MEMORANDUM

TO: Craig Beyrouty
   Dean, College of Agriculture and Natural Resources

FROM: Elizabeth Beise
      Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Modify the Ph.D. in Comparative Biomedical Sciences (PCC Log No. 20122)

The proposal to modify the Ph.D. in Comparative Biomedical Sciences has been administratively approved. A copy of the approved proposal is attached.

The change is effective Fall 2021. The Graduate Catalog entry for the program will be updated by the Graduate School (contact Angela Ambrosi at aambrosi@umd.edu for more information). Please ensure that the change is reflected in all other relevant descriptive materials.

EJB/mdc

Enclosure

cc: Valerie Orlando, Chair, Senate PCC Committee
    Barbara Gill, Office of Enrollment Management
    Reka Montfort, University Senate
    Huifang Pan, Division of Information Technology
    Pam Phillips, Institutional Research, Planning & Assessment
    Lae’l Hughes-Watkins, University Archives
    Linda Yokoi, Office of the Registrar
    Brooke Liu, Graduate School
    Joe Sullivan, College of Agriculture and Natural Resources
    Xiaoping Zhu, Department of Veterinary Medical Science
**474: COMPARATIVE BIOMEDICAL SCIENCES (VMSC)**

**In Workflow**
1. D-VMSC Chair (xzhu1@umd.edu)
2. AGNR Curriculum Manager (ecooper@umd.edu; tgallman@umd.edu)
3. AGNR PCC Chair (jsull@umd.edu; mcarroll@umd.edu)
4. AGNR Dean (jsull@umd.edu)
5. Academic Affairs Curriculum Manager (mcolson@umd.edu)
6. Graduate School Curriculum Manager (aambrosi@umd.edu)
7. Graduate PCC Chair (aambrosi@umd.edu)
8. Dean of the Graduate School (sfetter@umd.edu; aambrosi@umd.edu)
9. Senate PCC Chair (mcolson@umd.edu; vorlando@umd.edu)
10. Provost Office (mcolson@umd.edu)
11. Graduate Catalog Manager (aambrosi@umd.edu)

**Approval Path**
   Xiaoping Zhu (xzhu1): Approved for D-VMSC Chair
   Tyra Monnity (tgallman): Approved for AGNR Curriculum Manager
3. Thu, 01 Apr 2021 17:24:22 GMT
   Mark Carroll (mcarroll): Rollback to Initiator
4. Fri, 02 Apr 2021 19:08:46 GMT
   Xiaoping Zhu (xzhu1): Approved for D-VMSC Chair
5. Mon, 05 Apr 2021 12:52:38 GMT
   Tyra Monnity (tgallman): Approved for AGNR Curriculum Manager
6. Mon, 26 Apr 2021 00:00:45 GMT
   Mark Carroll (mcarroll): Approved for AGNR PCC Chair
7. Mon, 26 Apr 2021 03:31:48 GMT
   Joseph Sullivan (jsull): Approved for AGNR Dean
8. Tue, 27 Apr 2021 18:13:16 GMT
   Michael Colson (mcolson): Approved for Academic Affairs Curriculum Manager
9. Mon, 03 May 2021 20:47:30 GMT
   Angela Ambrosi (aambrosi): Approved for Graduate School Curriculum Manager
10. Mon, 03 May 2021 20:48:27 GMT
    Angela Ambrosi (aambrosi): Approved for Graduate PCC Chair
11. Fri, 07 May 2021 20:23:07 GMT
    Steve Fetter (sfetter): Approved for Dean of the Graduate School
12. Sat, 08 May 2021 16:39:37 GMT
    Valerie Orlando (vorlando): Approved for Senate PCC Chair
    Michael Colson (mcolson): Approved for Provost Office

**History**
1. Sep 16, 2019 by Angela Ambrosi (aambrosi)
2. Oct 18, 2019 by William Bryan (wbryan)
3. Aug 18, 2020 by Yanjin Zhang (zhangyj)
4. Sep 8, 2020 by Michael Colson (mcolson)
5. Nov 12, 2020 by Angela Ambrosi (aambrosi)

Date Submitted: Fri, 02 Apr 2021 19:04:50 GMT

**Viewing: 474 : Comparative Biomedical Sciences (VMSC)**

Last approved: Thu, 12 Nov 2020 14:50:49 GMT

Last edit: Wed, 02 Jun 2021 17:27:54 GMT

Changes proposed by: Yanjin Zhang (zhangyj)
Proposed Action
Curriculum Change

Program Name
Comparative Biomedical Sciences (VMSC)

Program Status
Active

Effective Term
Fall 2021

Catalog Year
2021-2022

Program Level
Graduate Program

Program Type
Doctoral

Delivery Method
On Campus

Departments

<table>
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<tr>
<th>Department</th>
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<tbody>
<tr>
<td>Veterinary Medicine Program</td>
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</tbody>
</table>

Colleges

<table>
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<tr>
<th>College</th>
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<tbody>
<tr>
<td>Agriculture and Natural Resources</td>
</tr>
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Program/Major Code
VMSC

MHEC Inventory Program
Veterinary Medical Sciences

CIP Code
018017 - 018017

HEGIS
129958

Degree(s) Awarded

<table>
<thead>
<tr>
<th>Degree Awarded</th>
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</thead>
<tbody>
<tr>
<td>Doctor of Philosophy</td>
</tr>
</tbody>
</table>

Proposal Contact
Yanjin Zhang, zhangyj@umd.edu, (301) 314-6596

Proposal Summary
We wish to update the outdated curriculum of the graduate program. Total credit hours needed for the degree remain the same. Milestones and course lists are updated.

(PCC Log Number 20122)
Program and Catalog Information

Provide the catalog description of the proposed program. As part of the description, please indicate any areas of concentration or specializations that will be offered.

Comparative Biomedical Science (program code: VMSC) is run by the Department of Veterinary Medicine. The program provides graduate training in a wide variety of biomedical science-related disciplines, including virology, bacteriology, parasitology, immunology, epidemiology, pathology, and vaccinology. One of the current focuses is zoonotic infectious diseases. Cutting-edge technologies are applied in the research and state-of-art facilities are maintained in the department.

Catalog Program Requirements:

Applicants with a minimum of B.S. or equivalent or a higher degree in biological or medical sciences may be admitted to the Doctor of Philosophy (Ph.D.) program. Students must complete the course requirements of 24 credits (for candidates with B.S. or equivalent degrees) or 12 credits (for candidates with MPH, M.S. or a D.V.M., M.D. or equivalent degrees) in addition to a minimum of 12 dissertation research credits (VMSC899). Students must maintain an overall GPA of 3.0 or better in courses taken for graduate credit per Graduate School policy.

Doctoral program requirements

The plan of study must be approved by the Advisor and Chair of the Graduate Admissions and Examination Review Committee by the end of the first semester of enrollment. By the end of the fourth semester, a student should have completed their core course requirement and present a dissertation research proposal to the Advisory Committee. For entering Ph.D. candidacy, a student must pass a qualifying examination (written and oral) satisfactorily by the end of the sixth semester. A dissertation based on independent and original research must be submitted to the CBSC Program and the Graduate School. The student must present the dissertation in a public seminar and pass a final oral examination given by the Advisory Committee.

For Students with B.S. or Equivalent

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BISI712</td>
<td>Responsible Conduct of Research for Biologists</td>
<td>1</td>
</tr>
<tr>
<td>VMSC698</td>
<td>One Health Seminar</td>
<td>4</td>
</tr>
<tr>
<td>VMSC758</td>
<td>Journal Club in Comparative Biomedical Sciences</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Restricted Electives (Choose at least 10 credits from the following courses):</td>
<td>10</td>
</tr>
<tr>
<td>VMSC610</td>
<td>Recombinant Viral Vectors</td>
<td></td>
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<tr>
<td>VMSC660</td>
<td>Emerging and Re-emerging Infectious Diseases</td>
<td></td>
</tr>
<tr>
<td>VMSC670</td>
<td>Molecular Epidemiology of Infectious Diseases (Molecular Epidemiology of Infectious Diseases)</td>
<td></td>
</tr>
<tr>
<td>VMSC689</td>
<td>Use of Genomics and Proteomics in Infectious Disease</td>
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</tr>
<tr>
<td>VMSC720</td>
<td>Viral Pathogenesis</td>
<td></td>
</tr>
<tr>
<td>VMSC760</td>
<td>Immunology of Infectious Diseases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional Credits (from restricted electives or other courses with advisor’s approval)</td>
<td>5</td>
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<tr>
<td>VMSC899</td>
<td>Dissertation Research</td>
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For Students with M.S. or Equivalent:

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<tbody>
<tr>
<td>BISI712</td>
<td>Responsible Conduct of Research for Biologists</td>
<td>1</td>
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<td>VMSC758</td>
<td>Journal Club in Comparative Biomedical Sciences</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Restricted Electives (Choose 7 credits from the following):</td>
<td>7</td>
</tr>
<tr>
<td>VMSC610</td>
<td>Recombinant Viral Vectors</td>
<td></td>
</tr>
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<td>VMSC760</td>
<td>Immunology of Infectious Diseases</td>
<td></td>
</tr>
<tr>
<td>VMSC899</td>
<td>Dissertation Research</td>
<td>12</td>
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</table>

Total Credits

24
Sample plan. Provide a term by term sample plan that shows how a hypothetical student would progress through the program to completion. It should be clear the length of time it will take for a typical student to graduate. For undergraduate programs, this should be the four-year plan.

A student can graduate in around five years. If he or she completes ten credits per semester, all course work should be done within three semesters. The thesis research can be done around five years if satisfactory progress is maintained. See attached file for a sample plan of study.

Use the space below for any additional comments on the courses or other requirements selected for the revised curriculum. Typical comments may be clarifications of why certain courses are being replaced or added.

The revised curriculum includes courses currently offered in the department. Most of them are added after the original curriculum was established and reflect the latest development in the biomedical sciences. The current version of the curriculum includes the updated courses and clearly states requirements for graduation. The total number of credits for graduation remains the same as in the old curriculum

*************This line and below is for proposal review purposes and will not be in the catalog*************

Course list
For students with B.S. or equivalent:

Course Title Credits
The following three courses are required:
BISI712 Responsible Conduct of Research Biologists 1
VMSC698 One Health Seminar 4
VMSC750 Journal Club in Comparative Biomedical Sciences 4

_________
Select at least 10 credits from the available VMSC courses:
VMSC610 Recombinant Viral Vectors 3
VMSC660 Emerging and Re-emerging Infectious Diseases 2
VMSC670 Molecular Epidemiology of Infectious Diseases 2
VMSC689 Use of Genomics and Proteomics in Infectious Disease 3
VMSC720 Viral Pathogenesis 2
VMSC760 Immunology of Infectious Diseases 3

_________
Select 5 or needed credits from other courses with the advisor's approval.
VMSC899 Dissertation Research 12

For students with M.S. or equivalent:

Course Title Credits
The following three courses are required:
BISI712 Responsible Conduct of Research Biologists 1
VMSC698 One Health Seminar 2
VMSC750 Journal Club in Comparative Biomedical Sciences 2

_________
And select seven credits from the VMSC courses:
VMSC610 Recombinant Viral Vectors 3
VMSC660 Emerging and Re-emerging Infectious Diseases 2
VMSC670 Molecular Epidemiology of Infectious Diseases 2
VMSC689 Use of Genomics and Proteomics in Infectious Disease 3
VMSC720 Viral Pathogenesis 2
VMSC760 Immunology of Infectious Diseases 3

_________
VMSC899 Dissertation Research 12

List the intended student learning outcomes. In an attachment, provide the plan for assessing these outcomes.

Learning Outcomes
The students are expected to become professional scholars with advanced knowledge of the current concepts in infectious diseases with an emphasis on zoonotic diseases that are critical to improving the health of humans, animals, and the environment. They are also expected to become experts in modern approaches in infectious disease research and the development of vaccines and therapeutics, such as proteomics, next-generation sequencing, vectored vaccines, gene therapy, and others. The students will develop skills in critically analyzing scientific literature, designing experiments, analyzing and interpreting data, publishing research findings, and presenting data to scientific and public audiences.

The student progress will be evaluated in each course by assessing their individual assignments, participation in the classroom discussions, and final exams. The dissertation will be evaluated by the expert advisory committee and must be successfully publicly defended.
**Program Modification Information**

**Description and Rationale for Modifications.**

The old curriculum has been in place for many years without changes. With the significant faculty turnover since the old curriculum was approved and the progress of the biomedical sciences reflected in the new courses, the curriculum needs to be updated. Also, the old curriculum does not indicate the milestones for students to complete, which is clearly addressed in the new curriculum.

For new or modified courses, please provide the course catalog information (credits, description, prerequisites, etc.). Suffixes “Selected” or “Special” topics courses should be avoided. New courses and course modifications must be submitted through the course approval process at https://courseleaf.umd.edu/courseadmin. You may submit individual course changes through the course approval process concurrently with the program proposal; however, the course change approvals may be held until the program proposal is approved.

All courses are approved.

**Impact on current students.** It should be specifically acknowledged that students enrolled in the program prior to the effective date of any curriculum change may complete their program under the old requirements if they wish. The courses required must remain available, or suitable substitutions specifically designated.

Current students can choose to follow the old curriculum if they wish.

**Linked Programs**

Indicate in the space below all programs to which this program is formally linked (e.g., approved combined bachelor's/master's programs, dual master's programs, or joint-programs with other universities). If the proposed modification will affect the linked program, provide as an attachment the new curriculum for each arrangement and provide supporting correspondence from the director of the linked program.

Not applicable.

**Describe any selective admissions policy or special criteria for students interested in this program.**

Not applicable. Applicants with a minimum of B.S. or equivalent, or a higher degree in biological or medical sciences may be admitted to the Doctor of Philosophy (Ph.D.) program.

Select the academic calendar type for this program (calendar types with dates can be found on the Academic Calendar page)

Traditional Semester

**Relationship to Other Units or Institutions**

If a required or recommended course is offered by another department, discuss how the additional students will not unduly burden that department’s faculty and resources. Discuss any other potential impacts on another department, such as academic content that may significantly overlap with existing programs. Use space below for any comments. Otherwise, attach supporting correspondence.

BISI712 is listed as a required course. It is a one-credit course on research integrity. The faculty members of this department join the teaching of BISI712. See the message attached stating permission from Dr. Eric S. Haag, Director of BISI graduate program, and Dr. Charles F. Delwiche, the current headteacher of BISI712. All other courses listed are offered in this department.

Accreditation and Licensure. Will the program need to be accredited? If so, indicate the accrediting agency. Also, indicate if students will expect to be licensed or certified in order to engage in or be successful in the program’s target occupation.

No. This program does not need additional accreditation. It should be included in the university accreditation.

Describe any cooperative arrangements with other institutions or organizations that will be important for the success of this program.

Not applicable.

**Supporting Documents**

**Attachments**

BISI712-Permission.pdf
VMSC-PhD-samplePlan.pdf

**Reviewer Comments**


Key: 474
Program Change Request

Date Submitted: 04/02/21 3:04 pm

Viewing: **474: Comparative Biomedical Sciences (VMSC)**

Last approved: 11/12/20 9:50 am
Last edit: 06/02/21 1:27 pm
Changes proposed by: Yanjin Zhang (zhangyj)

Catalog Pages Using this Program

Comparative Biomedical Sciences, Doctor of Philosophy (Ph.D.)

Proposed Action
- Curriculum Change

Program Name

In Workflow
1. D-VMSC Chair
2. AGNR Curriculum Manager
3. AGNR PCC Chair
4. AGNR Dean
5. Academic Affairs Curriculum Manager
6. Graduate School Curriculum Manager
7. Graduate PCC Chair
8. Dean of the Graduate School
9. Senate PCC Chair
10. Provost Office
11. Graduate Catalog Manager

Approval Path
1. 03/25/21 5:43 pm
   Xiaoping Zhu (xzhu1): Approved for D-VMSC Chair
2. 03/25/21 5:56 pm
   Tyra Monnity (tgallman): Approved for AGNR Curriculum Manager
3. 04/01/21 1:24 pm
   Mark Carroll (mc Carroll): Rollback to Initiator
4. 04/02/21 3:08 pm
Xiaoping Zhu  
(xzhu1): Approved for D-VMSC Chair  
5. 04/05/21 8:52 am  
Tyra Monnity  
(tgallman):  
Approved for AGNR Curriculum Manager  
6. 04/25/21 8:00 pm  
Mark Carroll  
(mcarroll):  
Approved for AGNR PCC Chair  
7. 04/25/21 11:31 pm  
Joseph Sullivan  
(jsull): Approved for AGNR Dean  
8. 04/27/21 2:13 pm  
Michael Colson  
(mcolson):  
Approved for Academic Affairs Curriculum Manager  
9. 05/03/21 4:47 pm  
Angela Ambrosi  
(aambrosi):  
Approved for Graduate School Curriculum Manager  
10. 05/03/21 4:48 pm  
Angela Ambrosi  
(aambrosi):  
Approved for Graduate PCC Chair  
11. 05/07/21 4:23 pm  
Steve Fetter  
(sfetter): Approved for Dean of the

https://courseleaf.umd.edu/courseleaf/courseleaf.cgi?page=/programadm...
Comparative Biomedical Sciences (VMSC)

Program Status: Active
Effective Term: Fall 2021
Catalog Year: 2021-2022
Program Level: Graduate Program
Program Type: Doctoral
Delivery Method: On Campus

Departments

Graduate School
12. 05/08/21 12:39 pm
Valerie Orlando (vorlando):
Approved for Senate PCC Chair
13. 06/02/21 1:28 pm
Michael Colson (mcolson):
Approved for Provost Office

History
1. Sep 16, 2019 by Angela Ambrosi (aambrosi)
2. Oct 18, 2019 by William Bryan (wbryan)
3. Aug 18, 2020 by Yanjin Zhang (zhangyj)
4. Sep 8, 2020 by Michael Colson (mcolson)
5. Nov 12, 2020 by Angela Ambrosi (aambrosi)
Department
Veterinary Medicine Program

Colleges

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<td>Agriculture and Natural Resources</td>
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Program/Major Code

| VMSC |

MHEC Inventory Program
Veterinary Medical Sciences

CIP Code
018017 - 018017

HEGIS
129958

MHEC Recognized Area(s) of Concentration

Degree(s) Awarded

<table>
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<tr>
<td>Doctor of Philosophy</td>
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Proposal Contact
Yanjin Zhang, zhangyj@umd.edu, (301) 314-6596

Proposal Summary

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(PCC Log Number 20122)
Provide the catalog description of the proposed program. As part of the description, please indicate any areas of concentration or specializations that will be offered.

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Catalog Program Requirements:

Applicants with a minimum of B.S. Applicants with a D.V.M., M.D., or equivalent or a higher related degree in biological or medical sciences may be admitted to the Doctor of Philosophy (Ph.D.) program. plus a M.S. degree may be admitted to the Ph.D. program. In exceptional cases, admission to the Ph.D. program without a M.S. degree may be considered but these candidates must complete the course requirements a minimum of 24 credits (for candidates with B.S. hours of course work, or equivalent degrees) or 12 credits (for candidates with MPH, M.S. or a D.V.M., M.D. Ph.D. candidates who have previously completed the D.V.M. and/or M.S. or equivalent degrees) in addition to degree must meet the minimum course requirements of 12 credits, and a minimum of 12 twelve dissertation research credits (VMSC899). (VMSC899). Students must maintain an overall GPA of 3.0 or better in courses taken for graduate credit per Graduate School policy.

No more than two credits of Special Problems (VMSC699) are acceptable as part of the 12 required course credits. Two additional seminar credits (VMSC698) are required. Students are required to register for one seminar credit (VMSC698) each academic year. Two seminar credits will be counted toward degree requirements. All students are expected to attend seminars regularly. Students are required to take a written and oral comprehensive examination and submit and defend their Ph.D. dissertation in partial fulfillment of the doctoral degree (see below). DOCTORAL REQUIREMENTS During the first semester, the student selects an advisor and with the help of the advisor forms an Advisory Committee. Doctoral program requirements

The plan of study Advisory Committee and the student must be approved meet by the Advisor and Chair end of the Graduate Admissions and Examination Review Committee by the end of second semester to approve the first semester of enrollment. student's plan of study. By the end of the fourth semester, a second semester the
student should have completed their core course requirement and present a dissertation research proposal to the Advisory Committee. For entering Ph.D. An oral and written comprehensive examination is required for advancement to candidacy. Prior to the final dissertation, an oral examination is required for advancement to candidacy. A student must be admitted to candidacy for the doctorate within five years after admission to the doctoral program and at least six months before the date on which the degree will be conferred. It is the responsibility of the student to submit an application for admission to candidacy when all the requirements for candidacy have been fulfilled. Applications for admission to candidacy are made in duplicate by the student and submitted to the graduate program for further action and transmission to the Graduate School. Application forms may be obtained at the Graduate School, Room 2123, Lee Building, or on the web. A student Paperwork must pass a qualifying examination (written and oral) satisfactorily be received by the end Graduate School prior to the 25th of the sixth semester, month in order for the advancement to become effective the first day of the following month. A dissertation based on independent the Graduate School policy on the Doctoral-Dissertation and original research must Examination may be submitted to the CBSC Program and the Graduate School. found in the Graduate School Catalog at: Doctoral candidates are automatically registered for six (6) credits of Doctoral-Dissertation Research (899), for which they pay the flat candidacy tuition. The student Prior to the final dissertation oral examination, the candidate must present the dissertation in a public seminar and pass a final oral examination given by the Advisory Committee.

### For Students with B.S. or Equivalent

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BISI712</td>
<td>Responsible Conduct of Research for Biologists</td>
<td>1</td>
</tr>
<tr>
<td>VMSC698</td>
<td>One Health Seminar</td>
<td>4</td>
</tr>
<tr>
<td>VMSC758</td>
<td>Journal Club in Comparative Biomedical Sciences (Journal Club in Comparative Biomedical Sciences)</td>
<td>4</td>
</tr>
</tbody>
</table>

Restricted Electives (Choose at least 10 credits from the following courses):

- VMSC610 Recombinant Viral Vectors
- VMSC660 Emerging and Re-emerging Infectious Diseases
- VMSC670 Molecular Epidemiology of Infectious Diseases (Molecular Epidemiology of Infectious Diseases)
- VMSC689 Use of Genomics and Proteomics in Infectious Disease
- VMSC720 Viral Pathogenesis
- VMSC760 Immunology of Infectious Diseases

Additional Credits (from restricted electives or other courses with advisor's approval) 5

| VMSC899 | Dissertation Research                                     | 12      |

Total Credits 36

### For Students with M.S. or Equivalent:

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<td>Course</td>
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<tr>
<td>VMSC758</td>
<td>Journal Club in Comparative Biomedical Sciences (Journal Club in Comparative Biomedical Sciences)</td>
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<td></td>
<td>Restricted Electives (Choose 7 credits from the following):</td>
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<td>Dissertation Research</td>
<td>12</td>
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**Total Credits**: 24

Details on the Graduate School policy on the Doctoral Dissertation and Examination may be found in the Graduate School Catalog at: [http://www.gradschool.umd.edu/catalog/doctoral_degree_policies.htm](http://www.gradschool.umd.edu/catalog/doctoral_degree_policies.htm). Dissertations are to be submitted to the Graduate School in electronic format after final approval of the dissertation by the Dissertation Examining Committee. See the University of Maryland Electronic Thesis and Dissertation (ETD) website at [http://dissertations.umi.com/umd](http://dissertations.umi.com/umd) or the University of Maryland Thesis and Dissertation Style Guide ([http://www.gradschool.umd.edu/styleguide](http://www.gradschool.umd.edu/styleguide)) for the details of this process.

**Curriculum requirements**

**Core Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMSC698</td>
<td>One Health Seminar</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Select 10 credits of coursework</td>
<td>10</td>
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</table>

**Dissertation Research Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMSC899</td>
<td>Dissertation Research</td>
<td>12</td>
</tr>
</tbody>
</table>

**Total Credits**: 12

Sample plan. Provide a term by term sample plan that shows how a hypothetical student would progress through the program to completion. It should be clear the length of time it will take for a typical student to graduate. For undergraduate programs, this should be the four-year plan.

A student can graduate in around five years. If he or she completes ten credits per semester, all course work should be done within three semesters. The thesis research can be done around five years if satisfactory progress is maintained. See attached file for a sample plan of study.
Use the space below for any additional comments on the courses or other requirements selected for the revised curriculum. Typical comments may be clarifications of why certain courses are being replaced or added.

The revised curriculum includes courses currently offered in the department. Most of them are added after the original curriculum was established and reflect the latest development in the biomedical sciences. The current version of the curriculum includes the updated courses and clearly states requirements for graduation. The total number of credits for graduation remains the same as in the old curriculum.

This line and below is for proposal review purposes and will not be in the catalog

Course list

For students with B.S. or equivalent:

Course Title Credits

The following three courses are required:
BISI712 Responsible Conduct of Research Biologists 1
VMSC698 One Health Seminar 4
VMSC750 Journal Club in Comparative Biomedical Sciences 4

Select at least 10 credits from the available VMSC courses:

VMSC610 Recombinant Viral Vectors 3
VMSC660 Emerging and Re-emerging Infectious Diseases 2
VMSC670 Molecular Epidemiology of Infectious Diseases 2
VMSC689 Use of Genomics and Proteomics in Infectious Disease 3
VMSC720 Viral Pathogenesis 2
VMSC760 Immunology of Infectious Diseases 3

Select 5 or needed credits from other courses with the advisor’s approval.

VMSC899 Dissertation Research 12

For students with M.S. or equivalent:
List the intended student learning outcomes. In an attachment, provide the plan for assessing these outcomes.

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students are expected to become professional scholars with advanced knowledge of the current concepts in infectious diseases with an emphasis on zoonotic diseases that are critical to improving the health of humans, animals, and the environment. They are also expected to become experts in modern approaches in infectious disease research and the development of vaccines and therapeutics, such as proteomics, next-generation sequencing, vectored vaccines, gene therapy, and others. The students will develop skills in critically analyzing scientific literature, designing experiments, analyzing and interpreting data, publishing research findings, and presenting data to scientific and public audiences. The student progress will be evaluated in each course by assessing their individual assignments, participation in the classroom discussions, and final exams. The dissertation will be evaluated by the expert advisory committee and must be successfully publicly defended.</td>
</tr>
</tbody>
</table>
Description and Rationale for Modifications.

The old curriculum has been in place for many years without changes. With the significant faculty turnover since the old curriculum was approved and the progress of the biomedical sciences reflected in the new courses the curriculum needs to be updated. Also, the old curriculum does not indicate the milestones for students to complete, which is clearly addressed in the new curriculum.

For new or modified courses, please provide the course catalog information (credits, description, prerequisites, etc.). Suffixied "Selected" or "Special" topics courses should be avoided. New courses and course modifications must be submitted through the course approval process at https://courseleaf.umd.edu/courseadmin. You may submit individual course changes through the course approval process concurrently with the program proposal; however, the course change approvals may be held until the program proposal is approved.

All courses are approved.

Impact on current students. It should be specifically acknowledged that students enrolled in the program prior to the effective date of any curriculum change may complete their program under the old requirements if they wish. The courses required must remain available, or suitable substitutions specifically designated.

Current students can choose to follow the old curriculum if they wish.

Linked Programs

Indicate in the space below all programs to which this program is formally linked (e.g., approved combined bachelor's/master's programs, dual master's programs, or joint-programs with other universities). If the proposed modification will affect the linked program, provide as an attachment the new curriculum for each arrangement and provide supporting correspondence from the director of the linked program.

Not applicable.

Describe any selective admissions policy or special criteria for students interested in this program.

Not applicable. Applicants with a minimum of B.S. or equivalent, or a higher degree in biological or medical sciences may be admitted to the Doctor of Philosophy (Ph.D.) program.

Select the academic calendar type for this program (calendar types with dates can be found on the Academic Calendar page)

Traditional Semester
If a required or recommended course is offered by another department, discuss how the additional students will not unduly burden that department’s faculty and resources. Discuss any other potential impacts on another department, such as academic content that may significantly overlap with existing programs. Use space below for any comments. Otherwise, attach supporting correspondence.

**BISI712 is listed as a required course. It is a one-credit course on research integrity. The faculty members of this department join the teaching of BISI712. See the message attached stating permission from Dr. Eric S. Haag, Director of BISI graduate program, and Dr. Charles F. Delwiche, the current headteacher of BISI712. All other courses listed are offered in this department.**

Accreditation and Licensure. Will the program need to be accredited? If so, indicate the accrediting agency. Also, indicate if students will expect to be licensed or certified in order to engage in or be successful in the program’s target occupation.

**No. This program does not need additional accreditation. It should be included in the university accreditation.**

Describe any cooperative arrangements with other institutions or organizations that will be important for the success of this program.

**Not applicable.**

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**Supporting Documents**

Attachments

- BISI712-Permission.pdf
- VMSC-PhD-samplePlan.pdf

Administrative Documents

Reviewer Comments

**Mark Carroll (mcarroll) (04/01/21 1:24 pm):** Rollback: Needs sample plan added to proposal. ☑️

Key: 474
Re: BISI 712 - Responsible Conduct of Research
1 message

Eric S Haag <ehaag@umd.edu>  Fri, Apr 2, 2021 at 2:30 PM
To: Yanjin Zhang <zhangyj@umd.edu>
Cc: Chuck Delwiche <delwiche@umd.edu>, Zakiya Whatley <zwhatley@umd.edu>

Dear Yanjin & Chuck,

Yes, I think it makes sense to centralize this effort so long as all units making heavy use of the course get involved in teaching it. With George having apparently just volunteered to represent VMSC, I think we are all set. Many thanks for this collegial cooperation.

Cheers,
Eric

---

On Apr 2, 2021, at 10:50 AM, Yanjin Zhang <zhangyj@umd.edu> wrote:

Chuck,

Thank you.

Eric, please confirm this. So I can submit the curriculum update to PCC. Many thanks,

Yanjin

---

On Thu, Apr 1, 2021 at 5:12 PM Charles Francis Delwiche <delwiche@umd.edu> wrote:

Hi Yanjin -

That is completely fine with us, and your students are more than welcome. We are pleased that VMSC faculty are in rotation as instructors for the class, and we regard it as a collaborative effort of BISI, CBMG, BIOL, ENTM, ANSC and VMSC.

That said, I think Eric Haag, who is now the Director of BISI, may also need to give his formal blessing. I'll CC him.

- Chuck

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On Apr 1, 2021, at 5:03 PM, Yanjin Zhang <zhangyj@umd.edu> wrote:

Hi, Chuck,

We are updating the curriculum of VMSC graduate program. BISI712 is listed as a required course. The PCC committee needs an approval email from you stating VMSC students are permitted to take the course. Please reply and let me know if you have any questions.

Thanks,

Yanjin

---

Yanjin Zhang, Ph.D.
Associate Professor
Director, Comparative Biomedical Sciences Graduate Program
On Wed, Mar 17, 2021 at 4:18 PM Yanjin Zhang wrote:

Hi, Chuck,

Thank you for the invitation. I can join your meeting.

Best,

Yanjin

On Wed, Mar 17, 2021 at 1:36 PM George Belov wrote:

Hi Chuck,

I'll be happy to help, I am sure a meeting will be very helpful to get acquainted with the course, please add me to the list.

Best. George.

On Wed, Mar 17, 2021 at 12:43 PM Charles Francis Delwiche UMD wrote:

Dear George, Yanjin -

I am writing to you to invite you to participate in the faculty rotation teaching BISI 712, Responsible Conduct of Research (RCR).

Preparing to teach my section of RCR this semester (it is a one-module, i.e., half-semester, one-credit class, so class starts on Monday) I noted that five of the students are in CBSC, which in turn reminded me that we do not yet have a faculty member from VetMet/CBSC in the rotation to teach the class. I asked Utpal Pal last summer, but he declined, and I never followed up with anyone else in your Department. To satisfy NIH's requirements the course should be taught by research active, tenure-track faculty. It is also important that the participating faculty be reasonably sympathetic to graduate students, because the discussions often touch on quite delicate topics. There is no special reason it could not be taught by an Assistant Professor, but I generally try to avoid them to protect their time (I actually think it could be *very* useful for Assistant Professors to participate informally as guest faculty with no hard time commitment, but that is a separate topic).

Anyway, we would very much like to have participation in the rotation of someone from Vet Med, and you two seem like likely candidates. We are trying to have representation among the faculty from all of the programs that routinely send students to the class, and to have enough faculty participating that any one professor only needs to teach the class roughly every other year. Because it is a one-credit, half-semester module that keeps the burden minimal, and honestly, it is a kind of a fun class to teach. Right now it is online, but I'll certainly be going back to in-person instruction next year. I'm pretty sure we will want to keep some sections online, so that will probably be decided by individual faculty.

I'm hoping one or both of you will agree to participate. The RCR faculty meet occasionally as a group and we are overdue for a meeting, so if you are willing I will add you to the list for our next meeting.

Best,
Chuck

—
Charles F. Delwiche
Professor, Cell Biology and Molecular Genetics
CBMG, 2108 Biosciences Research Building (deliveries: 0101J BRB)
4066 Campus Drive
University of Maryland
College Park, MD 20742-4407

*Pronouns: he/him/his.


"'O Oysters come and walk with us!' The Walrus did beseech. A pleasant walk, a pleasant talk, along the briny beach".

* Why do people list their pronouns? Gender is extremely important to identity, so much so that it is difficult to speak in English without using pronouns. This puts tremendous pressure on people whose outward appearance does not match their gender identity because it requires them repeatedly to initiate a discussion about gender identity. Thus, proactively giving pronouns communicates to people with non-canonical gender identities that they are welcome and valued, obviates the need to guess, and creates an opportunity to open dialog about assumptions behind gender and gender roles in our society.

--

******************************

George A. Belov, PhD
Associate Professor
VA-MD Regional College of Veterinary Medicine
University of Maryland
8075 Greenmead Dr., room 1337
College Park, MD 20742
Phone: 301-314-1259
Fax: 301-314-1400

—
Charles F. Delwiche
Professor, Cell Biology and Molecular Genetics
CBMG, 2108 Biosciences Research Building (deliveries: 0101J BRB)
4066 Campus Drive
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College Park, MD 20742-4407

*Pronouns: he/him/his.


Underneath the chilly, grey November sky we can make believe that Kennedy is still alive, we're shooting for the moon, and smiling Jackie's driving by. They say "good try". -- Andy Prieboy

* Why do people list their pronouns? Gender is extremely important to identity, so much so that it is difficult to speak in English without using pronouns. This puts tremendous pressure on people whose outward appearance does not match their gender identity because it requires them repeatedly to initiate a discussion about gender identity. Thus, proactively giving pronouns communicates to people with non-canonical gender identities that they are welcome and valued, obviates the need to guess, and creates an opportunity to open dialog about assumptions behind gender and gender roles in our society.
Sample study plan for PhD degree applicants
For students with B.S. or equivalent:

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<th>Courses</th>
<th>Credits</th>
<th>Subtotal credits</th>
<th>Benchmark</th>
</tr>
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<td>Semester 1</td>
<td>BISI712 Responsible Conduct of Research Biologists</td>
<td>1</td>
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<td>VMSC698 One Health Seminar</td>
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<td>VMSC750 Journal Club in Comparative Biomedical Sciences</td>
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<td>CBMG688J Special Topics in Cell Biology and Molecular Genetics; Genetics: Immunology and Host Defense</td>
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<td>VMSC670 Molecular Epidemiology of Infectious Diseases</td>
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<td>10 Plan of study</td>
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<td>Semester 2</td>
<td>VMSC698 One Health Seminar</td>
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Total credits 36
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<td>Semester 2</td>
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<td>VMSC760 Immunology of Infectious Diseases</td>
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Total credits 24