# Biomedical Science, PhD

## Academic Plans

# Sample Plans of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

# **Biomedical Science, PhD**

- Cancer Biology Subprogram [p. 1]
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### **Cancer Biology Subprogram**

Course Academic Care Any Semester	Title er	Hours
72 s.h. must be g graduate transfe More information and on departme	graduate level coursework; r credits allowed upon approval. n is included in the General Catalog ent website. <sup>a</sup>	
Graduate College required.	e program GPA of at least 3.00 is	
_	Hours	0
First Year		
Any Semester		
Select PhD Mente		
Fall	Hours	0
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	6
PCOL:5204	Basic Biostatistics and Experimental Design	1
Elective course <sup>c</sup>		3
Spring	Hours	15
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	6
FRRB:7001	Molecular and Cellular Biology of Cancer	3
MMED:6260	Methods for Molecular and Translational Medicine	1
PATH:5270	Pathogenesis of Major Human Diseases	3

PHAR:6504	Mastering Reproducible Science	1
Second Year	Hours	10
Fall		
BMED:7270	Scholarly Integrity/Responsible Conduct of Research I	0
CBIO:5500	Topics in Cancer Biology	1
CBIO:6000	Seminar: Cancer Research	1
CBIO:6500	Research in Cancer Biology	6
CBIO:7000	Clinical Connections	1
CBIO:7500	Crafting a Scientific Proposal	1
Elective course	c	3
	Hours	13
Spring		
BMED:7271	Scholarly Integrity/Responsible Conduct of Research II	0
CBIO:5500	Topics in Cancer Biology	1
CBIO:6000	Seminar: Cancer Research	1
CBIO:6500	Research in Cancer Biology	6
Elective course	c	1
	Hours	9
Summer		
Comprehensive	e Exam	
CBIO:6500	Research in Cancer Biology	1
	Hours	1
Third Year Fall		
CBIO:5500	Topics in Cancer Biology	1
CBIO:6000	Seminar: Cancer Research	1
CBIO:6500	Research in Cancer Biology	5
	Hours	7
Spring		
CBIO:5500	Topics in Cancer Biology	1
CBIO:6000	Seminar: Cancer Research	1
CBIO:6500	Research in Cancer Biology	4
	Hours	6
Fourth Year		
Fall		
CBIO:5500	Topics in Cancer Biology	1
CBIO:6000	Seminar: Cancer Research	1
CBIO:6500	Research in Cancer Biology	1
	Hours	3
Spring		2
CBIO:5500	Topics in Cancer Biology	1
CBIO:6000	Seminar: Cancer Research	1
CBIO:6500	Research in Cancer Biology	1
Final Exam <sup>d</sup>		-
	Hours	3
	Total Hours	<u>כ</u> כד
		, 2

a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.

b Graduate College program GPA is comprised of all courses that are approved degree requirements. If a student takes more than the minimum required number of semester hours to complete the degree, but all courses taken are eligible to count toward the degree, those courses will be included in the Graduate College program GPA.

c Work with faculty advisor to determine appropriate graduate elective coursework and sequence.

d Dissertation defense.

### Cell and Developmental Biology Subprogram

# Course Title Hours Academic Career

### **Any Semester**

72 s.h. must be graduate level coursework; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website.<sup>a</sup>

Graduate College program GPA of at least 3.00 is required.  $^{\rm b}$ 

	Hours	0
First Year		
Fall		
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	1
PCOL:5204	Basic Biostatistics and Experimental Design	1
Elective course <sup>c</sup>		3
	Hours	10
Spring		
BMED:7777	Biomedical Science Seminar	1
BMED:7888	<b>Biomedical Science Research</b>	1
MMED:6260	Methods for Molecular and Translational Medicine	1
PATH:5270	Pathogenesis of Major Human Diseases	3
Elective course <sup>c</sup>		3
	Hours	9
Second Year		
Any Semester		
Comprehensive I	Exam	
	Hours	0
Fall		
ACB:5206	Graduate Research in Cell and Developmental Biology	8
ACB:5224	Graduate Seminar in Cell and Developmental Biology	1
ACB:6220	Mechanisms of Cellular Organization	3
ACB:6237	Critical Thinking in Biochemistry and Molecular Biology	1
ACB:6239	Critical Thinking in Cell Biology	1
ACB:6248	Critical Thinking in Development	1
BMED:7270	Scholarly Integrity/Responsible Conduct of Research I	0
	Hours	15

#### Spring Graduate Research in Cell and ACB:5206 11 **Developmental Biology** Graduate Seminar in Cell and ACB:5224 1 **Developmental Biology** ACB:6238 Critical Thinking in Genetics 1 ACB:6249 Critical Thinking in Cellular 1 Physiology ACB:6250 Critical Thinking in Scientific 1 Writing and Presentations Scholarly Integrity/Responsible 0 BMED:7271 Conduct of Research II Hours 15 Summer ACB:5206 Graduate Research in Cell and arr. **Developmental Biology** Hours 0 **Third Year** Fall Complete Teaching Requirement Graduate Research in Cell and ACB:5206 8 Developmental Biology ACB:5224 Graduate Seminar in Cell and 1 **Developmental Biology** 9 Hours Spring ACB:5206 Graduate Research in Cell and 8 Developmental Biology <sup>g</sup> Graduate Seminar in Cell and ACB:5224 1 **Developmental Biology** Hours 9 **Fourth Year** Fall ACB:5206 Graduate Research in Cell and 1 **Developmental Biology** Graduate Seminar in Cell and ACB:5224 1 **Developmental Biology** Hours 2 Spring ACB:5206 Graduate Research in Cell and 1 **Developmental Biology** ACB:5224 Graduate Seminar in Cell and 1 **Developmental Biology** GRAD:6003 **Doctoral Final Registration** 1 Final Exam<sup>h</sup> Hours 3 **Total Hours** 72

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c Work with faculty advisor to determine appropriate graduate elective coursework and sequence.

- d Take enough credit hours of ACB:5206 to bring semester total up to 15 s.h.
- e Register for 1 s.h. of ACB:5206 if Comprehensive Exam is scheduled over the summer.
- f Can be done during any one semester before thesis defense and graduation.
- g Take enough credit hours of ACB:5206 to satisfy degree requirements.
- h Dissertation defense.

# **Experimental Pathology Subprogram** Course Title Hours **Academic Career Any Semester** 72 s.h. must be graduate level coursework; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. Graduate College program GPA of at least 3.00 is required.

	Hours	0
First Year		
Fall		
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
PATH:7211	Research in Pathology	10
PCOL:5204	Basic Biostatistics and Experimental Design	1
	Hours	15
Spring		
BIOS:4120	Introduction to Biostatistics	3
MMED:6260	Methods for Molecular and Translational Medicine	1
PATH:5270	Pathogenesis of Major Human Diseases	3
PATH:6220	Seminar in Pathology	1
PATH:7211	Research in Pathology	7
	Hours	15
Second Year Fall		
BMED:7270	Scholarly Integrity/Responsible Conduct of Research I	0
PATH:7211	Research in Pathology <sup>c</sup>	12
Elective relevant	to Experimental Pathology <sup>d</sup>	3 - 4
	Hours	15-16
Spring		
Exam: Doctoral (	Comprehensive Exam <sup>e</sup>	
BMED:7271	Scholarly Integrity/Responsible Conduct of Research II	0
PATH:6220	Seminar in Pathology	1
PATH:7211	Research in Pathology <sup>c</sup>	11
Elective relevant	to Experimental Pathology <sup>d</sup>	3 - 4
	Hours	15-16
Third Year		
Fall		
PATH:7211	Research in Pathology	3
	Hours	3

## Spring

PATH:7211	Research in Pathology	3
	Hours	3
Fourth Year		
Fall		
PATH:7211	Research in Pathology	3
	Hours	3
Spring		
PATH:7211	Research in Pathology	3
Exam: Doctora	l Final Exam <sup>†</sup>	
	Hours	3
	Total Hours	72-74

- a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.
- b Graduate College program GPA is comprised of all courses that are approved degree requirements. If a student takes more than the minimum required number of semester hours to complete the degree, but all courses taken are eligible to count toward the degree, those courses will be included in the Graduate College program GPA.
- c Adjust research credit hours depending on whether the elective course is 3 or 4 s.h.
- d Only one elective is required, and it can be taken either in the fall or spring semester of second year. Adjust research hours during non-elective semester so that total hours equals 15 s.h.
- e Completed during second year spring semester; exam includes oral defense of comp exam proposal.
- f Dissertation defense.

## Free Radical and Radiation Biology Subprogram

Course	Title	Hours
Academic Care	er	
Any Semester		
72 s.h. must be graduate transfe More information and on departme	graduate level coursework; er credits allowed upon approval. n is included in the General Catalog ent website. <sup>a</sup>	
Graduate Colleg required. <sup>b</sup>	e program GPA of at least 3.00 is	
	Hours	0
First Year Fall		
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research <sup>c</sup>	5
FRRB:5000	Radiation Biology <sup>d</sup>	4
PCOL:5204	Basic Biostatistics and Experimental Design	1
	Hours	15
Spring		
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research <sup>c</sup>	5

FRRB:7000	Redox Biology and Medicine <sup>d</sup>	4
MMED:6260	Methods for Molecular and Translational Medicine	1
PATH:5270	Pathogenesis of Major Human Diseases	3
PHAR:6504	Mastering Reproducible Science	1
	Hours	15
Second Year Fall		
BMED:7270	Scholarly Integrity/Responsible Conduct of Research I	0
FRRB:5000	Radiation Biology	4
FRRB:6000	Seminar: Free Radical and Radiation Biology <sup>e</sup>	1
FRRB:6004	Research: Free Radical and Radiation Biology	5
FRRB:6006	Topics in Free Radical Biology and Medicine <sup>g</sup>	1
FRRB:6008	Topics in Radiation and Cancer Biology <sup>g</sup>	1
Elective course		3
- ·	Hours	15
Spring	Calculation in the south of Decare and State	0
BMED:/2/1	Conduct of Research II	0
FRRB:6000	Seminar: Free Radical and Radiation Biology	1
FRRB:6004	Research: Free Radical and Radiation Biology	4
FRRB:6006	Topics in Free Radical Biology and Medicine <sup>g</sup>	1
FRRB:6008	Topics in Radiation and Cancer Biology <sup>g</sup>	1
FRRB:7000	Redox Biology and Medicine <sup>a</sup>	4
MMED:6226	Cell Cycle Control	1
Elective course		3
Third Year	Hours	15
Fall		
FRRB:6000	Seminar: Free Radical and Radiation Biology <sup>e</sup>	1
FRRB:6004	Research: Free Radical and Radiation Biology	5
	Hours	6
Spring		
Exam: Doctoral (	Comprehensive Exam <sup>h</sup>	
FRRB:6004	Research: Free Radical and Radiation Biology <sup>f</sup>	4
	Hours	4
Fourth Year		
Fall		
FRRB:6004	Research: Free Radical and Radiation Biology <sup>f</sup>	1
	Hours	1
Spring		
FRRB:6004	Research: Free Radical and Radiation Biology <sup>f</sup>	1

Exam: Doctora	ll Final Exam '
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Hours	1
Total Hours	72

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b Graduate College program GPA is comprised of all courses that are approved degree requirements. If a student takes more than the minimum required number of semester hours to complete the degree, but all courses taken are eligible to count toward the degree, those courses will be included in the Graduate College program GPA.

- c If only taking the courses described here, register for the indicated credit hours of BMED:7888; if taking additional courses, register for enough credit hours to bring total up to 15 s.h.
- d Students must take this course just once, either during their first or second year.
- e Take three times.
- f On average, FRRB students complete a total of 30 s.h. of research credit for their PhD degree; no more than 6 s.h. of research credit per semester allowed without prior approval of FRRB faculty.
- g Note: Students who are on the T32 Training Grant are required to give a seminar once a year.
- h Take by third year spring semester.
- i Dissertation defense.

### **Molecular Medicine Subprogram**

Course	Title	Hours
Academic Care	er	
Any Semester		
72 s.h. must be g graduate transfe More information and on departme	raduate level coursework; r credits allowed upon approval. is included in the General Catalog ent website. <sup>a</sup>	
Graduate College required. <sup>b</sup>	e program GPA of at least 3.00 is	
	Hours	0
First Year		
Fall		
BIOS:4120 or PCOL:5204	Introduction to Biostatistics or Basic Biostatistics and Experimental Design	1, 3
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	1
MMED:6280	Critical Thinking in Molecular Medicine	1
MMED:8115	Molecular Physiology	4
	Hours	12-14
Spring		
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	3
MMED:5270	Pathogenesis of Major Human Diseases	3

BMED:7271	Scholarly Integrity/Responsible Conduct of Research II	0
	Conduct of Research II	
BMED:7888	Biomedical Science Research	11
MMED:6280	Critical Thinking in Molecular Medicine	1
MMED:7290	Seminars in Molecular Medicine	1
MMED:7310	Translational Medicine Education Rounds	1
-	Hours	14
Summer	Molocular Modicino Posoarch	1
MMED:7305		1
Third Year Fall	nours	I
MMED:7290	Seminars in Molecular Medicine	1
MMED:7305	Molecular Medicine Research	6
Carlan	Hours	7
Spring	Seminars in Molecular Modicine	1
MMED:7290	Molecular Medicine Research	1
	Hours	0 7
Fourth Year Fall	nouis	
MMED:7290	Seminars in Molecular Medicine	1
MMED:7305	Molecular Medicine Research	1
	Hours	2
Spring		
MMED:7290	Seminars in Molecular Medicine	1
MMED:7305	Molecular Medicine Research	1
Exam: Doctoral	Final Exam	
	Hours	2
	Total Hours	72-74

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- b Graduate College program GPA is comprised of all courses that are approved degree requirements. If a student takes more than the minimum required number of semester hours to complete the degree, but all courses taken are eligible to count toward the degree, those courses will be included in the Graduate College program GPA.
- c Work with faculty advisor to choose appropriate graduate coursework from an approved list.
- d Typically taken no later than the end of summer before third year.
- e Dissertation defense.
- Molecular Physiology and Biophysics Subprogram

Course	Title	Hours
Academic Care	er	
Any Semester	we do the large because and a	
72 s.n. must be g graduate transfe More information and on departme	r credits allowed upon approval. r is included in the General Catalog ent website. <sup>a</sup>	
Graduate College required.	e program GPA of at least 3.00 is	
	Hours	0
First Year Fall		
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	6
PCOL:5204	Basic Biostatistics and Experimental Design	1
Elective course <sup>c</sup>		3
	Hours	15
Spring		
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	4
MMED:6260	Methods for Molecular and Translational Medicine	1
PATH:5270	Pathogenesis of Major Human Diseases	3
Elective course <sup>c</sup>		3
Elective course <sup>c</sup>		3
Second Year Fall	Hours	15
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:7270	Scholarly Integrity/Responsible Conduct of Research I	0
MPB:5153	Graduate Physiology	4
MPB:6302	Research Physiology and Biophysics	8
	Hours	15
Contine		

### Spring

Exam: Doctoral Comprehensive Exam

	Total Hours	72
	Hours	1
Exam: Doctora	l Final Exam <sup>d</sup>	
<b>Spring</b> GRAD:6002	Doctoral Continuous Registration	1
	Hours	1
GRAD:6002	Doctoral Continuous Registration	1
Fall		
Fourth Voor	Hours	1
	Biophysics	-
Spring MPB·6302	Research Physiology and	1
	Hours	9
MPB:6302	Research Physiology and Biophysics	9
Fall		
Third Year	nouis	15
	Hours	15
MPB:6302	Research Physiology and Biophysics Growth Factor Recentor Signaling	12
MMED:6227	Cell Fate Decisions	1
MMED:6226	Cell Cycle Control	1
BMED:7271	Scholarly Integrity/Responsible Conduct of Research II	0

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c Work with faculty advisor to choose from an approved list of electives.

d Dissertation defense.

### **Pharmacology Subprogram**

Course	Title	Hours			
Academic Career					
Any Semester					
72 s.h. must be g graduate transfer More information and on departme	raduate level coursework; r credits allowed upon approval. is included in the General Catalog nt website. <sup>a, b, c</sup>				
Graduate College required.	e program GPA of at least 3.00 is				
	Hours	0			
First Year					
Fall					
BMED:5207	Principles of Molecular and Cellular Biology	3			
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1			
BMED:7777	Biomedical Science Seminar	1			
BMED:7888	Biomedical Science Research <sup>e</sup>	5			

MPB:5153	Graduate Physiology <sup>†</sup>	4
PCOL:5204	Basic Biostatistics and Experimental Design	1
	Hours	15
Spring		
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research <sup>e</sup>	4
MMED:6260	Methods for Molecular and Translational Medicine	1
PATH:5270	Pathogenesis of Major Human Diseases	3
PCOL:5130	Fundamentals of Pharmacology $^{\intercal}$	3
PCOL:6250	Advanced Problem Solving in Pharmacological Sciences	1
PHAR:6504	Mastering Reproducible Science	1
<b>•</b> • • • •	Hours	15
Second Year Fall		
BMED:7270	Scholarly Integrity/Responsible Conduct of Research I	0
PCOL:6015	Topics in Pharmacology and Neuroscience	1
PCOL:6080	Pharmacology Seminar	1
PCOL:6090	Graduate Research in Pharmacology <sup>g</sup>	8
PCOL:6203	Pharmacology for Graduate Students	5
	Heure	15
	Hours	13
Spring		15
Spring Exam: Doctoral	Comprehensive Exam <sup>h</sup>	10
Spring Exam: Doctoral BMED:7271	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II	0
<b>Spring</b> Exam: Doctoral BMED:7271 PCOL:6015	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience	0
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6080	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar	0 1 1
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6080 PCOL:6090	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup>	10 0 1 10
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6080 PCOL:6090 PCOL:6210	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling	10 0 1 10 3
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6080 PCOL:6090 PCOL:6210 Third Year	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling Hours	10 0 1 1 10 3 <b>15</b>
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6080 PCOL:6090 PCOL:6210 Third Year Fall	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling Hours	10 0 1 10 3 15
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6090 PCOL:6210 PCOL:6210 Third Year Fall PCOL:6015	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling <b>Hours</b> Topics in Pharmacology and Neuroscience	10 0 1 10 3 <b>15</b> 1
Spring           Exam: Doctoral           BMED:7271           PCOL:6015           PCOL:6080           PCOL:6210           Third Year           Fall           PCOL:6015           PCOL:6015	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling <b>Hours</b> Topics in Pharmacology and Neuroscience Pharmacology Seminar	10 0 1 10 3 15 1 1
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6090 PCOL:6090 PCOL:6210 Third Year Fall PCOL:6015 PCOL:6080	Nours         Comprehensive Exam h         Scholarly Integrity/Responsible         Conduct of Research II         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Graduate Research in         Pharmacology <sup>9</sup> Receptors and Cell Signaling         Hours         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Hours	10 0 1 10 3 15 1 1 1 2
Spring Exam: Doctoral BMED:7271 PCOL:6015 PCOL:6090 PCOL:6090 PCOL:6210 <b>Third Year Fall</b> PCOL:6015 PCOL:6080 <b>Spring</b>	Nours         Comprehensive Exam h         Scholarly Integrity/Responsible         Conduct of Research II         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Graduate Research in         Pharmacology <sup>9</sup> Receptors and Cell Signaling         Hours         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Hours	10 0 1 10 3 15 1 1 1 2
Spring           Exam: Doctoral           BMED:7271           PCOL:6015           PCOL:6090           PCOL:6210           Third Year           Fall           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6080	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling <b>Hours</b> Topics in Pharmacology and Neuroscience Pharmacology Seminar <b>Hours</b>	10 0 1 10 3 15 1 1 2 1
Spring           Exam: Doctoral           BMED:7271           PCOL:6015           PCOL:6090           PCOL:6210           Third Year           Fall           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling <b>Hours</b> Topics in Pharmacology and Neuroscience Pharmacology Seminar <b>Hours</b>	10 0 1 10 3 15 1 1 1 2 1 1 1 2
Spring           Exam: Doctoral           BMED:7271           PCOL:6015           PCOL:6080           PCOL:6210           Third Year           Fall           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015	Nours         Comprehensive Exam h         Scholarly Integrity/Responsible         Conduct of Research II         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Graduate Research in         Pharmacology <sup>9</sup> Receptors and Cell Signaling         Hours         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Hours         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Hours         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar         Hours         Topics in Pharmacology and         Neuroscience         Pharmacology Seminar	10 0 1 10 3 15 1 1 1 2 1 1 2
Spring           Exam: Doctoral           BMED:7271           PCOL:6015           PCOL:6090           PCOL:6090           PCOL:6090           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6080           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015           PCOL:6015	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling <b>Hours</b> Topics in Pharmacology and Neuroscience Pharmacology Seminar <b>Hours</b> Topics in Pharmacology and Neuroscience Pharmacology Seminar <b>Hours</b>	10 1 1 1 1 1 1 1 1 2 1 1 2 1 1 2
Spring         Exam: Doctoral         BMED:7271         PCOL:6015         PCOL:6015         PCOL:6090         PCOL:6090         PCOL:6090         PCOL:6090         PCOL:6015	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling <b>Hours</b> Topics in Pharmacology and Neuroscience Pharmacology Seminar <b>Hours</b> Topics in Pharmacology and Neuroscience Pharmacology Seminar <b>Hours</b>	10 1 1 1 1 1 1 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1
Spring         Exam: Doctoral         BMED:7271         PCOL:6015         PCOL:6010         PCOL:6210         PCOL:6210         PCOL:6015         PCOL:6080	Comprehensive Exam <sup>h</sup> Scholarly Integrity/Responsible Conduct of Research II Topics in Pharmacology and Neuroscience Pharmacology Seminar Graduate Research in Pharmacology <sup>g</sup> Receptors and Cell Signaling Hours Topics in Pharmacology and Neuroscience Pharmacology Seminar Hours Topics in Pharmacology and Neuroscience Pharmacology Seminar Hours Topics in Pharmacology and Neuroscience Pharmacology Seminar Hours	10 0 1 10 3 <b>15</b> 1 1 2 1 1 2 1 1 2

### Spring

PCOL:6015	Topics in Pharmacology and Neuroscience	1
PCOL:6080	Pharmacology Seminar	1
	Hours	2
Fifth Year		
Fall		
PCOL:6015	Topics in Pharmacology and Neuroscience	1
PCOL:6080	Pharmacology Seminar	1
	Hours	2
Spring		
PCOL:6015	Topics in Pharmacology and Neuroscience	1
PCOL:6080	Pharmacology Seminar	1
Exam: Doctora	al Final Exam <sup>1</sup>	
	Hours	2
	Total Hours	72

a Students complete three 12-week laboratory rotations by the end of the second semester.

- b During the first two semesters, all registered students enroll in BMED:5208 and BMED:7777. In subsequent semesters, students enroll in PCOL:6015 and PCOL:6080.
- c Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.
- d Graduate College program GPA is comprised of all courses that are approved degree requirements. If a student takes more than the minimum required number of semester hours to complete the degree, but all courses taken are eligible to count toward the degree, those courses will be included in the Graduate College program GPA.
- e Register for the indicated credit hours of BMED:7888 if taking the courses exactly as listed on the plan for this semester. If enrolling for additional courses, adjust BMED:7888 credit hours to bring total up to 15 s.h.
- f Taking this course now allows for coursework completion in an optimal timeframe.
- g Register for the indicated credit hours of PCOL:6090 if taking the courses exactly as listed on the plan for this semester. If enrolling for additional courses, adjust PCOL:6090 credit hours to bring total up to 15 s.h.
- h The comprehensive examination process normally begins during the fourth semester and is completed during the fifth semester in the program.
- i Dissertation defense.