 9:15</td>
<td>Approve Minutes of the May 21, 2015 meeting</td>
</tr>
</tbody>
</table>

## Information/Discussion

### 2. Announcements

- A. Chair of the Graduate Council
- B. CCGA Representative
- C. Graduate Student Council Representative
- D. Dean of the Graduate Division

## Discussion/Action

### 3. Courses and Programs Subcommittee

#### A. Approval of Courses:

1. ENSC 205/MCBL 201/PLPA 201 *(DELETE)* - Functional Diversity of Prokaryotes
2. PLPA 207 *(CHANGE)* - Bacterial and Viral Diseases of Plants

*Course is associated with a program change on the agenda.

#### B. Approval of Program Changes

1. Environmental Sciences/Microbiology – removing course requirements (ENSC 205/MCBL 201/PLPA 201)  
2. Plant Biology – combining two MS degree offers into one  
3. Economics PhD program change – limits on field exams  
4. Economics PhD program change – Core GPA Requirement  
5. Bioengineering – enhancing list of approved bioscience graduate courses  
6. SoBA – change professional graduate program admission requirements  
7. Plant Pathology – MS & PhD program change (PLPA 207)
Coversheet for Request for Approval
To Modify Graduate Program Degree Requirements

<table>
<thead>
<tr>
<th>Program</th>
<th>Environmental Sciences Graduate Program</th>
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<td>Yes □ No</td>
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<td></td>
</tr>
<tr>
<td>Date</td>
<td>5/13/15</td>
</tr>
<tr>
<td>Proposed Effective Date</td>
<td>Winter 2016</td>
</tr>
</tbody>
</table>

Faculty Contact: Dr. Jirka Simunek
Prepared by: John Herring

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Phone: X27854
Email: john.herring@ucr.edu
Phone: x22441

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

- Admission requirements
- Unit requirements
- Professional Development Plan
- Examination requirements
- Time-to-degree
- Designated Emphasis
- Course requirements — course changes/new courses MUST be submitted in CRAMS simultaneously with program change/new program submission.
- Specializations
- Other (please describe):

Does this program change affect any other programs? If yes, check the box.

1. If the program change involves changes to any existing courses (deleting courses, changing existing courses, or adding new courses), the course changes MUST be submitted in CRAMS simultaneously with the program change submission so that Graduate Council can review all affected courses with the proposed program change.

2. Proposal must include a cover letter from the Dean, Associate Dean, Chair, Director or Program Advisor as appropriate, taking care to briefly describe the proposed modifications and justification for the request.

3. Attached proposal must include the proposed modifications as formatted in the example below. The existing requirements must be on the left column, and the proposed revisions on the right. Proposed additions must be underlined and deletions must be stricken.

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Faculty Approval Date: Indicate the date of the faculty vote

Department Chair / Program Director: Please type name(s) as appropriate
Signature: Please include signature(s) as appropriate
Date: Date signed

Checklist of Required Attachments/Appendices (please check to verify inclusion):

- Dean/Associate Dean/Chair or Program Advisor Cover Letter.
- Completed Coversheet for Request for Approval To Modify Graduate Program Degree Requirements.
- Revised Catalogue/Website Copy in proper table format including Justification as indicated above. Must be signed and dated.
May 21, 2015

RE: ENSC Grad Program Change

To whom it may concern,

We would like to amend the Environmental Microbiology track in the Graduate Program for Environmental Sciences by deleting the requirement for students to complete the MCBL 201 course, since the MCBL 201 course is being deleted from the Catalog. The faculty involved in the Environmental Sciences Graduate Program voted and approved this change.

Do not hesitate to contact me if you have any questions.

Sincerely yours,

[Signature]

Jiří Simůnek
Professor and Hydrologist
Department of Environmental Sciences
University of California Riverside
Phone: (951) 827-7854
Fax: (951) 827-3993
Email: Jiri.Simunek@ucr.edu
http://envisci.ucr.edu/faculty/simunek.html
Existing

Graduate Program

Subject abbreviation: ENSC College of Natural and Agricultural Sciences

James Sickman, Ph.D., Director Jirka Simunek, Ph.D., Graduate Advisor John Herring, Student Affairs Officer(951) 827-2441; envisci@ucr.edu

The Environmental Sciences Graduate Program offers the M.S. and Ph.D. degrees in Environmental Sciences. Advanced training in Environmental Sciences is becoming increasingly necessary to address complex problems involving natural resources and environmental quality. Although this task frequently requires specialized knowledge in various fields of science, it also requires understanding and integration of a wide variety of interacting physical, chemical, biological, and societal influences. This interaction makes graduate study in environmental sciences distinct from many other scientific fields.

We have designed our program to offer advanced training in a number of specialized field areas within environmental sciences, operating within a single graduate degree program administered by the Department of Environmental Sciences. Students trained in the Environmental Sciences Graduate Program can fill many areas of expertise needed in the state and nation. Potential career opportunities exist at regulatory agencies, consulting firms, government and academic research institutions, and industrial research facilities.

Admission Entry to the program requires completion of a baccalaureate degree in a field appropriate as preparation for graduate study in environmental sciences. Students normally will come to the program from an environmental sciences related discipline such as atmospheric science, aquatic science, earth science, environmental chemistry, hydrology, or soil science; a basic science such as biology, chemistry, or physics; or in a social science discipline such as economics, political science, geography, or sociology. Students may conduct research under the supervision of a sponsoring faculty member in any of the following field areas. Students must specify a field area for entry into the program.

In addition to the following requirements, all applicants must meet the general requirements as set forth in this catalog under the Graduate Studies section.

Proposed

[No Change]

[No Change]

[No Change]

[No Change]

[No Change]
Environmental Chemistry and Ecotoxicology  The Environmental Chemistry and Ecotoxicology field area focuses on the sources, physical and chemical transformations, and removal processes of chemicals in soil, water, and air, and their impacts on ecological systems.

**Entrance requirements**  There are no entrance requirements for the Environmental Chemistry area beyond the general requirements for admission to the ESGP. For Ecotoxicology, prospective students would be expected to have had courses in General Biology/Zoology and Organic Chemistry. Students who do not have sufficient background to take the core course or specific elective courses may, however, need to first take prerequisite courses.

Environmental Microbiology  The Environmental Microbiology field area encompasses the study of microbial processes in natural and agricultural ecosystems and the effects of microorganisms on environmental processes and environmental quality. Research topics include fundamental research on microbial physiology, genetics, and ecology as related to the environment, applied research on microbial effects on the fate and transport of pollutants, anthropogenic effects on microbial communities, fate and transport of human pathogenic microorganisms in the environment, and the application of microorganisms and microbial assays as indicators of soil and water quality.

**Entrance requirements**  Students admitted to the Environmental Microbiology field area are expected to have a baccalaureate degree in biology, microbiology, or closely related field or demonstration of extensive background in biology and microbiology. Recommended prior coursework includes chemistry (general, organic, and biochemistry), biology (general and advanced course work), microbiology (general), and statistics (general). Deficiencies in these areas must be remedied during the first year of graduate school.

Environmental and Natural Resource Economics and Policy  The economics and policy field area focuses on the human aspects of environmental problems. Coursework emphasizes training in the traditional areas of environmental and natural resource economics, including welfare theory, externalities, pollution control, resource extraction, and non-market valuation, but also in sustainability, environmental management, and environmental policy. Research topics could include the environmental impacts of agriculture, transportation and urbanization, land use in poor and industrialized countries, international trade and the environment, climate change, and methodological advances in non-market valuation, to name just a few. Training in this field enables a student to analyze and address a wide variety of environmental policy issues.

**Entrance requirements**  Students admitted to the Environmental and Natural Resource Economics and Policy field area normally will have completed a baccalaureate degree in the natural sciences, social sciences, or engineering. At least two undergraduate courses in economics and statistics are recommended. Students who do not have sufficient background to take the core courses or field courses may need to first take prerequisite courses.
Soil and Water Sciences The Soil and Water Science field area offers comprehensive training in the chemistry, physics, biology, and ecology of soils, surface waters and wetlands. Students can specialize in a variety of areas, including soil and aquatic chemistry, hydrology, limnology, soil-plant relations, biogeochemistry, bioremediation, geomicrobiology, contaminant fate and transport, water resources management, hillslope processes, soil genesis, soil mineralogy and geomorphology, and related areas.

Entrance requirements Admission to the Soil and Water Sciences field area requires a baccalaureate degree with preparation in both physical and life sciences. It is recommended that students have completed one year of general chemistry, as well as courses in general physics, organic chemistry, calculus through integrals, general biology, statistics, and physical geology or physical geography.

Environmental Sciences and Management The Environmental Sciences and Management field area is designed to serve students seeking interdisciplinary training in environmental research. Students enrolled in this field area will be expected to pursue a rigorous research plan that involves research in one or more of the following areas: science, management, or policy. Students will have the opportunity to select study committees from a spectrum of environmental disciplines.

Entrance requirements There are no additional entrance requirements for this field area beyond those to enter the graduate program.

Course Work The Ph.D. and M.S. degree programs both require completion of the courses given below, which are specific to each field area. Students with a M.S. objective may need to take additional courses to fulfill the requirements of the Plan I (Thesis) or Plan II (Comprehensive Examination) options. Upon acceptance to the program, the student will select an Advisory Committee made up of three members of the participating faculty in the ESGP to assist in the planning of the individualized curriculum. Electives are chosen in consultation with the Advisory Committee. Students are encouraged to attend a seminar each quarter (to be chosen in consultation with the major advisor). Students must complete 2 units of ENSC 401 (Professional Development in Environmental Sciences) within their first year of entering the ESGP. There is no foreign language requirement for the program.

Environmental Chemistry and Ecotoxicology All students must complete one core course: ENSC 200/ENTX 200/CHEM 246.

Students focusing on Environmental Chemistry must complete 4 electives from the following list, of which at least 2 must be at the graduate level:

ENSC 104, ENSC 127, ENSC 133/MCBL 133, ENSC 135/ENTX 135/CHEM 135, ENSC 136/CHEM 136, ENSC 214, ENSC 217, ENSC 224, ENSC 225, ENSC 232, ENTX 200L, ENTX 244/CHEM 244, ENTX 245/CHEM 245
Students focusing on Ecotoxicology must complete: ENTX 201 and ENTX 208 and take at least two electives from the following list, one of which must be at the graduate level: ENSC 214, ENSC 217, ENSC 224, ENSC 225, ENSC 232, ENTX 200L, ENTX 244/CHEM 244, ENTX 245/CHEM 245, ENTX 154, ENTX 205

Environmental Microbiology Students must complete the following core courses: MCBL 201, MCBL 221, MCBL 211, and at least 4 elective courses (or 12 credit hours) approved by their advisor, three of which must be at the graduate level.

Environmental and Natural Resource Economics and Policy Course requirements include: core course sequences consisting of ECON 200A, ECON 200B, ECON 200C and ECON 205A, ECON 205B, ECON 205C; field course sequence consisting of ECON 207, ECON 208, ECON 209; and three elective courses comprised of upper division undergraduate courses and/or graduate courses approved by their advisor. Students must earn a satisfactory score on the doctoral cumulative examination in microeconomic theory, attain a “B” average in each of the core and field course sequences, and pass the doctoral qualifying examination with written and oral components.

No student will be given more than three attempts to achieve a satisfactory grade on the microeconomic theory cumulative examination.

Faculty approval Date: 18 May 2015

Justification: MCBL 201 is being deleted therefore the Environmental Sciences Department is deleting MCBL 201 out of the Environmental Microbiology track in the Graduate Program for Environmental Sciences.
Coversheet for Request for Approval
To Modify Graduate Program Degree Requirements

<table>
<thead>
<tr>
<th>Program</th>
<th>Microbiology Graduate Program</th>
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<tbody>
<tr>
<td>Is this an interdepartmental program?</td>
<td>☑ Yes ☐ No</td>
</tr>
<tr>
<td>If an interdepartmental program, list other involved programs</td>
<td>Plant Pathology</td>
</tr>
<tr>
<td>Department/Academic Unit/School</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Date</td>
<td>5/13/2015</td>
</tr>
<tr>
<td>Proposed Effective Date</td>
<td>Winter 2016</td>
</tr>
</tbody>
</table>

Faculty Contact: Wenbo Ma
Email: wenbo.ma@ucr.edu
Phone: 951.827.4349

Prepared by: Jammy Yang
Email: jammy.yang@ucr.edu
Phone: 951.827.5688

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

- ☑ Admission requirements
- ☐ Unit requirements
- ☐ Professional Development Plan
- ☐ Examination requirements
- ☐ Time-to-degree
- ☐ Designated Emphasis
- ☑ Course requirements – course changes/new courses MUST be submitted in CRAMS simultaneously with program change/new program submission.
- ☐ Specializations
- ☐ Other (please describe): 

☐ Does this program change affect any other programs? If yes, check the box.

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2. Proposal must include a cover letter from the Dean, Associate Dean, Chair, Director or Program Advisor as appropriate, taking care to briefly describe the proposed modifications and justification for the request.

3. Attached proposal must include the proposed modifications as formatted in the example below. The existing requirements must be on the left column, and the proposed revisions on the right. Proposed additions must be underlined and deletions must be stricken.

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Justification: The Justification should include examples such as impact on time to degree, expected impact on employment prospects, expected impact on recruitment. Please address whether current students will be permitted to switch to take advantage of the revisions. If so what will the approval process be?

Faculty Approval Date: Indicate the date of the faculty vote

Department Chair / Program Director: Please type name(s) as appropriate
Signature: Please include signature(s) as appropriate
Date: Date signed

Checklist of Required Attachments/Appendices (please check to verify inclusion):

- ☑ Dean/Associate Dean/Chair or Program Advisor Cover Letter.
- ☑ Completed Coversheet for Request for Approval To Modify Graduate Program Degree Requirements.
- ☑ Revised Catalogue/Website Copy in proper table format including Justification as indicated above. Must be signed and dated.
Proposed Change

- Removing MCBL 201

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<td><strong>Microbiology Graduate Program</strong></td>
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<td><strong>Course work</strong> The program is designed to prepare students for teaching and research careers in colleges and universities, as well as basic and applied research in private, industrial and government laboratories. To attain this goal, a three-tiered curriculum has been designed whereby students are expected to complete the following:</td>
<td><strong>Course work</strong> The program is designed to prepare students for teaching and research careers in colleges and universities, as well as basic and applied research in private, industrial and government laboratories. To attain this goal, a three-tiered curriculum has been designed whereby students are expected to complete the following:</td>
</tr>
<tr>
<td>1. A core sequence of classes in microbiology: <strong>MCBL 201 (Functional Diversity of Prokaryotes)</strong> or MCBL 202 (Microbial Pathogenesis and Physiology), BIOL 221/MCBL 221 (Microbial Genetics), and MCBL 211/SWSC 211 (Microbial Ecology).</td>
<td>1. A core sequence of classes in microbiology: MCBL 202 (Microbial Pathogenesis and Physiology), BIOL 221/MCBL 221 (Microbial Genetics), and MCBL 211/SWSC 211 (Microbial Ecology).</td>
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<td>2. A selection of elective courses in microbiology and other relevant fields chosen in consultation with the student’s major professor and the advisory committee in order to develop depth in particular areas of specialization.</td>
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<td>3. Research training in specific areas of microbiology.</td>
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**Memo of Justification:**

- The course has not been offered in 6 years, since the instructor left UCR in 2008. There currently is not a faculty member able to teach the course.

**Faculty Vote Date**

- 4/23/15

[Signature] 5/28/2015
**Coversheet for Request for Approval**
**To Modify Graduate Program Degree Requirements**

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<th>Program</th>
<th>Plant Biology</th>
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Faculty Contact: Edith Allen  
Email: edith.allen@ucr.edu  
Phone: 951.827.2123

Prepared by: Jammy Yang  
Email: jammy.yang@ucr.edu  
Phone: 951.827.5688

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

- ☒ Admission requirements
- ☐ Unit requirements
- ☐ Professional Development Plan
- ☐ Examination requirements
- ☐ Time-to-degree
- ☐ Designated Emphasis

☐ Other (please describe): Combining the two MS degree offers into 1 Designated Emphasis

☐ Does this program change affect any other programs? If yes, check the box.

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Department Chair / Program Director: Please type name(s) as appropriate
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- ☒ Completed Coversheet for Request for Approval To Modify Graduate Program Degree Requirements.
Revised Catalogue/Website Copy in proper table format including Justification as indicated above. Must be signed and dated.
### Proposed Change

- The program currently has two tracks, MS in Plant Sciences or MS in Botany, under Plan I (Thesis) and Plan II (Comprehensive Examination). We propose to combine the tracks to offer one MS track in Plant Biology under Plan I (Thesis) and Plan II (Comprehensive Examination).

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<tr>
<td><strong>Graduate Program</strong>&lt;br&gt;The Department of Botany and Plant Sciences offers programs leading to the M.S. degree in Plant Biology with two tracks, Botany or Plant Science, and a program leading to Ph.D. degrees in Plant Biology or Plant Biology (Plant Genetics). Research in these programs can focus on basic and/or applied questions.</td>
<td><strong>Graduate Program</strong>&lt;br&gt;The Department of Botany and Plant Sciences offers programs leading to the M.S. and Ph.D. degrees in Plant Biology or Plant Biology (Plant Genetics). Research in these programs can focus on basic and/or applied questions.</td>
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<td><strong>Admission</strong>&lt;br&gt;Applicants who have a baccalaureate degree and who satisfy the general requirements of the university listed in the Graduate Studies section of this catalog are considered for admission to graduate status. Students applying to the Ph.D. program and domestic applicants to the M.S. program must submit GRE General Test scores (verbal, quantitative, and analytical). Regardless of the area of their major for the baccalaureate degree, students must have had, or complete soon after entering graduate school the following:&lt;br&gt;1. A year of course work in general biology and general chemistry&lt;br&gt;2. A course in genetics, biochemistry, and calculus&lt;br&gt;3. Two courses in physics and/or statistics.&lt;br&gt;Credit from these courses does not count toward the graduate degree.&lt;br&gt;Immediately after being admitted, each student should identify a faculty advisor and consult with that advisor or the graduate advisor regarding educational goals; scheduling initial course work and possible lab rotations; and forming a guidance committee. Further guidance on these matters is provided in the Botany and Plant Sciences Graduate Student Handbook.</td>
<td><strong>Admission</strong>&lt;br&gt;Applicants who have a baccalaureate degree and who satisfy the general requirements of the university listed in the Graduate Studies section of this catalog are considered for admission to graduate status. Students applying to the M.S. and Ph.D. program must submit GRE General Test scores (verbal, quantitative, and analytical). Regardless of the area of their major for the baccalaureate degree, students must have had, or complete soon after entering graduate school the following:&lt;br&gt;1. A year of course work in general biology and general chemistry&lt;br&gt;2. A year of coursework in general chemistry&lt;br&gt;3. A course in genetics, biochemistry, or ecology and calculus&lt;br&gt;4. A course in calculus.&lt;br&gt;5. Two courses in physics and/or statistics.&lt;br&gt;Credit from these courses does not count toward the graduate degree.&lt;br&gt;Immediately after being admitted, each student should identify a faculty advisor and consult with that advisor or the graduate advisor regarding educational goals; scheduling initial course work and possible lab rotations; and forming a guidance committee. Further guidance on these matters is provided in the Botany and Plant Sciences Graduate Student Handbook.</td>
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<tr>
<td><strong>Master’s Degree</strong>&lt;br&gt;The Department of Botany and Plant Sciences offers programs leading to the M.S. degree in Plant Biology with tracks in Botany or Plant Science.</td>
<td><strong>Master’s Degree</strong>&lt;br&gt;The Department of Botany and Plant Sciences offers programs leading to the M.S. degree in Plant Biology. The master’s degree may be earned under Plan I (Thesis) or Plan II (Comprehensive Examination). Students must meet all general requirements of the Graduate Division. The detailed course program is determined by the guidance committee after considering the specific interests of the student. Department requirements are as follows:</td>
</tr>
<tr>
<td><strong>Plan I (Thesis)</strong>&lt;br&gt;1. Three courses from Section I of either the Botany track or the Plant Science track M.S. list&lt;br&gt;2. Two courses from Section II. In fulfilling the Section II requirement, students may use no more than one course cross-listed by Botany and Plant Sciences and another</td>
<td><strong>Plan I (Thesis)</strong>&lt;br&gt;1. Three courses from Section I are required. Students who have taken courses comparable to those in Section I during their baccalaureate training may have a portion or all of this section waived. Recommendations for waivers should specify alternative courses and should be sent to the department educational advisory committee for approval. In such instances, however, it is expected that their programs include increased units in courses from Sections II, III, and/or IV.&lt;br&gt;2. Two courses (6 units) from Section II are required. In fulfilling the Section II requirement, students may use no more than one course cross-listed by Botany and Plant Sciences and another</td>
</tr>
</tbody>
</table>
Plan II (Comprehensive Examination)

1. Three courses from Section I of either the Botany track or Plant Science track M.S. list.

2. Two courses from Section II. In fulfilling the Section II requirement, students may use no more than one course cross-listed by Botany and Plant Sciences and another program. If such a cross-listed course is used toward fulfilling the Section II requirement, the same course may not be used toward fulfilling the Section I or III requirements.

3. At least 6 units from Section III of either the Botany track or Plant Science track M.S. list.

4. At least 6 units from Section IV for a research project or literature review, which should be described in a report to be submitted for evaluation by the comprehensive examination committee.

5. Comprehensive written and oral examinations. Students who have taken courses comparable to those in Section I during their baccalaureate training may have a portion or all of this section waived. In such instances, however, it is expected that their programs include increased units in courses from Sections II, III, and/or IV. Recommendations for waivers should specify alternative courses and should be sent to the department educational advisory committee for approval.

Seminar Requirement All full-time students must enroll in the BPSC 250 seminar during each quarter in which it is offered. Part-time students must take one BPSC 250 seminar for every 12 units of courses. One quarter per year, students may enroll in an equivalent seminar course as a replacement for the BPSC 250 seminar course. All students must present at least one BPSC 250 seminar and complete at least two quarters of BPSC 240 (or equivalent).

Plan II (Comprehensive Examination)

1. Three courses from Section I are required. Students who have taken courses comparable to those in Section I during their baccalaureate training may have a portion or all of this section waived. In such instances, however, it is expected that their programs include increased units in courses from Sections II and/or III. Recommendations for waivers should specify alternative courses and should be sent to the educational advisory committee for approval.

2. Two courses (6 units) from Section II are required. In fulfilling the Section II requirement, students may use no more than one course cross-listed by Botany and Plant Sciences and another program. If such a cross-listed course is used toward fulfilling the Section II requirement, the same course may not be used toward fulfilling the Section I or III requirements.

3. At least 12 units from Section III of either the Botany track or Plant Science track M.S. list.

4. At least 6 units from Section IV for a research project or literature review, which should be described in a report to be submitted for evaluation by the comprehensive examination committee.

5. Comprehensive written and oral examinations. Students who have taken courses comparable to those in Section I during their baccalaureate training may have a portion or all of this section waived. In such instances, however, it is expected that their programs include increased units in courses from Sections II and/or III. Recommendations for waivers should specify alternative courses and should be sent to the educational advisory committee for approval.

Seminar Requirement All full-time students must enroll in the BPSC 250 seminar during each quarter in which it is offered. Part-time students must take one BPSC 250 seminar for every 12 units of courses. All students must present at least one BPSC 250 seminar and complete at least two quarters of BPSC 240 (or equivalent). Students are encouraged to take BPSC 200A and 200B to substitute for one BPSC 240.
Courses available for fulfilling the requirement for the M.S. degree in Plant Biology:

<table>
<thead>
<tr>
<th>Section I — Upper-division undergraduate courses:</th>
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<table>
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<tr>
<th>Section II — Graduate and upper-division undergraduate courses in related departments or programs and professional development courses (i.e., BPSC 200A - BPSC 200B). Applicable courses are approved by the Graduate Educational Advisory Committee. A minimum of 6 units of course work is required. No more than 4 units may be from professional development classes.</th>
</tr>
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<tbody>
<tr>
<td>Botany track</td>
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<tr>
<td>Plant Science track</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section III — Research courses: BPSC 290 and BPSC 297</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section V — Thesis research: BPSC 299, Thesis for Plan I</td>
</tr>
<tr>
<td>Normative Time to Degree 7 quarters</td>
</tr>
</tbody>
</table>

Memo of Justification:

- The two MS tracks differ only in a few courses, with more applied courses in the Plant Sciences track and more basic courses in the Botany track. Some of our MS students who selected one track have requested to take a course in the other track so they could be trained in both basic and applied aspects of Plant Biology. The proposed Plant Biology track now includes all BPSC courses in one track, and students can select courses with their committees to fulfill the program course requirements and
according to their research interests.

Faculty Vote Date

- 2/2/15

Grad Advisor Signature Date
Coversheet for Request for Approval
To Modify Graduate Program Degree Requirements

<table>
<thead>
<tr>
<th>Program</th>
<th>Economics Ph.D. Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this an interdepartmental program?</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>If an interdepartmental program, list other involved programs</td>
<td>ECONOMICS DEPARTMENT</td>
</tr>
<tr>
<td>Department/Academic Unit/School</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>MAY 15, 2015</td>
</tr>
<tr>
<td>Proposed Effective Date</td>
<td>July 1, 2015</td>
</tr>
</tbody>
</table>

Faculty Contact: Marcelle Chauvet  
Prepared by: Gary Kuzas

Email: marcelle.chauvet@ucr.edu  
Email: gary.kuzas@ucr.edu

Phone: 2-1587  
Phone: 2-1474

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

☐ Admission requirements
☐ Unit requirements
☐ Professional Development Plan
☐ Examination requirements
☐ Time-to-degree
☐ Designated Emphasis

☐ Course requirements — course changes/new courses MUST be submitted in CRAMS simultaneously with program change/new program submission.

☐ Specializations
☐ Other (please describe): Limits on Field Exams

☐ Does this program change affect any other programs? If yes, check the box.

1. If the program change involves changes to any existing courses (deleting courses, changing existing courses, or adding new courses), the course changes MUST be submitted in CRAMS simultaneously with the program change submission so that Graduate Council can review all affected courses with the proposed program change.

2. Proposal must include a cover letter from the Dean, Associate Dean, Chair, Director or Program Advisor as appropriate, taking care to briefly describe the proposed modifications and justification for the request.

3. Attached proposal must include the proposed modifications as formatted in the example below. The existing requirements must be on the left column, and the proposed revisions on the right. Proposed additions must be underlined and deletions must be stricken.

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<td>Justification: The Justification should include examples such as impact on time to degree, expected impact on employment prospects, expected impact on recruitment. Please address whether current students will be permitted to switch to take advantage of the revisions. If so what will the approval process be?</td>
<td></td>
</tr>
</tbody>
</table>

Faculty Approval Date: Indicate the date of the faculty vote

Department Chair / Program Director: Please type name(s) as appropriate
Signature: [Signature]
Date: May 15, 2015

Date signed

Checklist of Required Attachments/Appendices (please check to verify inclusion):

☒ Dean/Associate Dean/Chair or Program Advisor Cover Letter.
☒ Completed Coversheet for Request for Approval To Modify Graduate Program Degree Requirements.
☒ Revised Catalogue/Website Copy in proper table format including Justification as indicated above. Must be signed and dated.
May 15, 2015

RE: Justification For Change in Field Exams

The catalogue information on the field exam is very vague regarding the dates of the exams and the number of attempts that students are allowed to take. This has been creating confusion with the students and faculty. The Department has decided to make the rules clearer.

Aman Ullah
Chair, Economics Department
Sproul Hall, University Of California
Riverside, CA 92521, U.S.A.

951-827-1470
951-827-5685(Fax)
e-mail: aman.ullah@ucr.edu
http://economics.ucr.edu/ullah.html
# Department of Economics  
Graduate Program

<table>
<thead>
<tr>
<th>CURRENT</th>
<th>PROPOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field Requirement</strong></td>
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</tr>
</tbody>
</table>
| All students must:  
i. complete course work in a major field  
consisting of three courses.  
and  
ii. take five additional field courses.  
Students must pass a comprehensive examination in  
their major field. Comprehensive examinations in each major  
field are given twice a year. | All students must:  
i. complete course work in a major field  
consisting of three courses.  
and  
ii. take five additional field courses in any of the fields.  
Students must pass a comprehensive examination in  
their major field. Comprehensive examinations in each major  
field are given twice a year. After completing the major field  
courses, students must take the next scheduled examination.  
The exams are given mid-Summer and if necessary at the end  
of the Fall quarter. All students can have a maximum of two  
Attempts in a given field, and can take field exams in no more  
than two fields, after completing their respective field courses. |
Coversheet for Request for Approval
To Modify Graduate Program Degree Requirements

Program: Economics Ph.D. Program

<table>
<thead>
<tr>
<th>Is this an interdepartmental program?</th>
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<tr>
<td>Department/Academic Unit/School</td>
<td>MAY 15, 2015</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>July 1, 2015</td>
<td></td>
</tr>
<tr>
<td>Proposed Effective Date</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Faculty Contact: Marcelle Chauvet
Prepared by: Gary Kuzas
Email: marcelle.chauvet@ucr.edu
Phone: 2-1587
Email: gary.kuzas@ucr.edu
Phone: 2-1474

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

- Admission requirements
- Unit requirements
- Professional Development Plan
- Examination requirements
- Time-to-degree
- Designated Emphasis
- Course requirements - course changes/new courses MUST be submitted in CRAMS simultaneously with program change/new program submission.
- Specializations
- Other (please describe): Core GPA Requirement

☐ Does this program change affect any other programs? If yes, check the box.

1. If the program change involves changes to any existing courses (deleting courses, changing existing courses, or adding new courses), the course changes MUST be submitted in CRAMS simultaneously with the program change submission so that Graduate Council can review all affected courses with the proposed program change.

2. Proposal must include a cover letter from the Dean, Associate Dean, Chair, Director or Program Advisor as appropriate, taking care to briefly describe the proposed modifications and justification for the request.

3. Attached proposal must include the proposed modifications as formatted in the example below. The existing requirements must be on the left column, and the proposed revisions on the right. Proposed additions must be underlined and deletions must be stricken.

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Justification: The Justification should include examples such as impact on time to degree, expected impact on employment prospects, expected impact on recruitment. Please address whether current students will be permitted to switch to take advantage of the revisions. If so what will the approval process be?

Faculty Approval Date: Indicate the date of the faculty vote

Department Chair / Program Director: Please type name(s) as appropriate
Signature: Date: May 15, 2015

Date signed

Checklist of Required Attachments/Appendices (please check to verify inclusion):

☑ Dean/Associate Dean/Chair or Program Advisor Cover Letter.
☑ Completed Coversheet for Request for Approval To Modify Graduate Program Degree Requirements.
☑ Revised Catalogue/Website Copy in proper table format including Justification as indicated above. Must be signed and dated.
May 15, 2015

RE: Justification for removing the B average in the Macro and Micro core sequence classes:

The requirement of a B in the first-year core courses has never been enforced in the Department. The reason is that, if the student passes the qualifying exams, which contain the material of the core courses and test the student's knowledge in a comprehensive way, then the Department finds that this evidence of knowledge of the material overrides previous grades in the first year courses. We also think that it is counterproductive for students who have passed the qualifying exams to go back to the first year courses and retake them to increase their grades if they received a grade below B in the sequence, given that they have already shown knowledge of the material in the comprehensive exam.

Given this reasoning, the Department discussed and approved eliminating this requirement.

Aman Ullah
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Riverside, CA 92521, U.S.A.
951-827-1470
951-827-5685(Fax)
e-mail: aman.ullah@ucr.edu
http://economics.ucr.edu/ullah.html

Date: May 15, 2015
# Department of Economics

**Graduate Program**

<table>
<thead>
<tr>
<th>CURRENT</th>
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<tbody>
<tr>
<td><strong>Core Requirements</strong></td>
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</tr>
<tr>
<td>1. Economic Theory</td>
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</tr>
<tr>
<td>Students must complete the following:</td>
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</tr>
<tr>
<td>a) ECON 200A, ECON 200B, ECON 200C</td>
<td>a) ECON 200A, ECON 200B, ECON 200C</td>
</tr>
<tr>
<td>(Microeconomic Theory)</td>
<td>(Microeconomic Theory)</td>
</tr>
<tr>
<td>b) ECON 201A, ECON 201B, ECON 201C</td>
<td>b) ECON 201A, ECON 201B, ECON 201C</td>
</tr>
<tr>
<td>(Macroeconomic Theory)</td>
<td>(Macroeconomic Theory)</td>
</tr>
</tbody>
</table>

All students must pass two cumulative examinations: one in microeconomic theory (covering topics encompassed in the course sequence ECON 200A, ECON 200B, and ECON 200C) and one in macroeconomic theory (covering the topics covered in ECON 201A, ECON 201B, ECON 201C). Both examinations are given at the end of the first year, and at the beginning of the fall quarter. After completing the sequence of courses, students must sit for each examination at each offering until they have passed the requirement. An unexcused failure to sit for a required examination will be regarded as a failure. All students can have two attempts. Only students who pass at least one of the exams in the first or second attempts can have a third attempt in the other failed exam. No student will be given more than three attempts to achieve a satisfactory grade on each one of the two examinations.

2. Quantitative Methods

Students must complete the following: ECON 205A, ECON 205B, ECON 205C (Econometric Methods I, II, III)

To satisfy these course requirements, students must attain a “B” average in the sequences ECON 200A, ECON 200B, and ECON 200C; ECON 201A, ECON 201B, and ECON 201C; and ECON 205A, ECON 205B, and ECON 205C. They also must receive a grade of “B-” or better in ECON 212 or ECON 213. Core courses may be waived, based on equivalent graduate work completed elsewhere. The comprehensive examinations, however, may not be waived.

---

<table>
<thead>
<tr>
<th>Signature</th>
<th>05/15/2015</th>
</tr>
</thead>
</table>

---
To: Graduate Council, University of California, Riverside
From: Valentine I. Vullev, Graduate Advisor for Bioengineering
Re: Adding NRSC 200A and 200B to the list of approved bioscience courses for the Bioengineering Interdepartmental Graduate (BIG) program

With this letter, I would like to convey a request from the Department of Bioengineering for enhancing the list of approved bioscience graduate courses that the students enrolled in the BIG program can take toward their graduate degrees.

As engineering professionals with a focus on biological and biomedical engineering, the BIG students have to develop proficiency in biology. Therefore, they are required to successfully take at least one 200-level course in biosciences. The current list of classes that meet this requirement includes courses from biochemistry (e.g., BCH 210, 211, and 212) and biology (e.g., BIOL 203 and 221, and BIOL/CMBD 200 and 201).

With the growth of the department and expanding the areas of research of our faculty, this list proves limiting for many of the BIG students. Specifically, with building research strengths in neurobioengineering, driven by the national BRAIN initiative, some of our students have dire needs to build proficiency in bioscience that is in the area of neurobiology. NRSC 200A and 200B offer the biology rigor comparable to the other approved courses in the BIG bioscience list. The focus of NRSC 200A and 200B, however, is on aspects of biology that are directly pertinent to the research interests of many of our bioengineering graduate students. The success of a graduate program is reflected by its research achievements. Therefore, adding NRSC 200A and 200B to the list approved BIG bioscience courses will serve this important stipulation.

Should you need any further information or assistance, please do not hesitate to contact me or other members of the Department of Bioengineering.

Sincerely yours,

Valentine I. Vullev
Associate Professor of Bioengineering, Chemistry (CFM), Biochemistry (CFM), and Materials Science and Engineering
Coversheet for Request for Approval  
To Modify Graduate Program Degree Requirements

<table>
<thead>
<tr>
<th>Program</th>
<th>Bioengineering</th>
</tr>
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<tbody>
<tr>
<td>Is this an interdepartmental program?</td>
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<tr>
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<td>Department/Academic Unit/School</td>
<td>Bourns College of Engineering</td>
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<td>Date</td>
<td>5/20/2015</td>
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<tr>
<td>Proposed Effective Date</td>
<td>Fall 2015</td>
</tr>
</tbody>
</table>

Faculty Contact: Val Vullev  
Email: vullev@ucr.edu  
Phone: x6239  
Prepared by: Nancy Ford  
Email: nford@engr.ucr.edu  
Phone: x5025

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

- [ ] Admission requirements
- [ ] Unit requirements
- [ ] Professional Development Plan
- [ ] Examination requirements
- [ ] Time-to-degree approved bioscience graduate courses.
- [ ] Designated Emphasis
- [ ] Course requirements — course changes/new courses MUST be submitted in CRAMS simultaneously with program change/new program submission.
- [ ] Specializations
- [ ] Other (please describe): Enhancing the list of

Does this program change affect any other programs? If yes, check the box.

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Faculty Approval Date: Indicate the date of the faculty vote

Department Chair / Program Director: Please type name(s) as appropriate
Signature: Please include signature(s) as appropriate
Date: Date signed

Checklist of Required Attachments/Appendices (please check to verify inclusion):
- [x] Dean/Associate Dean/Chair or Program Advisor Cover Letter.
- [x] Completed Coversheet for Request for Approval To Modify Graduate Program Degree Requirements.
Revised Catalogue/Website Copy in proper table format including Justification as indicated above. Must be signed and dated.
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<tr>
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| **Core Courses** All BIG graduate students are required to take at least three courses from the following six Bioengineering courses. Other courses may be substituted but must be approved by the bioengineering graduate advisor. Students from non-engineering backgrounds are also required to take BIEN 264 as one of their core course requirements.  
**Bioengineering Core**  
1. BIEN 223 - Engineering Analysis of Physiological Systems  
2. BIEN 224 - Cellular and Molecular Engineering  
3. BIEN 245 - Optical Methods in Biology, Chemistry, and Engineering  
4. BIEN 249 - Integration of Computational and Experimental Biology  
5. BIEN 264 - Biotransport Phenomena  
6. BIEN 270 - Transport with Reactions in Biological Systems  
Other required courses:  
1. One bioscience class chosen from: BCH 210, BCH 211, BCH 212, BIOL/CMDB 200, BIOL/CMDB 201, BIOL 203, BIOL 221/MCBL 221/PLPA 226, or, with consent of instructor, BMSC 229, BMSC 230, BMSC 231, BMSC 232, BMSC 234, and BMSC 235.  
2. Other courses may be substituted but must be approved by the Bioengineering Graduate Advisor.  
3. BIEN 286 - Colloquium in Bioengineering. This course is required every quarter in which it is offered.  
Additional courses may be required by the Advisory Committee depending on the student’s background and fields of interest. |

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6. BIEN 270 - Transport with Reactions in Biological Systems  
Other required courses:  
1. One bioscience class chosen from: BCH 210, BCH 211, BCH 212, BIOL/CMDB 200, BIOL/CMDB 201, BIOL 203, BIOL 221/MCBL 221/PLPA 226, or, with consent of instructor, BMSC 229, BMSC 230, BMSC 231, BMSC 232, BMSC 234, and BMSC 235 or NRSC 200A and NRSC 200B.  
2. Other courses may be substituted but must be approved by the Bioengineering Graduate Advisor.  
3. BIEN 286 - Colloquium in Bioengineering. This course is required every quarter in which it is offered.  
Additional courses may be required by the Advisory Committee depending on the student’s background and fields of interest. |

Justification:  
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<tr>
<th>Faculty Approval Date:</th>
<th>December 5, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Program Director</td>
<td>Valentine Valley</td>
</tr>
<tr>
<td>Signature</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Date</td>
<td>May 20, 2015</td>
</tr>
</tbody>
</table>
BIEN 272 Special Topics in Biomaterials and Tissue Engineering (1-2) Seminar, 1-2 hours; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced biomaterials and tissue engineering for medical applications. Explores the design, processing, characterization, and evaluation of biomaterials. Examines current development in novel materials and recent advances in their applications in tissue engineering, drug delivery, gene therapy, cell therapy, medical devices, and implants. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable as content changes to a maximum of 30 units. Cross-listed with MSE 280.

BIEN 273 Special Topics in Regenerative Engineering and Biomechanics (1-2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced regenerative engineering and biomechanics in the skeletal system. Examines biomechanics of skeletal system at the tissue and cell levels utilizing molecular biology approaches. Develops and implements regenerative methodologies for repairing damaged skeletal tissues by a thorough understanding in mechanobiology. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 30 units.

BIEN 286 Colloquium in Bioengineering (1) Colloquium, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Colloquia on current research topics in bioengineering and related fields. Presented by faculty members and visiting scientists. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIEN 287 Directed Studies (1-6) Independent study, 3-18 hours. Prerequisite(s): graduate standing, consent of instructor and graduate advisor. Faculty-directed individual study of selected topics in bioengineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 9 units.

BIEN 288 Individual Internship (1-12) Internship, 2-24 hours, written work, 1-12 hours. Prerequisite(s): graduate standing; consent of instructor. An individual apprenticeship in bioengineering with an approved professional individual or organization and academic work under the direction of a faculty member. Requires a written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

BIEN 299 Research for the Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing; consent of instructor. Designated for research in bioengineering for the M.S. Thesis or Ph.D. dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

BIEN 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): graduate standing, appointment as a teaching assistant or associate in Bioengineering. Provides supervised teaching in undergraduate courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIEN 401 Fundamentals of Proposal Preparation and Ethical Standards in Bioengineering (4) Lecture, 3 hours, discussion, 1 hour. Prerequisite(s): graduate standing. An introduction to effective proposal preparation and writing for bioengineering-related research. Also covers ethical standards of scientific research related to bioengineering. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

BIEN 402 Effective Writing for Bioengineering Research Publications (4) Lecture, 4 hours. Prerequisite(s): BIEN 401. An introduction to effective manuscript writing for bioengineering-related research publications.

Bioengineering Interdepartmental Graduate Program

Bir Bhanu, D.Sc., Interim Chair
Department Office, 205 MSE (951) 827-4303; bir.bhanu@ucr.edu

Distinguished Professors

Robert C. Hadden, Ph.D. (Chemistry)
Natalie Raikshel, Ph.D. (Botany & Plant Sciences)
Jerome S. Schultz, Ph.D. (Bioengineering)

Professors

Michael E. Adams, Ph.D. (Cell Biology & Neuroscience/Entomology)
Bhavna Anvari, Ph.D. (Biochemistry)
John Anderson, Ph.D. (Psychology)
Bir Bhanu, Ph.D. (Electrical & Computer Engineering)
David Borjanc, Ph.D. (Chemistry)
Richard Cordullo, Ph.D. (Cell Biology & Neuroscience)
Quan Cheng, Ph.D. (Chemistry)
Wilfred Chen, Ph.D. (Chemical & Environmental Engineering)
Sarjeet S. Gill, Ph.D. (Cell Biology & Neuroscience/Entomology)
Tao Jiang, Ph.D. (Computer Science)
David Johnson, Ph.D. (Biomedical Sciences)
Cynthia K. Linve, Ph.D. (Chemistry)
David Lo, Ph.D. (Biomedical Sciences)
Elizabeth Lord, Ph.D. (Botany & Plant Sciences)
Menaka Manthra-Green, Ph.D. (Cell Biology & Neuroscience)
Umer Mohiuddin, Ph.D. (Physics & Astronomy)
Dimitris Mantsakis, Ph.D. (Bioengineering)
Thomas H. Morton, Ph.D. (Chemistry)
Ashok Mulchandani, Ph.D. (Chemical & Environmental Engineering)
Nasim Myung, Ph.D. (Chemical & Environmental Engineering)
Eugene Navigli, Ph.D. (Botany & Plant Sciences)
Cengiz S. Ozkan, Ph.D. (Mechanical Engineering)
Mihr Ozkan, Ph.D. (Electrical & Computer Engineering)
Victor G. Rodgera, D.Sc. (Bioengineering)
Thomas F. Strohman, Ph.D. (Mechanical Engineering)
Prudence Talbot, Ph.D. (Cell Biology & Neuroscience)
Harry W. K. Tom, Ph.D. (Physics & Astronomy)
Kambiz Vafai, Ph.D. (Mechanical Engineering)
Jianzhong Wu, Ph.D. (Chemical & Environmental Engineering)

Yushan Yan, Ph.D. (Chemical & Environmental Engineering)

Associate Professors

Guillermo Aguilera, Ph.D. (Mechanical Engineering)
Christopher J. Bardeen, Ph.D. (Chemistry)
Sean Butler, Ph.D. (Plant Cell Biology & Chemistry)
Iryna Ehtel, Ph.D. (Biomedical Sciences)
Thomas Grieke, Ph.D. (Bioinformatics)
Jiyu Liao, Ph.D. (Biochemistry)
Stefano Lonardi, Ph.D. (Computer Science)
Michael Marcella, Ph.D. (Chemistry)
Aaron Seltz, Ph.D. (Psychology)
Valentine Vujic, Ph.D. (Biomechanics)
Sharon Walker, Ph.D. (Chemical & Environmental Engineering)

Assistant Professors

Dev K. Binner, Ph.D. (Biomedical Sciences)
Anamapa Dahanukar, Ph.D. (Entomology)
Elza Franco, Ph.D. (Mechanical Engineering)
Kasturi Ghosh, Ph.D. (Bioengineering)
Elaine Heinrich, Ph.D. (Electrical & Computer Engineering)
Huilan Li, Ph.D. (Bioengineering)
Julia Lyubovitsky, Ph.D. (Bioengineering)
Jin Nam, Ph.D. (Bioengineering)
B. Hoye Park, Ph.D. (Bioengineering)
Masaru P. Rao, Ph.D. (Mechanical Engineering)
Khalid A. Razak, Ph.D. (Psychology)
Ian Wheeler, Ph.D. (Chemical & Environmental Engineering)
Nicole I. Zurn Neder, Ph.D. (Cell Biology & Neuroscience)

Adjunct Professor

Shu-Wei Sun, Loma Linda University

Program Overview

The Bioengineering Interdepartmental Graduate Program (BIG) is the umbrella for graduate level research effort associated with the faculty in the Department of Bioengineering as well as other faculty at UCR who have an interest in training graduate students in bioengineering. The program offers graduate instruction leading to M.S. and Ph.D. degrees in Bioengineering.

Our interdisciplinary program combines a solid fundamental foundation in biological sciences and engineering, and aims to equip the students with diverse communication skills and training in the most advanced quantitative bioengineering research so that they can become leaders in their respective fields. The result is a rigorous, but exceptionally interactive and welcoming educational training for Bioengineering graduate students.

The interdisciplinary aspect of the program allows students to develop skills related to bioengineering with faculty in a broad range of disciplines. The research vision is to build strength from experts in biochemistry, biophysics, biology and engineering to focus on critical themes that impact bioengineering.


The dominant research themes of BIG are advanced techniques development, bioimaging, biophysics of cellular systems, biomaterials, drug design and delivery, tissue engineering, cellular control and regulation, and computational modeling of biological systems.
Other research areas include: high-throughput screening systems, structural bioinformatics, microfluidics, charge transfer in biological and biominetic systems, immunophysics, auditory bioengineering, molecular mechanisms of platelet activation, fatty acid contributions to obesity and diabetes, brain imaging, and bioinformatics.

Please visit the UCR website to determine the research emphasis of the various participating faculty. The research efforts of faculty in the Department of Bioengineering can be found at bioeng.ucr.edu.

**Combined B.S. + M.S. Five-Year Program**
The college offers a combined B.S. + M.S. program in Bioengineering designed to lead to a Bachelor of Science degree as well as a Master of Science degree in five years. Applicants for this program must have a high school GPA above 3.6, a combined SAT Reasoning score above 1950 (or ACT plus Writing equivalent), complete the Entry Level Writing Requirement before matriculation, and have sufficient mathematics preparation to enroll in calculus in their first quarter as freshmen.

Interested students who are entering their junior year should check with their academic advisor for information on eligibility and other details.

Students in the B.S. + M.S. program may use units from their last two technical electives from their undergraduate course work towards their M.S. degree in addition to their B.S. degree. Students may not choose which technical elective units they will use. Only the last two courses will count. To transfer the units to the M.S. degree, students must see the department to submit the proper paperwork.

**Admission**
In addition to the following requirements, all applicants must meet the general requirements as set forth in this catalog under the Graduate Studies section.

Application to the B.S. program is limited to the fall quarter.

Applicants will need to have completed coursework in chemistry, physics, math, biochemistry and biology, and engineering. Students without an undergraduate engineering degree should have excellent training in mathematics and the physical sciences.

Specific recommendations for students without an undergraduate engineering degree are:

- Two years of mathematics (equivalent UCR course = MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B).
- One year of physics (equivalent UCR course = PHYS 002A, PHYS 002B, PHYS 002C with lab).
- One year of inorganic chemistry including lab (equivalent UCR course = CHEM 001A, CHEM 001B, CHEM 001C).
- One year of organic chemistry including lab (equivalent UCR course = CHEM 112A, CHEM 112B, CHEM 112C).
- One course in biochemistry (equivalent UCR course = BIOL 110A or BIOL 110B or BIOL 110C).

- One course in molecular biology (equivalent UCR course = BIOL 107).

Students with strong academic records may be admitted with limited coursework deficiencies provided that these are satisfied by appropriate coursework taken during the first two years of graduate study.

**Language Requirement**
All international students whose first language is not English must satisfactorily complete the SPEAK test.

Students may be admitted to either the Master's or the Ph.D. program. Students in the Master's program may petition for admission into the Ph.D. program.

**Master's Program**
The M.S. program is ideal for professionals seeking greater depth in several areas of bioengineering. The degree requires a minimum of 36 quarter credits and may be completed in three to four academic quarters of full-time study. Both thesis and non-thesis options are offered for the degree program (Plan I, Thesis and Plan II, Comprehensive Examination).

Student must request permission to pursue an M.S. in Bioengineering while simultaneously pursuing a Ph.D. in a program other than Bioengineering.

**Normative Time to Degree**
Two years.

**Plan I (Thesis)**
In addition to the following requirements, all applicants must meet the requirements for Plan I as set forth in this catalog under the Graduate Studies section Master's Degree Plan I (Thesis).

**Course Requirements**
Students must satisfy the core course requirements (see Core Courses). Students must enroll in BIEN 286, Colloquium in Bioengineering, each quarter it is offered.

**Plan II (Comprehensive Examination)**
This plan is designed primarily for students who do not intend to pursue a Ph.D. in Bioengineering.

In addition to the following requirements, all applicants must meet the requirements for Plan I as set forth in this catalog under the Graduate Studies section Master's Degree Plan II (Comprehensive Examination).

**Course Requirements**
Students must satisfy the core course requirements (see Core Courses). Students must enroll in BIEN 286, Colloquium in Bioengineering, each quarter it is offered.

The comprehensive examination is prepared and administered by the Graduate Examination Committee. The student is allowed to choose between an oral and written examination. The examination covers a broad range of topics chosen from upper division undergraduate courses and graduate courses taken by M.S. students.

Subsequent to the examination, the Graduate Examination Committee issues a passing or failing grade. Students who fail in the first attempt may retake the examination at the next scheduled comprehensive examination period. No more than two attempts to pass the exam are allowed.

The M.S. Comprehensive Examination may be held at the end of any quarters throughout the year. The committee to administer the M.S. Comprehensive Examination is selected by the Graduate Advisor and approved by the Graduate Program Committee.

**Doctoral Program**
The Ph.D. program is heavily integrated with research activities and is intended for well-qualified individuals who wish to pursue leadership careers in academic or industrial research. The Ph.D. program requires approximately three years of full-time study beyond the master's degree. In consultation with a faculty advisor, Ph.D. students plan their program of study.

The doctoral dissertation is based on original research in the field of specialization. An M.S. degree is not a prerequisite for entering the Ph.D. program.

The doctoral program includes a teaching requirement, an oral and written qualifying examination, and a dissertation.

**Normative Time to Degree**
Five years.

**Course Requirements**
Students must satisfy the core course requirements (see Core Courses). Students must enroll in BIEN 286, Colloquium in Bioengineering, each quarter it is offered.

**Written Qualifying Examination**
Students in the Ph.D. program must pass a written qualifying examination that covers the fields of engineering and biology that relate to the student's dissertation project.

**Oral Qualifying Examination**
Following successful completion of the written examination, candidates for the doctoral degree must pass an oral examination, normally within three quarters of the date of their written exam. The oral examination is scheduled only after the candidate has written a proposal detailing the rationale, specific aims and approaches to be undertaken for her/his dissertation research.

**Dissertation**
A written dissertation is completed by each student.

Candidates for the degree of Ph.D. may be required to defend the dissertation in a public oral presentation at a time announced to members of the University community.

**Core Courses**
All Ph.D. students are required to take at least three courses from the following six Bioengineering courses. Other courses may be substituted but must be approved by the bioengineering graduate advisor. Students from non-engineering backgrounds are also required to take BIEN 254 as one of their core course requirements.

1. BIEN 223 - Engineering Analysis of Physiological Systems
2. BIEN 224 - Cellular and Molecular Engineering
3. BIEN 245 - Optical Methods in Biology, Chemistry, and Engineering
4. BIEN 249 - Integration of Computational and Experimental Biology
Biological Sciences

Subject abbreviation: BSLC
College of Natural and Agricultural Sciences

Raphael Zdzitewitz, Ph.D., Lead Advisor
Program Office, 1223 Pierce Hall
(951) 827-3579

The Biological Sciences interdepartmental major is not currently accepting new students. For more information, contact CNAS Undergraduate Academic Advising Center, 1223 Pierce Hall, (951) 827-7294.

Biology

Subject abbreviation: BIOL
College of Natural and Agricultural Sciences

Michael F. Allen, Ph.D., Chair
Department Office, 2745 Life Sciences/psychology Bldg.
(951) 827-5903; biology.ucr.edu

Professors

Michael F. Allen, Ph.D. (Biology/Plant Pathology)
Richard A. Catullo, Ph.D.
Mark A. Chappell, Ph.D.
Daphne Fairairn, Ph.D.
Theodore Gendron, Ph.D.
Kimberly A. Hammon, Ph.D.
Cheryl Y. Hayashi, Ph.D.
Bradley C. Hyman, Ph.D.
Dmitri Makos, Ph.D.
Leonard P. Nurney, Ph.D.
David N. Roznick, Ph.D.
Derek A. Roff, Ph.D.
Wendy G. Saltzman, Ph.D.
Mark S. Springer, Ph.D.

Professors Emeriti

Curton R. Bovell, Ph.D.
Roger D. Farley, Ph.D.
Leah T. Haimo, Ph.D.
Wilbur W. Hinkin, Ph.D.
Edward G. Platzer, Ph.D. (Biology/Nematology)
Mary V. Price, Ph.D.
John T. Rotenberg, Ph.D.

Rodolfo Ribeiro, Ph.D.
Cly A. Sassa, Ph.D.
Irwin W. Sherman, Ph.D.
Nicole P. Wierse, Ph.D.
Associate Professors

John Gately, Ph.D.
Morris F. Madero, Ph.D.
Helen K. Beihan, Ph.D.
Joel J. Sacks, Ph.D.
Assistant Professors

Kurt Anderson, Ph.D.
Christopher Clark, Ph.D.
Timothy E. Higham, Ph.D.
Jonah Polla-Scott, Ph.D.

Adjunct Faculty

Marlene Zuck, Ph.D.
Lecturer

Trey L. Kahn, Ph.D.

Cooperating Faculty

Khaled A. Razzaq, Ph.D. (Psychology)
Edith B. Allen, Ph.D. (Botany and Plant Sciences)
Emma Amstrong, Ph.D. (Plant Pathology & Microbiology)
Ring T. Carre, Ph.D. (Entomology)
Matthew Dougherty, Ph.D. (Entomology)
Mary L. Droser, Ph.D. (Earth Sciences)
Norman C. Estrada, Ph.D. (Botany and Plant Sciences)
J. Daniel Fares, Ph.D. (Entomology)
Joel M. Healy, Ph.D. (Entomology)
Nigel C. Hughes, Ph.D. (Earth Sciences)
Darren Jewett, Ph.D. (Plant Pathology & Microbiology)
Timothy D. Paine, Ph.D. (Entomology)
Richard A. Redick, Ph.D. (Entomology)
Louis J. Santoro, Ph.D. (Botany and Plant Sciences)
Jason Stajich, Ph.D. (Plant Pathology & Microbiology)
William T. Walton, Ph.D. (Entomology)
Bradley White, Ph.D. (Entomology)
Emma Wierse, Ph.D. (Plant Pathology & Microbiology)

Major

The Department of Biology offers B.A. and B.S. degrees in Biology. Both programs are based on the conviction that broad undergraduate training in biology, mathematics and the physical sciences, together with study in the humanities and social sciences, are fundamental to the education of a biologist. In addition to English composition, humanities, social sciences and the Life Sciences core curriculum (see below, Major Requirements), both degrees require at least 36 units of upper-division (numbered 100-199) biology courses. The degrees differ in the humanities and social sciences requirements; also 16 units of a foreign language are required for the B.A., whereas the B.S. requires 16 additional units in substantive courses in biology or related fields.

The research and teaching of the Department of Biology includes different levels (e.g., molecules, cells, organisms, populations, communities) and processes (e.g., development, evolution) of biological organization. An overview is presented in the introductory courses (BIOL 005A, BIOL 051A, BIOL 005B, and BIOL 051B), and emphasis is placed on the unifying principles of the discipline.

Because of the diversity within biology and the wide range of career options, much latitude is allowed in selecting upper-division biology courses for the 36 units required for the major. Each student can select courses and plan a program of study to meet her/his specific interests and career goals. For assistance with this, faculty advisors are available in the CNAS Academic Advising Center (1223 Pierce Hall, (951) 827-7294). The section below, Programs of Specialization, is provided as a guide for course selection for graduate schools, medical and health science professional schools and the broad range of careers that are possible with the Biology major.

The 36 upper-division units are selected from a list (see below) which includes courses offered by the Department of Biology (BIOL 100-199) and a limited number of courses in Biochemistry (BCH), and Cell Biology and Neuroscience (CBNS). Qualified undergraduates (GPA 3.0 or above) may participate in graduate-level biology seminar courses with consent of the instructor, and up to 4 units (with letter grade) may be included in the major.

Those who choose to obtain a B.S. degree have as a college requirement an additional 16 units in upper-division biology courses and/or substantive courses in a field or fields related to the major. The purpose of this related area is to add strength and breadth to the major and to meet specific requirements for postgraduate study or a chosen career. The substantive courses in fields related to the major may be lower or upper division, but they usually have science or mathematics prerequisites (e.g., CBNS 120, PSYC 120, CHEM 005, STAT 100A, STAT 100B, MATH 090C).

The Thomas Halder Program at the UCR School of Medicine Students in the Biology major and all others at UCR are eligible to complete admission requirements and apply for up to 24 positions reserved for UCR students in the UCR School of Medicine. Students eligible to apply to this unique pathway into the UCR medical school, called the Thomas Halder Program at the UCR School of Medicine, are those who attend UCR for at least six consecutive quarters and complete their bachelor's degree at UCR. Information on this program and general admission to the UCR medical school is provided at medschool.ucr.edu, in the school's section of this catalog, in the medical school Student Affairs Office (1682A School of Medicine Education Building, (951) 827-4334), and at orientation meetings held at UCR.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

Major Requirements

Some of the following requirements for the major in Biology may also fulfill the College's breadth requirements. Consult with a department advisor for course planning.

1. Life Sciences core curriculum (68-72 units)
   a) BIOL 005A, BIOL 051A, BIOL 005B, BIOL 051B
   b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C
   c) CHEM 121A, CHEM 121B, CHEM 121C
UNIVERSITY OF CALIFORNIA, RIVERSIDE

May 19, 2015

To: Rene Lysloff, Chair
   Courses & Programs Subcommittee of the Graduate Council

From: Prof. Rami Zwick, Assoc. Dean
       SoBA

Re: Proposed Changes to SoBA’s Professional Graduate Program Admission Requirements

First, thanks for approving our proposal to require applicants to our professional graduate programs to submit “at least one letter of recommendation” rather than the previously required 3 letters. The attached catalog revision incorporates this element.

Second, we are not proposing to eliminate the Statement of Purpose and the Statement of Personal History as requirements for admission. Rather, as explained in the rational to our proposal we propose to condense the content of the two essays into one. In particular, the applicants would be asked to address the following issues: academic preparation, purpose for seeking admission to the program, career objectives, barriers that have been overcome, etc.

The catalog entry does not refer to the specific topics of the essays; hence we propose to replace essays with essay.

The committee asked us to provide examples from other business schools that require only one essay. We have done so. The requirements for admission to a professional graduate business degree should be evaluated vis-a-vis the “industry standard” (i.e., other business schools) and not vis-à-vis other non-business graduate programs on campus.

cc: Ana Kafie, SoBA
EXECUTIVE COMMITTEE
SCHOOL OF BUSINESS ADMINISTRATION

REPORT TO THE RIVERSIDE DIVISION
January 9, 2015

To be adopted:

A Request for Approval to Change admission requirements to the School of Business Administration’s Professional Graduate Programs

Catalog entries

<table>
<thead>
<tr>
<th>Current</th>
<th>Proposed change</th>
</tr>
</thead>
<tbody>
<tr>
<td>p. 323 (middle column)</td>
<td></td>
</tr>
<tr>
<td>Graduate Programs</td>
<td>NC</td>
</tr>
<tr>
<td>The Anderson Graduate School of Management offers a variety of programs leading to the M.B.A. (Master of Business Administration) degree. These include a two-year, full-time M.B.A. program, and a Flexible M.B.A. (or FLEX M.B.A.) program, which may be completed in 19-33 months. AGSM also offers a Master of Professional Accountancy (M.P.Ac.) program and a Master of Finance (M.Fin.). The Interdepartmental Graduate Program in Management offers both the Master of Arts (M.A.) degree and the Doctor of Philosophy Degree (Ph.D.).</td>
<td></td>
</tr>
</tbody>
</table>

Admission Applications for the traditional M.B.A. program are accepted for fall, winter, and spring entry. The program is open to eligible students from all undergraduate majors. Quantitative methods (business calculus, statistics, linear algebra) is a prerequisite to the program. Qualified students who have not taken this prerequisite course may be admitted, but must meet this requirement during their first two quarters in residence. Admission to the graduate program is based on several criteria including the quality of previous academic work, scores on the Graduate Management Admission Test (GMAT) or General Record Examination (GRE), letters of recommendation, and managerial experience.

Admission Applications for the traditional M.B.A. program are accepted for fall, winter, and spring entry. The program is open to eligible students from all undergraduate majors. Quantitative methods (business calculus, statistics and linear algebra) is a prerequisite to the program. Qualified students who have not taken this prerequisite course may be admitted, but must meet this requirement during their first two quarters in residence. Admission to the graduate program is based on several criteria including the quality of previous academic work, scores on the Graduate Management Admission Test (GMAT) or General Record Examination (GRE), letter(s) of recommendation, and managerial experience.
<table>
<thead>
<tr>
<th>Applications for the M.P.Ac. program are accepted for the Fall quarter. Applications for the M.Fin. program are accepted for the Fall quarter. Coursework for the M.P.Ac. program is expected to be completed in one academic year.</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications for the Executive M.B.A. program are no longer accepted.</td>
<td>NC</td>
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</tbody>
</table>

**p. 323 (third column, bottom) and p. 324 (right column)**

**Admissions** Students interested in pursuing the M.B.A. degree program at UC Riverside’s Anderson Graduate School of Management (AGSM) must have earned a BA, or its equivalent, with training comparable to that provided by the University of California.

<table>
<thead>
<tr>
<th>Evaluation of the applicant’s file for admission to the FLEX M.B.A. degree program is similar to that of the full-time M.B.A. program and will consist of an integrated assessment of all materials (test scores, transcripts of previous academic work, essays, and letters of recommendation).</th>
<th>Evaluation of the applicant’s file for admission to the FLEX M.B.A. degree program is similar to that of the full-time M.B.A. program and will consist of an integrated assessment of all materials (test scores, transcripts of previous academic work, essay, and letter(s) of recommendation).</th>
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<tr>
<td>Applicants are required to submit scores on either the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). A minimum scholastic average of 3.0 or better is required, in most cases, for course work completed in upper-division or prior graduate study. No specific undergraduate major or course work is required for admission, though preparation in quantitative methods (such as calculus and statistics) is strongly encouraged. Students who do not have adequate quantitative preparation at the time of admission will need to complete preparatory coursework in mathematics in addition to the courses required for the degree.</td>
<td>NC</td>
</tr>
<tr>
<td>The admissions committee assesses professional and organizational experience in terms of scope or level of responsibility, evidence of contribution or success, and evidence of career progression or of growth in responsibility. No specific number of years of work experience is required.</td>
<td>NC</td>
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<td>Applicants must submit <strong>three</strong> letters of recommendation from individuals who can attest to their professional and leadership skills and to their potential for business leadership.</td>
<td>Applicants must submit <strong>at least one</strong> letter of recommendation from individuals who can attest to their professional and leadership skills and to their potential for business leadership.</td>
</tr>
<tr>
<td><strong>p. 324 (right and middle column)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Master of Finance (M.Fin.)</strong> The Department of Finance and Management Science of the A. Gary Anderson Graduate School of Management offers a Master of Finance (M.Fin.) degree. The degree program consists of a full-time one-academic-year program (or its equivalent on a part-time basis).</td>
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<tr>
<td><strong>Admission</strong> The M.Fin. is offered as a one-year program (48 units) for graduates who hold a baccalaureate degree in a field that provides sufficient quantitative background to enable successful completion of the program. Appropriate undergraduate majors include, but are not limited to, business, engineering, mathematics, statistics, and physics, among others.</td>
<td>NC</td>
</tr>
<tr>
<td>All applicants to this program must have completed a bachelor’s degree or its approved equivalent from an accredited institution, and have attained an undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applications are accepted for fall term.</td>
<td>NC</td>
</tr>
<tr>
<td>All applicants must submit scores from the Graduate Management Admissions Test</td>
<td>NC</td>
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(GMAT) or Graduate Record Exam, General Test (GRE). Applicants whose first language is not English are required to submit acceptable scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally each applicant must submit three letters of recommendation, at least two of which must be academic references. All other application requirements are specified in the graduate application or in the General UCR catalog.

Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally each applicant must submit at least one letter of recommendation. All other application requirements are specified in the graduate application or in the General UCR catalog.

p. 324 (middle and right column)

Master of Professional Accountancy (M.P.Ac.)
The Master of Professional Accountancy program provides emerging professional accountants and auditors with advanced education in audit and assurance, taxation, accounting information systems and ethics. The M.P.Ac. will be offered as a one year program (48 units) for graduates of a baccalaureate degree with a concentration or major in accounting. These students typically will be graduates of accounting programs from UCR and other colleges and universities. Students admitted to the program will have an academic profile similar to those students admitted to other master’s level programs in the Anderson Graduate School of Management.

Master of Professional Accountancy (M.P.Ac.)
The Master of Professional Accountancy program provides emerging professional accountants and auditors with advanced education in audit and assurance, taxation, accounting information systems and ethics. The M.P.Ac. is offered as a one year program (48 units) for graduates of a baccalaureate degree with a concentration or major in accounting. These students typically will be graduates of accounting programs from UCR and other colleges and universities. Students admitted to the program will have an academic profile similar to those students admitted to other master’s level programs in the Anderson Graduate School of Management.

All applicants to this program must have completed a bachelor’s degree or its approved equivalent from an accredited institution and to have attained undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applications are accepted for fall term. Students will be deemed to have a
concentration or major in accounting if his or her prior work includes 48 semester (72 quarter) units of accounting, auditing and business-related subjects, including a minimum of 24 semester (36 quarter) units in accounting and auditing subjects. The remaining 24 semester (36 quarter) units may include additional accounting subjects or other business-related subjects as listed below. Accounting and auditing courses must include Introductory Financial Accounting, Introduction to Auditing, Managerial Accounting or Cost Accounting, Intermediate Financial Accounting—at least 2 semesters or 3 quarters, and Income Taxation of Individuals or Business Entities. Business-related subjects may include courses in Accounting Information Systems, Advanced Accounting, Advanced Auditing, Advanced Taxation, Business Administration, Business Communications, Business Law, Ethics, Business Management, Computer Science/Information Systems, Economics, Finance, Marketing, Statistics, and Management Science/Operations Research.

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<th>All applicants must submit scores from the Graduate Management Admissions Test (GMAT) or Graduate Record Exam, General Test (GRE). Applicants whose first language is not English are required to submit acceptable scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction.</th>
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Rational

Following national trends in revising downward the amount of documents that are needed to be provided while applying for professional graduate programs in business, we request to reduce to one (from three) the number of letters of recommendation, and reduce to one (from two) the number of essays required.

To become more competitive and to increase the number of applications from high quality applicants, we would like to make it as easy to apply to SoBA professional graduate programs as it is to apply to Harvard, UCLA, Yale and Wharton (see examples below). Applicants to the top schools usually apply to other “safer” schools (e.g., an applicant to UCLA Anderson MBA program or USC MBA program may also apply to our program as a safety net). However, if application to a “safer” school is additional work to what has already been done to apply to the top schools it is unlikely that such an applicant would be willing to take the extra effort of applying to a lower ranked school. This is especially true for domestic students.

A smaller applicant pool means fewer highly qualified applicants, thus lower the achieving cohort. Based on data from other schools, we believe that the burden of heavy application requirements is especially a hinder for application by domestic students. High quality domestic students are sought after by top schools and requiring extra effort to apply to our graduate programs will make us less attractive to domestic students.

Regarding the essays, our experience tells us that reading one essay provides sufficient evidence to the communication and analysis strength of the applicants. The second essay is often redundant. Currently, UCR Graduate Division requires two essays: Statement of Purpose & Personal History Statement. We propose to condense the content of the two essays into one. In particular, the applicants would be asked to address the following issues: academic preparation, purpose for seeking admission to the program, career objectives, barriers that have been overcome, etc.

Similarly, since the letters of recommendations are solicited by the candidates, they are seldom diagnostic. In most cases, the second and third letters are redundant.

Examples from the professional graduate education industry

Letters of recommendation

UCLA. See the article “MBA Applications Up 32% At UCLA” (Poets and Quants, April 29, 2014, http://poetsandquants.com/2014/04/29/mba-applications-up-32-at-ucla/). The article describes how in a year (2013/14) when application volume at many schools is thought to be either flat or slightly down, applications at Anderson have risen by more than 60% in the past four years. The article continues to say that “The school attributes the increase to a variety of factors, including a reduction of the number of essays and letters of recommendation required to apply as well as increased recruiting efforts that have led to deeper engagement by applicants.”
Required essays

**Harvard.** See the article “Harvard shakes up its MBA admissions” (Fortune Magazine, May 22, 2012 [http://fortune.com/2012/05/22/harvard-shakes-up-its-mba-admissions/]). The article describe how Harvard is cutting in half the number of required essays for most applicants to its full-time MBA program and making its first round application deadline earlier than ever before.

**UCLA.** See the article “MBA Applications Up 32% At UCLA” (Poets and Quants, April 29, 2014, [http://poetsandquants.com/2014/04/29/mba-applications-up-32-at-ucla/]). The article describes how in a year (2013/14) when application volume at many schools is thought to be either flat or slightly down, applications at Anderson have risen by more than 60% in the past four years. The article continues to say that “The school attributes the increase to a variety of factors, including a reduction of the number of essays and letters of recommendation required to apply as well as increased recruiting efforts that have led to deeper engagement by applicants.”

**Yale.** The Naveen Jindal School of Management at Yale University requires “one letter of recommendation from current or past employers, community leaders, former professors, etc.” ([http://som.yale.edu/our-programs/mba/admissions/application-information/faq](http://som.yale.edu/our-programs/mba/admissions/application-information/faq)).

**Wharton.** Applicants to Wharton MBA are required to submit one required essay and another optional essay ([http://www.wharton.upenn.edu/mba/admissions/application-requirements.cfm](http://www.wharton.upenn.edu/mba/admissions/application-requirements.cfm)).

**Rutgers.** Applicants to Rutgers Business School MBA are required to submit one essay (select 1 of the 3 essay topics) and additional optional essay ([http://www.business.rutgers.edu/admissions/graduate/checklist](http://www.business.rutgers.edu/admissions/graduate/checklist)).

**USC Marshall School of Business.** One required essay and an optional essay and One letter of recommendation ([http://www.marshall.usc.edu/mba/admissions/requirements](http://www.marshall.usc.edu/mba/admissions/requirements)).

**Graziadio School of Business and Management - Pepperdine University.** One required essay ([http://bschool.pepperdine.edu/programs/full-time-mba/admission/requirements.htm](http://bschool.pepperdine.edu/programs/full-time-mba/admission/requirements.htm)).

**UNC Kenan-Flagler Business School.** One required essay and three optional essays ([http://www.kenan-flagler.unc.edu/admissions/mba/requirements](http://www.kenan-flagler.unc.edu/admissions/mba/requirements)).

**Georgetown University.** One recommendation is required for the Georgetown MBA application ([http://msb.georgetown.edu/programs/evening-MBA/admissions/info/process/instructions](http://msb.georgetown.edu/programs/evening-MBA/admissions/info/process/instructions)).

**School of Business Administration - University of Miami.** Each applicant is required to submit one letter of recommendation or the online recommendation survey form included within the online application ([http://www.bus.miami.edu/graduate-programs/full-time-mba/two-year-mba/admission-requirements/index.html](http://www.bus.miami.edu/graduate-programs/full-time-mba/two-year-mba/admission-requirements/index.html)).
Wisconsin School of Business at the University of Wisconsin – Madison. Require one essay as part of the application (http://bus.wisc.edu/mba/admissions/deadlines-requirements).

Tepper School of Business - Carnegie Mellon University. One Professional Recommendation is required.
(http://tepper.cmu.edu/prospective-students/masters/mba/admissions/apply).

Approved by SoBA Executive Committee January 9, 2015
Revised
May 19, 2015

To: Prof. Rami Zwick, Assoc. Dean
SoBA

From: Rene Lysloff, Chair
Courses & Programs Subcommittee of the Graduate Council

Re: Proposed Changes to SoBA’s Professional Graduate Program Admission Requirements

The Courses & Programs Subcommittee received the information you provided from other institutions which shows the number of letters of recommendation and required essays as two distinct issues. The Subcommittee was comfortable reducing the number of letters of recommendation if the program adds the following statement throughout the catalog copy: at least one letter of recommendation is required.

After a lengthy discussion, the committee confirmed that no other graduate program on this campus eliminates the Statement of Purpose and the Statement of Personal History as requirements for admission. Therefore, the committee feels strongly that both of these statements need to remain as requirements for admission to the program.

If you are able to revise the catalog copy to include these requirements and submit it to Sarah Miller via email no later than Wednesday, May 20th, the committee can review it at their final meeting of the academic year.

cc: Ana Kafie, SoBA
Date: December 11, 2014

To: David Lo
   Chair, Graduate Council

From: Katherine Borkovich
   Chair, Plant Pathology Graduate Program

Re: Proposed Course Changes to the Plant Pathology Graduate Program Catalog

REVISED

Master’s Degree
The Department of Plant Pathology and Microbiology offers the M.S. degree in Plant Pathology.

General university requirements are given in the Graduate Studies section of this catalog. The master’s degree in Plant Pathology is offered under Plans I or II.

Plan I (Thesis) requires 36 units of upper-division and graduate courses, of which at least 24 must be in the 200 series courses in Plant Pathology or Nematology. A maximum of 12 units may be in graduate research for the thesis.

Plan II (Comprehensive Examination) requires 36 units of upper-division and graduate courses, of which at least 18 must be in the 200-series courses in Plant Pathology or Nematology, excluding graduate research for a thesis or dissertation, and a comprehensive final examination in the major subject.

Doctoral Degree
The Department of Plant Pathology and Microbiology offers the Ph.D. degree in Plant Pathology.

Course Work The course of study normally includes, as a minimum, PLPA 200, PLPA 203, PLPA 204, PLPA 206/NEM 206, and participation in PLPA 250.

Doctoral Degree
The Department of Plant Pathology and Microbiology offers the Ph.D. degree in Plant Pathology.

Course Work The course of study requires as a minimum PLPA 120, PLPA 120L, PLPA 200, PLPA 206/NEM 206, PLPA 207, PLPA 234, PLPA 250, and PLPA 265.
Justification:

December 1, 2014

To: David Lo, Ph.D.
Chair, Graduate Council

From: Katherine A. Borkovich, Chair
Department of Plant Pathology and Microbiology

Re: Proposal to Revise the Curriculum for the Graduate Program in Plant Pathology

Below are proposed revisions for the Plant Pathology Graduate Program that are supported by the
program faculty. These changes were originally proposed in a February 28, 2014 memo to
Graduate Council. Much of the text below is contained in the original memo and is also included
here for completeness.

A faculty committee researched Plant Pathology curricula at other universities, including UC
Davis. Several alternatives were presented for discussion at faculty meetings. The final choice
was a one-year core course curriculum (see model in table, below). There are several reasons why
we believe this is the best option for our graduate program at UCR. The proposed one-year core
course curriculum eliminates redundancy, streamlines laboratory course preparation and makes it
possible to deliver our existing coursework M.S. option in one year. We believe the latter point
will make our program more attractive to international students who must pay Nonresident tuition
(NRT) for a M.S. program. A one-year curriculum also alleviates escalating costs to advisors of
Ph.D. students by not having students supported by grant funds while they are taking courses. It
enables international students to take the qualifying exam in the summer after the first year, thus
eliminating NRT costs. This curriculum also allows for exceptions for domestic or international
students to delay the qualifying exam until after the fourth quarter, provided funds are available
from the major advisor to pay NRT (for international students).

Overview of One-Year Core Course Curriculum in Plant Pathology

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Course</th>
<th>Title</th>
<th>Units</th>
<th>Lecture Hrs/Wk</th>
<th>Lab Hrs/Wk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>PLPA 120</td>
<td>Intro Plant Pathology (10 wks)</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Fall</td>
<td>PLPA 120L</td>
<td>Intro Plant Pathology Lab</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Fall</td>
<td>PLPA 234</td>
<td>Intro Mycology (10 wks)</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Fall</td>
<td>PLPA 250</td>
<td>Seminar in Plant Pathology</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Winter</td>
<td>PLPA 207</td>
<td>Bacterial and Viral Diseases of Plants (10 wks)</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Winter</td>
<td>PLPA 200</td>
<td>Fungal Diseases of Plants (10 wks)</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Winter</td>
<td>PLPA 250</td>
<td>Seminar in Plant Pathology</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Spring</td>
<td>PLPA 206</td>
<td>Phytopathogens: Nematodes (10 wk)</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Spring</td>
<td>PLPA 265</td>
<td>Colloquium on the Principles of Plant Pathology (10 wks)</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**TOTAL UNITS for YEAR 1 CORE**: 22
Detailed Description of Core Curriculum

Fall Year 1:
All students will take PLPA120/PLPA120L (4 units total) and PLPA234 (5 units). This is appropriate, as fungi and oomycetes are the most important plant pathogens. Both of these courses include a lab component; feedback from our current students indicates that they learn more when a laboratory component is included in courses.

All students take the PLPA250 Plant Pathology seminar course (1 unit/quarter) during Fall and Winter quarters every year.

Winter Year 1:
We are merging our current Plant Bacterial Diseases (PLPA203) and Plant Viral Diseases (PLPA204) courses into one 3-unit course with a laboratory component, Bacterial and Viral Diseases of Plants (PLPA207). The current instructors believe that the curriculum for these can be streamlined without sacrificing course content quality, particularly with retention of a laboratory component. The course form for PLPA207 has been submitted with this paperwork.

We will continue to offer Fungal Diseases of Plants (PLPA200), but as a 3-unit instead of 4-unit course, since most students will take PLPA234 during Fall quarter, and thus will already have some exposure to fungal pathogens. This course will have a laboratory component. Offering two courses focused on fungi and oomycetes is warranted, due to the importance of these organisms to plant disease. The course change form for PLPA200 has been submitted with this paperwork.

Spring Year 1:
Phytopathogens: Nematodes (PLPA206) will continue to be offered as a 2-unit course with a laboratory component.

We will continue to require PLPA265 (Colloquium on the Principles of Plant Pathology; 3 units), a combined Plant Pathology principles review and professional development course.

Electives:
Electives such as Molecular Plant-Microbial Interactions (PLPA230), Microbial Genetics (PLPA226) and Statistics will be taken, depending on the student’s research program.

Faculty vote:
Out of 17 eligible faculty, 12 in favor and 5 not available.