Fiscal Unit/Academic Org: Graduate School Admin - D3000
Administrating College/Academic Group: Pharmacy
Co-administering College/Academic Group: The College of Medicine

Semester Conversion Designation: Converted with minimal changes to program goals and/or curricular requirements (e.g., sub-plan/specialization name changes, changes in electives and/or prerequisites, minimal changes in overall structure of program, minimal or no changes in program goals or content)

Credit Hour Explanation

<table>
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<tr>
<th>Program credit hour requirements</th>
<th>A) Number of credit hours in current program (Quarter credit hours)</th>
<th>B) Calculated result for 2/3rds of current (Semester credit hours)</th>
<th>C) Number of credit hours required for proposed program (Semester credit hours)</th>
<th>D) Change in credit hours</th>
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<tbody>
<tr>
<td>Total minimum credit hours required for completion of program</td>
<td>120</td>
<td>80.0</td>
<td>80</td>
<td>0.0</td>
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<tr>
<td>Required credit hours offered by the unit</td>
<td>Minimum</td>
<td>31</td>
<td>20.7</td>
<td>21</td>
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<tr>
<td></td>
<td>Maximum</td>
<td>34</td>
<td>22.7</td>
<td>23</td>
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<tr>
<td>Required credit hours offered outside of the unit</td>
<td>Minimum</td>
<td>86</td>
<td>57.3</td>
<td>57</td>
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<tr>
<td></td>
<td>Maximum</td>
<td>89</td>
<td>59.3</td>
<td>59</td>
</tr>
<tr>
<td>Required prerequisite credit hours not included above</td>
<td>Minimum</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
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<tr>
<td></td>
<td>Maximum</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
</tbody>
</table>

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals

- Investigate the biochemical basis of life and disease on an interdisciplinary level where they gain fundamental and advanced knowledge in Biochemistry.
- Complete mentored laboratory research and are expected to publish at least one first-authored research publication based on their research endeavors before they graduate.
- Conduct independent research in academia, government, and industry with a wide range of career opportunities available to them.
- Training in professional development utilizing lectures, workshops, academic conferences, and/or seminars.

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No
DIRECT MEASURES (means of assessment that measure performance directly, are authentic and minimize mitigating or intervening factors)

Direct assessment methods specifically applicable to graduate programs

- Candidacy exams
- Research proposals written and grants awarded
- Thesis/dissertation oral defense and/or other oral presentation
- Thesis/dissertation (written document)
- Publications

INDIRECT MEASURES (means of assessment that are related to direct measures but are steps removed from those measures)

Additional types of indirect evidence

- Job or post-baccalaureate education placement
- Student or alumni honors/recognition achieved
- External program review
- Grade review

USE OF DATA (how the program uses or will use the evaluation data to make evidence-based improvements to the program periodically)

- Meet with students directly to discuss their performance
- Analyze and discuss trends with the unit's faculty
- Analyze and report to college/school
- Make improvements in curricular requirements (e.g., add, subtract courses)
- Make improvements in course content
- Make improvements in course delivery and learning activities within courses
- Periodically confirm that current curriculum and courses are facilitating student attainment of program goals

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major

Does this Program have a Pre-Major? No

Attachments

- OSBP Semester Conversion Proposal (Final 5-12-2011).pdf: Final Proposal
  (Program Proposal. Owner: Sanders,Peter Bernard)

Comments

- The Graduate School approves this program request. (by Myers,Dena Elizabeth on 05/31/2011 02:17 PM)
- All required components are in the attached document. (by Sanders,Peter Bernard on 05/12/2011 02:35 PM)

Workflow Information

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<th>User(s)</th>
<th>Date/Time</th>
<th>Step</th>
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<td>05/12/2011 02:36 PM</td>
<td>Submitted for Approval</td>
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<tr>
<td>Approved</td>
<td>Rafaelfortney,Jill A</td>
<td>05/26/2011 02:02 PM</td>
<td>Ad-Hoc Approval</td>
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<tr>
<td>Approved</td>
<td>Myers,Dena Elizabeth</td>
<td>05/27/2011 09:15 AM</td>
<td>Unit Approval</td>
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<td>Approved</td>
<td>Myers,Dena Elizabeth</td>
<td>05/27/2011 09:34 AM</td>
<td>College Approval</td>
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<td>Myers,Dena Elizabeth</td>
<td>05/31/2011 02:17 PM</td>
<td>GradSchool Approval</td>
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<td>Pending Approval</td>
<td>Soave,Melissa A Cameron,Erin Marie</td>
<td>05/31/2011 02:17 PM</td>
<td>CAA Approval</td>
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To: Office of Academic Affairs

From: Jill A. Rafael-Fortney, Director and Graduate Studies Chair, Ohio State Biochemistry Program

Date: May 6, 2011

Re: Semester Change Proposal for the Ohio State Biochemistry Program

The Ohio State Biochemistry Program (OSBP) is an Interdisciplinary Graduate Program that is currently under the academic direction of the Graduate School. A Lead Dean from the Life Sciences Deans, currently Dean Robert Brueggemeier, assumes direct oversight of the program. OSBP faculty members are from 6 participating Colleges (Arts & Sciences, Medicine, Engineering, Pharmacy, Veterinary Medicine, Education and Human Ecology) representing 21 different departments. The only degree offered by OSBP is a Ph.D.

The core and elective courses taken by OSBP students are taught from within the participating departments, and therefore are part of individual departmental semester change plans. Therefore, our document contains only the rationale for the required core courses and the required number of elective credits. The only courses offered directly through OSBP are: 1) First-year Student Orientation (containing research ethics as well as other instructive introductory material for new graduate students); 2) Interdisciplinary Student Seminars (student presentations series); 3) Colloquium-Advanced Biochemistry Topics (a seminar series with prestigious external speakers); and 4) Laboratory Rotations. After completing laboratory rotations during their first year, students register for Dissertation Research through their chosen advisor's departmental registration number.

The proposed curriculum plan was put together by the OSBP Curriculum Committee (Zucai Suo, Chair; Charles Bell, Thomas Magliery, and Shang-Tian Yang), in frequent consultation with the departments offering the Core Courses (Molecular & Cellular Biochemistry, Molecular Genetics, Biochemistry and Chemistry) and with the other interdisciplinary graduate programs (Molecular, Cell, and Developmental Biology -MCDB; and Biophysics) who use the same courses as core or elective courses in their own curriculum. After 14 versions, we put forth a proposal that has been accepted by all participating parties.
Program Rationale Statement

The main goal of this proposed plan is to create a flexible curriculum that provides the core knowledge necessary for graduate research in biochemistry without a net increase in instruction time. The OSBP Curriculum Committee felt that it is more important for the curriculum to be composed of "core" topics with plenty of elective time for specialization than for the required curriculum to be comprehensive.

Currently, OSBP students take 17 or 18 quarter credit hours (qch) including 2 required core courses per quarter for the first year followed by 8 qch of electives, which translates into 15~17 semester credit hours of instructional time. We propose one semester of DNA Transactions and Gene Regulation (4 semester credit hours - sch) and one year of Advanced Biochemistry (6 sch total) including Protein and Macromolecular Structure; Enzymes; and Membranes and Lipids as the core curriculum plus 6 to 8 sch of electives, recommended to be completed by the first semester of the second year. We also propose three or four 7-week rotations and limiting enrollment in the OSBP Colloquium seminar series to the first two years (in favor of the advisor selecting a participatory seminar program such as focus group or Departmental seminar after the second year). Each OSBP student is expected to join a research laboratory by the start of the first summer, after completing three or four 7-week research rotations in the first two semesters. To eliminate the registration problem for the rotations, the OSBP Curriculum Committee recommends that all first-year students register for lab rotations under the call number of the OSBP director, which will also increase oversight of the progress of first year students. Only if absolutely necessary, a student can perform a fifth or final lab rotation in the first summer term per permission of OSBP director. *Our proposed semester curriculum will enable OSBP students to finish all course work and advance to candidacy by the end of the 2nd semester in the second year.* The minimum credit hours for a student to graduate with a Ph.D. from OSU under the semester system has been set to 80. We suggest OSBP students to use the first two years to accumulate most of the required credits in order to complete their candidacy exam and progress through their Ph.D. in an average time of 5 years.

Sincerely,

Jill A. Rafael-Fortney, Ph.D.
Director and Graduate Studies Committee Chair
Ohio State Biochemistry Program
rafael-fortney.1@osu.edu

and the OSBP Curriculum Committee
List of Semester Courses
Chuck Bell, Thomas Magliery, Zucai Suo (chair), Shang-Tian Yang

Year 1 – First Semester (16 total credits)
MG 6701- DNA Transactions and Gene Regulation (14 weeks, 4 credits)
MCB/Biochem 6761-Advanced Biochemistry: Proteins and Macromolecular Structures (14 weeks, 3 credits)
OSBP 7600-First-Year Student Orientation (14 weeks, 1 credit)
OSBP 7700- Interdisciplinary Student Seminar (14 weeks, 1 credit)
OSBP 7193-2x7-week Laboratory Rotation (6 credits)
OSBP 7890- Colloquium-Advanced Biochemistry Topics (1 credit)

Year 1 – Second Semester (14 or 15 total credits)
MCB/Biochem 6762-Advanced Biochemistry: Enzymes (the first 7 weeks, 1.5 credits)
MCB/Biochem 6763-Advanced Biochemistry: Membranes and Lipids (the second 7 weeks, 1.5 credits)
1st Elective (14 weeks, 2 credits; or 7 weeks, 1.5 credits)
2nd Elective (14 weeks, 2 credits; or 7 weeks, 1.5 credits)
OSBP 7700- Interdisciplinary Student Seminar (14 weeks, 1 credit)
OSBP 7193-2x7-week Laboratory Rotation (6 credits)
OSBP 7890- Colloquium-Advanced Biochemistry Topics (1 credit)

Note: each OSBP student is expected to join a research group by the end of the second semester after three or four rotations. The rotation duration is 7 weeks.

Year 1 – Summer term (4 total credits)
Dissertation Research (4 credits)

Year 2 – First Semester (14 or 15 total credits)
3rd Elective (14 weeks, 2 credits; or 7 weeks, 1.5 credits)
4th Elective (14 weeks, 2 credits; or 7 weeks, 1.5 credits)
OSBP 7700- Interdisciplinary Student Seminar (14 weeks, 1 credit)
OSBP 7890- Colloquium-Advanced Biochemistry Topics (1 credit)
Dissertation Research (9-12 credits)

Year 2 – Second Semester (15 total credits)
4th Elective (if offered only Spring semester, 14 weeks, 2 credits; or 7 weeks, 1.5 credits)
OSBP 7700- Interdisciplinary Student Seminar (14 weeks, 1 credit)
OSBP 7890- Colloquium-Advanced Biochemistry Topics (1 credit)
Dissertation Research (10-13 credits)

Note: each 2nd year OSBP student is expected to take his or her candidacy exam during this semester.

Year 2 – Summer term (0 total credits)
No enrollment

Years 3-5 (18 total credits)
OSBP 7890- Colloquium-Advanced Biochemistry Topics (1 credit)
Dissertation Research (2 credits/Semester)

Note: Summer term enrollment post candidacy is not required.
**Summary:** In addition to seminar, rotation, ethics, literature, and research, OSBP requires students to take four core courses (10 credits) and four electives (6 to 8 credits with a minimum of 6 credits) in their first two years. The total credit hours of this 5-year plan for non-fellowship students are 81-83, which is more than 80, the minimum credit hours required for graduation. Each student is expected to select a research lab by the end of the 2nd semester after three or four rotations and take the candidacy exam during the 2nd semester of the 2nd year.

**Fellowship students:** the credit hour policies are different and the above 5-year plan for regular students needs to be adjusted. The Graduate School says that the minimum enrolled credit hours are 12 per semester and 6 per summer term before the candidacy exam. However, the Graduate School has not issued the credit hour policy for fellows who have passed the candidacy exam.

**Criteria for Electives:** although the OSBP Curriculum Committee currently does not know which courses are available to be considered to be electives, the OSBP Curriculum Committee has set up the following guidelines for a course to be considered: no seminar type; at proper levels (7000-level or above. Lower level courses may be approved if the course content is judged to be appropriate for OSBP); graded; broadly related to biochemistry. All approved electives will be grouped under topic-based categories, *e.g.* Cell Biology, Advanced Biochemistry, Spectroscopy, Protein Folding, Biophysical Chemistry, *etc.*

**Additional Notes:**
The OSBP Curriculum Committee recommends that OSBP core courses will be cross-listed between the participating Departments (Chemistry & Biochemistry, Microbiology, Molecular & Cellular Biochemistry, Molecular Genetics, and Physics) and graduate programs (Biophysics, OSBP, and MCDB) so that in the future we can always have a way to teach them. At present, we will not consider the May semester for now due to the complication of the tuition/fees structure.
OSBP Academic Advising Worksheet
Sample Full Plan-of-Study

**Core Courses**

<table>
<thead>
<tr>
<th>Department &amp; Course Number</th>
<th>Course Title</th>
<th>Credit Hrs.</th>
<th>Term/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG 701 &amp; Biochem/Chem 702</td>
<td>DNA Transactions and Gene Regulation</td>
<td>4</td>
<td>Autumn, Year 1</td>
</tr>
<tr>
<td>Successor: MG 6701</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCB/Biochem 761 &amp; Biochem/Chem 766 Successor: MCB/Biochem 6761</td>
<td>Advanced Biochemistry: Proteins and Macromolecular Structures</td>
<td>3</td>
<td>Autumn, Year 1</td>
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<tr>
<td>MCB/Biochem 762 Successor: MCB/Biochem 6762</td>
<td>Advanced Biochemistry: Enzymes</td>
<td>1.5</td>
<td>Spring, Year 1</td>
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<tr>
<td>MCB/Biochem 763 Successor: MCB/Biochem 6763</td>
<td>Advanced Biochemistry: Membranes and Lipids</td>
<td>1.5</td>
<td>Spring, Year 1</td>
</tr>
</tbody>
</table>

**Electives Courses**

<table>
<thead>
<tr>
<th>Department &amp; Course Number</th>
<th>Course Title</th>
<th>Credit Hrs.</th>
<th>Term/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD from successor electives</td>
<td>Elective 1 (OSBP Approved Elective)</td>
<td>2</td>
<td>Spring, Year 1</td>
</tr>
<tr>
<td>TBD from successor electives</td>
<td>Elective 2 (OSBP Approved Elective)</td>
<td>2</td>
<td>Spring, Year 1</td>
</tr>
<tr>
<td>TBD from successor electives</td>
<td>Elective 3 (OSBP Approved Elective)</td>
<td>2</td>
<td>Autumn, Year 2</td>
</tr>
<tr>
<td>TBD from successor electives</td>
<td>Elective 4 (OSBP Approved Elective)</td>
<td>2</td>
<td>Autumn, Year 2</td>
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</table>

**Orientation & Seminars Courses**

<table>
<thead>
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<th>Department &amp; Course Number</th>
<th>Course Title</th>
<th>Credit Hrs.</th>
<th>Term/Year</th>
</tr>
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<tbody>
<tr>
<td>OSBP 760 Successor: OSBP 7600</td>
<td>First-Year Student Orientation</td>
<td>1</td>
<td>Autumn, Year 1</td>
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<td>OSBP 796 Successor: OSBP 7700</td>
<td>Interdisciplinary Student Seminar</td>
<td>4</td>
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<td>OSBP 790 Successor: OSBP 7890</td>
<td>Colloquium-Advanced Biochemistry Topics</td>
<td>1 (x 10)</td>
<td>Autumn &amp; Spring Year 1, 2, 3, 4, &amp; 5</td>
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**Rotation & Research Courses**

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<th>Department &amp; Course Number</th>
<th>Course Title</th>
<th>Credit Hrs.</th>
<th>Term/Year</th>
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</thead>
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<td>OSBP 793 Successor: OSBP 7193</td>
<td>Laboratory Rotation</td>
<td>6 (x 2)</td>
<td>Autumn &amp; Spring, Year 1</td>
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<tr>
<td>TBD-8999</td>
<td>Research (Departmental Based)</td>
<td>38+ (total)</td>
<td>Summer, Year 1 &amp; Autumn &amp; Spring Year 2, 3, 4, &amp; 5+</td>
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</table>
Flexibility exists in designing a plan-of-study that meets OSBP curriculum requirements while giving students the opportunity to select electives that can further develop their research interests/knowledge base. This worksheet should be updated annually as necessary during annual progress meetings between students and their advisors.
OSBP Semester Transition Policy

**Transition Policy Statement**

Students currently in the program should not be negatively affected by the semester conversion since all orientation, rotation, core, seminar, and department-based research courses will continue to exist in semester form to meet curriculum requirements. All core courses are completed in a student’s first year in OSBP and this basic core curriculum schedule will not change. Therefore students that completed their first year prior to the semester conversion will no longer be taking core courses after the switch and will not be impacted. Similarly, students that start their first year after the switch will not have any transitional issues. OSBP will see to it that any course credit discontinuities that occur due to the semester conversion meet current minimum credit guidelines set by the graduate school to comply with degree completion requirements. The appropriate formula will be applied to convert quarter hours to semester hours at the appropriate time. Electives that are already completed by students will count towards degree requirements and new electives will be available to meet degree requirements upon approval by the OSBP curriculum committee. Advisory committee and progress meetings will continue to occur to allow students to adjust their individual plan-of-study to meet degree requirements before and after the semester conversion. OSBP has also adopted a formal academic advising worksheet that will be utilized with new and transitioning students to provide guidance for developing individual plans-of-study. This special academic planning step supplements the annual reports and post-candidacy reports that students complete throughout their time in OSBP to ensure that every student is making progress towards degree completion.