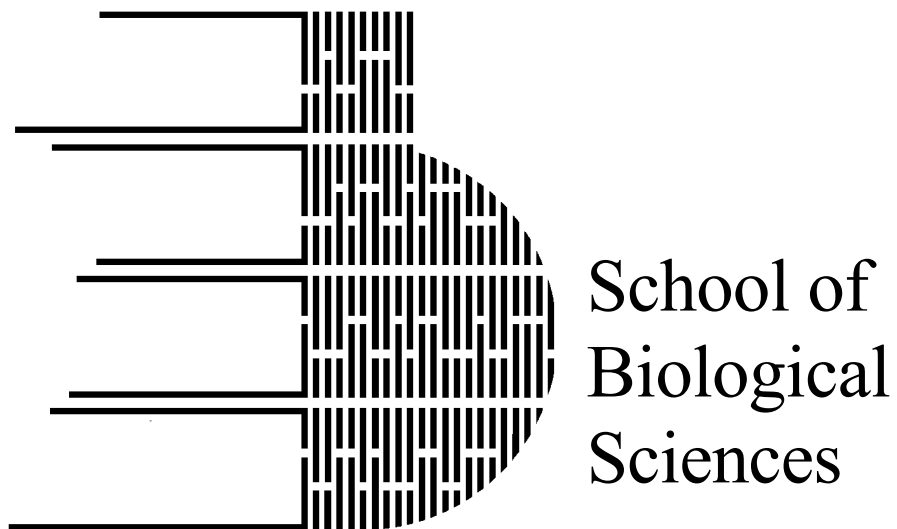


# GRADUATE PROGRAMS

## HANDBOOK



UNIVERSITY OF MISSOURI - KANSAS CITY

July 2004

Questions or Comments? Phone (816) 235-2352  
Email: sbs-grad@umkc.edu

Additional information, updates and schedules can be obtained from our Internet Homepage:  
<http://sbs.umkc.edu>

## INTRODUCTION

Welcome to the School of Biological Sciences at the University of Missouri-Kansas City. The purpose of this Graduate Programs Handbook is to summarize the School of Biological Sciences' graduate programs, the requirements for graduate degrees, and various academic rules and regulations. It offers practical guidelines to aid your progress as a graduate student. A complete, up-to-date version can be found on the SBS website at <http://sbs.umkc.edu/graduate/>. The contributions of students, faculty and staff to make this handbook more useful are greatly appreciated. Note that academic regulations will change over time. When questions arise, please contact the Graduate Programs Office (Room 212 BSB; phone (816) 235-2352). For additional information about rules and regulations, students are referred to the UMKC Catalog, including the Graduate and Professional Catalog, at <http://www.umkc.edu/catalog>.

The graduate programs at the School of Biological Sciences are administered in coordination with the School of Graduate Studies of the University of Missouri-Kansas City.

- The School of Biological Sciences offers a Ph.D. graduate program in its Disciplines of Cell and Molecular Biology (CBB) and of Molecular Biology and Biochemistry (MBB). These two disciplines participate in the UMKC-wide Interdisciplinary Ph.D. program. CBB and MBB can be chosen as Primary Discipline (formally known as Coordinating Discipline) and as Co-Discipline.
- The School of Biological Sciences offers a Master's of Science (M.S.) in Cellular and Molecular Biology (CMB). Students generally enter the School's Ph.D. programs through this M.S. track.
- The School of Biological Sciences offers a Master's of Arts (M.A.) in Biology. Students may pursue a certificate in the Truman Medical Center Nurse Anesthesia Program concurrently.

Students are responsible for familiarizing themselves with the general and specific requirements, applicable to their degree. Students are also responsible for knowing the rules and regulations contained herein, as well as in the UMKC Graduate Catalog. The Graduate Programs Office is available to answer questions and assist students. However, knowledge of the requirements, rules and regulations is ultimately the responsibility of the student.

Jakob H. Waterborg, Ph.D.  
Graduate Programs Officer  
School of Biological Sciences  
July 2004

**This GRADUATE PROGRAMS HANDBOOK of the SCHOOL OF BIOLOGICAL SCIENCES belongs to \_\_\_\_\_**

This Handbook may contain valuable notes and information relating to this student's progress in his program. Should it be lost and found, please return it to Room 212 Biological Sciences Building, School of Biological Sciences, University of Missouri-Kansas City, 5007 Rockhill Road, Kansas City, MO 64110.

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Master's Degree Program of Study .....	<a href="http://sbs.umkc.edu/graduate/pdf/5POSms.pdf">http://sbs.umkc.edu/graduate/pdf/5POSms.pdf</a>
Request for Program Change (M.S.) .....	<a href="http://sbs.umkc.edu/graduate/pdf/5PrgCng.pdf">http://sbs.umkc.edu/graduate/pdf/5PrgCng.pdf</a>
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Master's Thesis Report .....	<a href="http://www.umkc.edu/sgs/T-DGuidelines/MastersReader'sReport.pdf">http://www.umkc.edu/sgs/T-DGuidelines/MastersReader'sReport.pdf</a>
Preliminary Approval of Thesis or Dissertation .....	<a href="http://sbs.umkc.edu/graduate/pdf/9PrelAp.pdf">http://sbs.umkc.edu/graduate/pdf/9PrelAp.pdf</a>
Report of Results of Examination for Doctoral Students .....	<a href="http://sbs.umkc.edu/graduate/pdf/9ExamIP.pdf">http://sbs.umkc.edu/graduate/pdf/9ExamIP.pdf</a>
Report of Results of Examination for Master's Students .....	<a href="http://sbs.umkc.edu/graduate/pdf/9ExamMS.pdf">http://sbs.umkc.edu/graduate/pdf/9ExamMS.pdf</a>



**Section 1.**  
**DEGREE REQUIREMENTS**

The UMKC Graduate and Professional Catalog (<http://www.umkc.edu/umkc/catalog-grad/html/>) lists under 'Graduate Academic Regulations and Information', the general academic regulations that apply to all graduate degree programs, including minimal standards for admission and retention. Some of the catalog information is included in this handbook. In certain cases, the School of Biological Sciences has implemented more stringent Academic Regulations than those contained in the UMKC Catalog. Therefore, Interdisciplinary Ph.D. students with disciplines of Molecular Biology and Biochemistry (MBB) or Cell Biology and Biophysics (CBB) must be familiar with both the requirements in this handbook as well as in the UMKC Catalog.

**1.1 INTERDISCIPLINARY Ph.D. STUDY**  
**with CELL BIOLOGY AND BIOPHYSICS as PRIMARY DISCIPLINE**

Doctoral training in Cell Biology and Biophysics has four important components: research, program of study, teaching, and seminars. The primary goal is the development and training of independent research scientists. Thus, research is the component that receives major emphasis.

The most important features of doctoral studies in Cell Biology and Biophysics are:

**Research.** The School offers research opportunities in many areas of modern life sciences that address problems of basic life processes at the cellular, subcellular, and molecular levels. Graduate studies offered with primary participation of the faculty in the Division of Cell Biology and Biophysics are based on the belief that training for research can be best accomplished by having an appropriate breadth of background course work, combined with a depth of specialization in a particular research area. We have established guidelines that have a minimum of formal requirements so that students have the flexibility to advance at a pace consistent with development of the individual. Diligence, creativity, and independent thinking are the qualities desired in the candidate's dissertation work.

**Plan of Study.** This consists of a minimum total of 45 credit hours of post-baccalaureate studies distributed as a required minimum 30 credit hour basic core of courses and competencies in Cell Biology and Biophysics and at least one other discipline, plus 15 credit hours of dissertation research in Cell Biology and Biophysics. The core courses should be completed by the end of the second academic year after admission to the graduate program on a full-time basis (individual arrangements will be made for part-time students). Additional electives (above the minimum core) may also be required by the student's research advisor and supervisory committee. A plan of study will be determined based on the student's background and research interests. The core graduate courses should include 18-22 credit hours in Cell Biology and Biophysics (500 or 600 level) and at least 9 credit hours in related disciplines, such as Molecular Biology and Biochemistry, Chemistry, Pharmaceutical Sciences, Pharmacology, Oral Biology or Physics, although other possible combinations are not excluded. Full-time students take their Comprehensive Examination before the beginning of the third academic year after admission to Ph.D. study. Part-time Ph.D. students must complete their Comprehensive Examination immediately after completion of the 30-hour course requirement on their Ph.D. plan of study.

**Teaching.** As part of their graduate training, all Ph.D. students in Cell Biology and Biophysics must participate in the teaching program of the School of Biological Sciences for a period of at least 1 year. This is an important component of preparation for careers in academia or at other institutions, and aids in the development of effective communication skills.

**Seminars.** Students will participate in seminars in which current developments in various areas of life sciences will be discussed and explored. Students will also present seminars on their own work or on work in the current scientific literature. The latter is taken as part of the core of graduate level courses in the primary or secondary disciplines.

**COURSE REQUIREMENTS (CBB as PRIMARY DISCIPLINE)**

**Overall Requirements:** A minimum of 30 credit hours of courses and 15 credit hours of dissertation research for a total of 45 credit hours of post-baccalaureate credits is required.

**Discipline Courses Required:**

- Advanced Experimental Cell Biology, LSCBB 596 or LSCBB 597 (2 credits)
- Seminar in Cell Biology and Biophysics, LSCBB 612 (2 credits)

An additional 9-12 credits must be selected from among the following core courses:

- Molecular and Cellular Neurobiology, LSCBB 505 (3 credits)
- Eukaryotic Cell Biology, LSCBB 520 (3 credits)
- Prokaryotic Molecular Biology, LSCBB 530 (3 credits)
- Membrane Biochemistry, LSCBB 566 (3 credits)
- Structural Biology, LSCBB 569 (3 credits)

Five (5) credits in Analytical Methods (LSCBB/MBB 690) is required prior to completion of the Comprehensive Examination. Maximally 8 credits may be applied to the degree.

**Related Disciplines Required:**

9-12 additional course credit hours in one related discipline or combination of disciplines are required. Related disciplines are Molecular Biology and Biochemistry, Chemistry, Pharmaceutical Sciences, Pharmacology, Oral Biology, Physics and others. Seminar courses may be part of this component of required courses up to a maximum of three for the program, as are two credits of advanced experimental molecular biology.

Any of the above courses, as part of the primary or co-discipline requirement, will be credited toward the Ph.D. course requirement if the student receives a grade of B– or better and if the courses were taken as part of any graduate program at UMKC. In such cases, these courses serve as part of the overall 30 credit course requirement. Note that 700 level courses may not be used to satisfy CBB discipline-specific requirements for the Ph.D. No more than seven (7) course credit hours of 500 level courses, or their equivalent, can be taken at institutions outside UMKC.

**Electives:**

Each student's supervisory committee may require additional courses in any university-approved doctoral discipline as preparation for specific areas of research. These additional requirements may not exceed nine (9) credit hours beyond the 30 credits required for the basic course core. These electives may be taken at any time during enrollment as a graduate student, up to the semester prior to that in which the dissertation defense will occur.

**ACADEMIC PERFORMANCE STANDARDS**

The following rules apply to students who have CBB as their coordinating discipline:

1. A student must earn B– or better grades in LSMBB 561/562. No more than one C grade will be permitted in other basic core course work. This includes the following courses: LSMBB 503, LSCBB 505, LSCBB 520, LSCBB 530, LSMBB 565, LSCBB 566, LSMBB 567, LSCBB 569, LSCBB/MBB 596/597, LSCBB/MBB 690. If a student receives more than one C grade in a basic course, he/she will be dropped from the doctoral program.
2. If a student receives more than two C grades in any course, it will result in a mandatory recommendation for termination from the doctoral program in CBB.
3. No D or F grades are permitted. Any student who receives a D or F grade will be dropped from the doctoral program in CBB.
4. Depending on overall aspects of student performance (including laboratory ability), a student who is terminated from the doctoral program may be permitted to complete a Master's Degree, or he/she may be dropped entirely from graduate study in SBS programs.

## SAMPLE Plan of Study for an Interdisciplinary Ph.D. student (primary unit CBB; co-discipline MBB)

				I.Ph.D.	
<u>Year 1</u>	admission into graduate program (M.S. CMB track)			credit hours POS <sup>#</sup>	
Fall Semester	coursework	LIFESCI 401	Biophysical Principles	3	
		LSMBB 561	General Biochemistry I	4 #	
		LSCBB 596	Adv. Exp. Cell Biology	2 #	
		Graduate Research Seminar <sup>1</sup> (LSCBB 538)			<u>(2)</u> <sup>1</sup>
		teaching	Undergraduate laboratory teaching (GTA)		<b>9</b> [9] <sup>s</sup>
Winter Semester	coursework	LSMBB 562	General Biochemistry II	4 #	
		LSCBB 566	Membrane Biochem. Biophys.	3 #	
		LSMBB 597	Adv. Exp. Mol. Biology	2 #	
		Graduate Research Seminar <sup>1</sup> (LSMBB 538)			<u>(2)</u> <sup>1</sup>
	teaching	Undergraduate laboratory teaching (GTA)		<b>9</b> [9] <sup>s</sup>	
selection of research advisor					
Summer Semester	full admission into I.Ph.D. program				
	research	BIOL 593	M.S. Topics	<b>3*</b> [≥ 3] <sup>s</sup>	
develop research project; selection of supervisory committee					
<u>Option:</u> submission of M.S. Program of Study (POS)					
<u>Year 2</u>	Fall Semester:	coursework	LSCBB 505	Mol. Cell. Neurobiology	3 #
			LSCBB 530	Prokaryotic Mol. Biology	3 #
			LSCBB 612	Seminar	1 #
			LSCBB 538	Graduate Research Seminar	2
		research	LSMBB 690	Analytical Methods	<u>1</u> #
	submission of I.Ph.D. Plan of Study (POS) including Research Proposal			<b>10*</b> [≥ 9] <sup>s</sup>	
	Winter Semester	coursework	LSCBB 520	Eukaryotic Cell Biology	3 #
			BIOL 591 (or LSCBB 591)	Virology (LSMCRB 431)	3 #
			LSMBB 611	Seminar	1 #
			LSMBB 538	Graduate Research Seminar	2
research		LSCBB 690	Analytical Methods	<u>1</u> #	
<u>Option:</u> file to be awarded the M.S. degree in CMB (non-thesis option)			<b>10*</b> [≥ 9] <sup>s</sup>		
Summer Semester	research	LSCBB 690	Analytical Methods	<b>3*</b> # [≥ 3] <sup>s</sup>	
	Completion of Interdisciplinary Residency Requirement * Comprehensive Examination				
<u>Year 3</u>	Fall Semester	coursework	LSCBB 612	Seminar	1 #
			LSCBB/MBB 538	Graduate Research Seminar	2
	research	LSCBB 699	<i>Dissertation Research</i>		<u>3</u>
					<b>6</b> [≥ 6] <sup>s</sup>
<u>Subsequent semesters</u>					
	research	LSCBB 699	<i>Dissertation Research</i>	≥ 1 <sup>s</sup>	
		in FS and WS LSCBB/MBB 538	Graduate Research Seminar	<u>2</u>	
maintain full-load enrollment <sup>s</sup>				<b>3-6</b> <sup>s</sup>	

Graduation is expected by the end of year 5.

# Listed on the I.Ph.D. Plan of Study, fulfilling core or elective course requirements.

\* Fulfill the Interdisciplinary Ph.D. Residency Requirement: 21 course credits within 18 months.

\$ The School of Biological Sciences requires full-time, supported graduate students to enroll in a minimum of 9 hours during Fall, 9 hours during Winter and 3 hours during Summer semesters, until all coursework has been completed. Subsequently, a minimum of 6, 6 and 3 hours, respectively, is expected.

1 Tuition and out-of-state fee waiver support in Year 1 is limited to 9 hours. Formal enrollment in LSCBB/MBB 538 is required of those full-time students who, without this course, would be enrolled in less than 8 hours.

**Course credits:** CBB: 20 credits (57%) + MBB: 12 credits (34%) + Other: 3 credits (9%) = 35 credits.

**Dissertation credits:** Accumulate at least a total of 15 credits of LSCBB 699 prior to Dissertation defense.

## 1.2 INTERDISCIPLINARY Ph.D. STUDY with MOLECULAR BIOLOGY AND BIOCHEMISTRY as PRIMARY DISCIPLINE

Doctoral training in Molecular Biology and Biochemistry has four important components: research, program of study, teaching, and seminars. The primary goal is the development and training of independent research scientists. Thus, research is the component which receives major emphasis.

The most important features of doctoral studies in Molecular Biology and Biochemistry are:

**Research.** The School offers research opportunities in many areas of modern life sciences, which address problems of basic life processes at the cellular, subcellular, and molecular levels. Graduate studies offered with primary participation of the faculty in the Division of Molecular Biology and Biochemistry are based on the belief that training for research can be best accomplished by having an appropriate breadth of background course work, combined with a depth of specialization in a particular research area. We have established guidelines that have a minimum of formal requirements so that students have the flexibility to advance at a pace consistent with development of the individual. Diligence, creativity, and independent thinking are the qualities desired in the candidate's dissertation work.

**Plan of Study.** This consists of a minimum total of 45 credit hours of post-baccalaureate studies distributed as a required minimum 30 credit hour basic core of courses and competencies in Molecular Biology and Biochemistry and at least one other discipline, plus 15 credit hours of dissertation research in Molecular Biology and Biochemistry. The core courses must be completed by the end of the second academic year after admission to the graduate program on a full-time basis (individual arrangements will be made for part-time students). Additional electives (above the minimum core) may also be required by the student's research advisor and supervisory committee. A plan of study will be determined based on the student's background and research interests. The core graduate courses should include 20 credit hours in Molecular Biology and Biochemistry (500 or 600 level) and 10 credit hours in related disciplines, such as Cell Biology and Biophysics, Chemistry, Pharmaceutical Sciences, Pharmacology or Oral Biology, although other possible combinations are not excluded. Full-time students take their Comprehensive Examination before the beginning of the third academic year after admission to Ph.D. study. Part-time Ph.D. students must complete their Comprehensive Examination immediately after completion of the 30-hour course requirement on their Ph.D. plan of study.

**Teaching.** As part of their graduate training, all Ph.D. students in Molecular Biology and Biochemistry must participate in the teaching program of the School of Biological Sciences for a period of at least 1 year. This is an important component of preparation for careers in academia or at other institutions, and aids in the development of effective communication skills.

**Seminars.** Students will participate in seminars in which current developments in various areas of life sciences will be discussed and explored. Students will also present seminars on their own work or on work in the current scientific literature. The latter is taken as part of the core of graduate level courses in the primary or secondary disciplines.

**COURSE REQUIREMENTS (MBB as PRIMARY DISCIPLINE)**

**Overall Requirements:** A minimum of 30 credit hours of courses and 15 credit hours of dissertation research for a total of 45 credit hours of post-baccalaureate credits is required.

**Discipline Courses Required:**

- General Biochemistry I, LSMBB 561 (4 credits)
- General Biochemistry II, LSMBB 562 (4 credits)
- Advanced Experimental Molecular Biology, LSMBB 596 or LSMBB 597 (2 credits)
- Seminar in Molecular Biology and Biochemistry, LSMBB 611 (2 credits)

An additional 3 credits must be selected from among the following courses for a total of 15:

- Eukaryotic Molecular Biology, LSMBB 503 (3 credits)
- Structure and Function of Proteins, LSMBB 565 (3 credits)
- Physical Biochemistry, LSMBB 567 (3 credits)

Five (5) credits in Analytical Methods (LSMBB/CBB 690) is required prior to completion of the Comprehensive Examination. Maximally 8 credits may be applied to the degree.

**Related Discipline Courses Required:**

Ten (10) additional course credit hours in one related discipline or combination of disciplines are required. Related disciplines are Cell Biology and Biophysics, Chemistry, Pharmaceutical Sciences, Pharmacology, Oral Biology, and others. Seminar courses may be part of this component of required courses, up to a maximum of three for the program, as are two credits of advanced experimental cell biology.

Any of the above courses, as part of the primary or co-discipline requirement, will be credited toward the Ph.D. course requirement if the student receives a grade of B– or better and if the courses were taken as part of any graduate program at UMKC. In such cases, these courses serve as part of the overall 30 credit course requirement. Note that 700 level courses may not be used to satisfy MBB discipline-specific requirements for the Ph.D. No more than seven (7) course credit hours of 500 level courses, or their equivalent, can be taken at institutions outside UMKC.

**Electives:**

Each student's supervisory committee may require additional courses in any university-approved doctoral discipline as preparation for specific areas of research. These additional requirements may not exceed nine (9) credit hours beyond the 30 credits required for the basic course core. These electives may be taken at any time during enrollment as a graduate student, up to the semester prior to that in which the dissertation defense will occur.

**ACADEMIC PERFORMANCE STANDARDS**

The following rules apply to students who have MBB as their coordinating discipline:

1. A student must earn a B– or better grade in LSMBB 561/562. No more than one C grade will be permitted in other basic core course work. This includes the following courses: LSMBB 503, LSCBB 505, LSCBB 520, LSCBB 530, LSMBB 565, LSCBB 566, LSMBB 567, LSCBB 569, LSCBB/MBB 596/597, LSCBB/MBB 690. If a student receives more than one C grade in a basic course, he/she will be dropped from the doctoral program.
2. If a student receives more than two C grades in any course, it will result in a mandatory recommendation for termination from the doctoral program in MBB.
3. No D or F grades are permitted. Any student who receives a D or F grade will be dropped from the doctoral program in MBB.
4. Depending on overall aspects of student performance (including laboratory ability), a student who is terminated from the doctoral program may be permitted to complete a Master's Degree, or he/she may be dropped entirely from graduate study in SBS programs.

## SAMPLE Plan of Study for an Interdisciplinary Ph.D. student (primary unit MBB; co-discipline CBB)

				I.Ph.D.
<u>Year 1</u>	admission into graduate program (M.S. CMB track)			credit hours POS <sup>#</sup>
Fall Semester	coursework	LIFESCI 401 LSMBB 561 LSMBB 596 Graduate Research Seminar <sup>1</sup> (LSCBB 538)	Biophysical Principles General Biochemistry I Adv. Exp. Mol. Biology	3 4 # 2 # <u>(2)</u> <sup>1</sup>
	teaching	Undergraduate laboratory teaching (GTA)		9 [9] <sup>s</sup>
Winter Semester	coursework	LSMBB 562 LSCBB 520 LSCBB 597 Graduate Research Seminar <sup>1</sup> (LSMBB 538)	General Biochemistry II Eukaryotic Cell Biology Adv. Exp. Cell Biology	4 # 3 # 2 # <u>(2)</u> <sup>1</sup>
	teaching	Undergraduate laboratory teaching (GTA)		9 [9] <sup>s</sup>
	selection of research advisor			
Summer Semester	full admission into I.Ph.D. program			
	research	BIOL 593	M.S. Topics	3* [≥3] <sup>s</sup>
	develop research project; selection of supervisory committee			
	submission of M.S. Program of Study (POS)			
	<u>Option:</u>			
<u>Year 2</u> Fall Semester:	coursework	LSMBB 503 LSCBB 612 LSCBB 538	Eukaryotic Mol. Biology Seminar Graduate Research Seminar	3 # 1 # 2
	research	LSMBB 690	Analytical Methods	<u>3</u> #
	submission of I.Ph.D. Plan of Study (POS) including Research Proposal			9* [≥9] <sup>s</sup>
Winter Semester	coursework	LSCBB 566 BIOL 525 LSMBB 611 LSMBB 538	Membrane Biochem. Biophysics Bioinformatics & Data Analysis Seminar Graduate Research Seminar	3 # 3 # 1 # 2
	research	LSMBB 690	Analytical Methods	<u>1</u> #
	<u>Option:</u> file to be awarded the M.S. degree in CMB (non-thesis option)			10* [≥9] <sup>s</sup>
Summer Semester	research	LSCBB 690	Analytical Methods	3* # [≥3] <sup>s</sup>
	Completion of Interdisciplinary Residency Requirement *			
	Comprehensive Examination			
<u>Year 3</u> Fall Semester	coursework	LSMBB 611 LSCBB/MBB 538	Seminar (Winter Semester) Graduate Research Seminar	1 # 2
	research	LSMBB 699	<i>Dissertation Research</i>	<u>3</u>
				6 [≥6] <sup>s</sup>
<u>Subsequent semesters</u>	research	LSMBB 699	<i>Dissertation Research</i>	≥1 <sup>s</sup>
	in FS and WS	LSCBB/MBB 538	Graduate Research Seminar	<u>2</u>
	maintain full-load enrollment <sup>s</sup>			3-6 <sup>s</sup>

Graduation is expected by the end of year 5.

# Listed on the I.Ph.D. Plan of Study, fulfilling core or elective course requirements.

\* Fulfill the Interdisciplinary Ph.D. Residency Requirement: 21 course credits within 18 months.

\$ The School of Biological Sciences requires full-time, supported graduate students to enroll in a minimum of 9 hours during Fall, 9 hours during Winter and 3 hours during Summer semesters, until all coursework has been completed. Subsequently, a minimum of 6, 6 and 3 hours, respectively, is expected.

1 Tuition and out-of-state fee waiver support in Year 1 is limited to 9 hours. Formal enrollment in LSCBB/MBB 538 is required of those full-time students who, without this course, would be enrolled in less than 8 hours.

**Course credits:** MBB: 19 credits (56%) + CBB: 12 credits (35%) + Other: 3 credits (9%) = 34 credits.

**Dissertation credits:** Accumulate at least a total of 15 credits of LSMBB 699 prior to Dissertation defense.

**1.3 INTERDISCIPLINARY Ph.D. STUDY with CBB or MBB as CO-DISCIPLINE****Requirements:**

- A. Students who select CBB or MBB as a co-discipline and a primary discipline outside of the School of Biological Sciences will be required to take LSMBB 561 and LSMBB 562 plus sufficient other core courses to constitute the required percentage of their program of study. A minimum total of 11 credit hours of core courses is required, including one (1) credit hour of seminar LSMBB 611 or LSCBB 612.
- B. No more than one C grade in any core course will be permitted for students who have CBB or MBB as their co-discipline. Students who receive more than one C grade will be dropped from the discipline.
- C. Students who have CBB or MBB as their co-discipline, must take and successfully pass an appropriate portion of the School of Biological Sciences Written Comprehensive Exam. They will take the exam along with the students who have CBB or MBB as their primary discipline. Co-discipline students will be required to answer the section of the exam pertaining to LSMBB 561/562 as well as an appropriate number of the questions for the advanced subjects, reflecting the number of courses taken. Co-discipline students should take the School of Biological Sciences comprehensive exam as soon as possible after completing their required School of Biological Sciences coursework. The remaining portion of the comprehensive exam will be conducted according to the requirements of the primary discipline. The oral exam will include the participation of the CBB or MBB doctoral faculty member of the student's committee.

**1.4 M.S. DEGREE PROGRAM in CELLULAR AND MOLECULAR BIOLOGY****M.S. (Thesis option) Course Requirements:**

• LSMBB 561/562, General Biochemistry I and II .....	8	cr.hr.
• LSMBB 611 or LSCBB 612, Seminar .....	1	cr.hr.
• LSMBB 599 or LSCBB 599, Thesis research .....	6	cr.hr.
• Elective courses * .....	15	cr.hr.
	Total : .....	30 cr.hr.

**M.S. (Non-thesis option) Course Requirements:**

• LSMBB 561/562, General Biochemistry I and II .....	8	cr.hr.
• LSMBB 611 or LSCBB 612, Seminar .....	1	cr.hr.
• M.S. Topics BIOL 593 .....	3	cr.hr.
• Elective courses * .....	24	cr.hr.
	Total : .....	36 cr.hr.

\* Selected from the following list or other alternatives approved by the School of Biological Sciences Graduate Programs Committee for either M.S. degree: LSMBB 503, LSCBB 505, LSCBB 520, LSCBB 530, LSMBB 565, LSCBB 566, LSMBB 567, LSCBB 569, LSCBB/MBB 596, LSCBB/MBB 597.

- LSCBB/MBB 538 is approved for the M.S. (non-thesis option) degree only.
- LSCBB/MBB 690 is not approved for inclusion in a M.S. Program of Study.
- BIOL, LSCBB or LSMBB 591, Directed Individual Studies, may only be included in a M.S. Program of Study or in a I.Ph.D. Plan of Study after **prior** approval from the Graduate Programs Officer.
- BIOL 525, Bioinformatics and Data Analysis, is approved for inclusion in a M.S. Program of Study and, listed as 'other discipline', for inclusion in an I.Ph.D. Plan of Study.
- BIOL 519, Principles of Evolution, is approved for inclusion in a M.S. Program of Study (it may be required: see below). It is not approved for inclusion in an I.Ph.D. Plan of Study.

A limited number of credit hours of upper level undergraduate courses is allowed in a M.S. Program of Study (see Section 5), with advisor approval. LIFESC 401, Biophysical Principles, is approved for inclusion.

**Additional M.S. requirements for the Emphasis in Bioinformatics degree option:**

- Bloch school: BDS 508, Statistical Analysis in Business
- OR: BIS 502, Management Information Systems ..... 3 cr.hr.
- BIOL 519, Principles of Evolution ..... 3 cr.hr.
- BIOL 525, Bioinformatics and Data Analysis ..... 3 cr.hr.
- Required courses replacing M.S. elective courses :..... 9 cr.hr.

**1.5****M.A. DEGREE PROGRAM in BIOLOGY****M.A. Degree Requirements:**

- The Master of Arts program of study requires a minimum of 36 credit hours.
- No more than 40 percent of the program may be at the 300 to 400 level; the balance must be at the 500 level or above.
- BIOL 592 Master of Arts Topics in Biology, an advisor-approved, intense investigation with oral presentation. This investigation may be a literature search or a clinical/laboratory investigation.

No more than 6 hours of BIOL 591, Directed Individual Studies, may be applied to this program.

Students typically pursue in a coordinated program the M.A. in Biology and a certificate in the Truman Medical Center Nurse Anesthesia Program. Students interested in this option should contact the Department of Anesthesiology at Truman Medical Center and the School of Biological Sciences for information; admission by both programs is required.

**SAMPLE Program of Study for M.A. student**

<b><u>Year 1</u></b>			credit hours
	Summer admission into graduate program.		
Summer Semester	PHTH 880	Human Anatomy (KUMC)	5
Fall Semester	LSBIOC 304	Biochemistry and Nutrition	4
	PHARM 519	Pharmacology I	4
	BIOL 646	Mammalian Physiology (KU Edwards Campus)	4
Winter Semester	BIOL 734	Cardiovascular and Pulmonary Physiology	3
	BIOL 742	Neurobiology	3
	PHARM 520	Pharmacology II	5
<b><u>Year 2</u></b>			
Fall Semester	EDUC 505	Statistics	3
Winter Semester	BIOL 592	M.A. Topics in Biology	2
<b><u>Year 3</u></b>			
Fall Semester	BIOL 592	M.A. Topics in Biology	2
Winter Semester	BIOL 592	M.A. Topics in Biology	<u>1</u>
			36

**1.6 ACADEMIC PERFORMANCE STANDARDS for all MASTER'S DEGREES**

The following rules apply to students who are pursuing any of the Master's degrees in programs administered by the School of Biological Sciences:

1. No more than two C grades or one C and one D grade will be permitted in graduate courses. This includes all required and elected courses listed above. If a Master's student exceeds these limits, he or she will be dropped from the program.
2. No F grades are permitted. Any student who receives an F grade will be dropped from the Master's program. If a student receives a D grade in a course, he/she must repeat that course and obtain a grade of C or higher. No more than one D grade will be permitted.
3. In order to graduate, students must have a 3.0 overall grade point average. Campus regulations regarding graduate student probation should be consulted.
4. A limited number of appropriate undergraduate science courses may be counted toward Master's degrees in the School of Biological Sciences. These must be approved by the Graduate Programs Officer. The minimum acceptable grade required for inclusion in a Program of Study is B- (2.7 grade points).
5. Students must consult the UMKC catalog so they are familiar with Campus-wide and University-wide regulations pertaining to them.

**Section 2.**  
**ADMISSION INFORMATION**

Graduate Program applications should primarily be made through the OnLine process available at the SBS website at <http://sbs.umkc.edu/graduate>. If this option cannot be used, pdf forms available at the website can be used for application by mail to: **University of Missouri-Kansas City, Graduate Admission Committee, School of Biological Sciences, Room 212 BSB, 5007 Rockhill Road, Kansas City, MO 64110-2499 (Phone: (816) 235-2352, Fax: (816) 235-5158, Email: [sbs-grad@umkc.edu](mailto:sbs-grad@umkc.edu))**. If neither option is available, application packets may be requested by Email, mail or phone at the Graduate Programs Office. As instructed, all materials that must be submitted by mail to complete an application should be sent to the same address. Applications for doctoral study that are ready for review will be presented to the Admission Committee for an admission decision. Applications should be completed in Spring to allow timely processing for admission by the beginning of the Fall semester.

The Web page of the School at <http://sbs.umkc.edu> also provides extensive information about its graduate programs, the process of application, program requirements and opportunities. Access to the UMKC Graduate Catalog with all general and specific information about the graduate programs of the School and UMKC is provided.

This web site also provides information on all doctoral faculty members in the CBB and MBB disciplines of the School of Biological Sciences, including their research interests.

**Minimum Requirements for Admission into graduate programs of the School.**

- UMKC Application for Admission: if possible, the OnLine web application procedure should be used.
- One page narrative on educational and professional background and educational plans is requested OnLine.
- Completed baccalaureate degree in a physical or biological science, or equivalent, is required.
- Official transcript for all undergraduate and post-baccalaureate coursework.
- Minimum GPA (grade point average) of at least 3.0 (4.0 scale) is required for doctoral study. A minimum 3.0 GPA in the sciences is preferred.
- GRE (Graduate Record Examination) aptitude test scores (verbal, quantitative, analytical). The UMKC School of Graduate Studies no longer requires a minimum GRE score, but doctoral study in CBB/MBB disciplines does (GRE scores may be no more than 7 years old). A combined score of the verbal and quantitative GRE tests of 1000 (out of a maximum of 1600) is expected, in combination with a score of 4 (out of a maximum of 6) for the analytical writing test. A GRE score of 1500 is required for tests taken prior to Fall 2002, composed of verbal, analytical and quantitative components for a maximum score of 2400. A GRE score of 1800 is preferred. The subject test is optional.
- Three (3) letters of recommendation, using the OnLine forms and instructions.
- Commitment to a full-time research-based graduate program.

For international applicants for whom English is not the native language:

- TOEFL (Test of English as a Foreign Language) score of at least 550/213 (paper/computer) is required (600/250 or higher is preferred).

For international students:

- A minimum score of 4.0 for the TWE (Test of Written English) portion of the TOEFL is required.

Graduate degree programs of the School do not have a foreign language requirement.

The graduate research degree programs in the School are based on full-time participation throughout all the years and for all semesters between admission and graduation. Only under extraordinary conditions will part-time continuation of the degree program be allowed. Part-time participation may be allowed for students in the M.S. program of the School or for students in the Interdisciplinary Ph.D. program with their co-discipline within but their primary discipline outside of the School.

The M.S. in Cell and Molecular Biology (non-thesis option) is the only graduate program in the School of Biological Sciences reasonably compatible with part-time study. Generally, graduate assistantships are not available for part-time students.

### **Admission Process**

The Graduate Programs Committee, upon recommendation of the Admission and Recruitment subcommittee, makes the decision to recommend or to deny acceptance of any applicant to any of the doctoral programs of the School. In general, admission into the doctoral track begins with admission into the M.S. in Cell and Molecular Biology program. Provisional admission into the Interdisciplinary Ph.D. program may be recommended for international students with a prior Master's degree in order to obtain appropriate visa.

The Graduate Programs Officer makes admission decisions of applicants for a Master's degree.

Once a decision or recommendation regarding admission has been accepted by the Dean, that decision is final. The decision is communicated to the applicant. If an applicant is admitted, a letter of admission and a possible financial offer will specify the conditions of admission. This letter must be returned to the School with a signature, signifying acceptance of the offer.

To expedite the admission process, international applicants to the graduate programs of the School may be pre-selected before they are offered the opportunity to apply. All international applicants should use the SBS graduate application site (<http://sbs.umkc.edu/graduate/>) for information and instructions including Minimum Admission Requirements, required official certificates, diplomas and records, Summary of Education Experiences by Years and Financial Statement.

Upon demonstrated experience and interest in biophysical research problems, a Ph.D. applicant may request to be recognized as a potential participant in the Regional Biophysics Program with the intent to take CBB as coordinating unit and MBB as co-discipline. Admission under these conditions opens the possibility to select as a research co-advisor one of the Kansas University Medical Center (KUMC) Regional Biophysical Associates who have adjunct doctoral status. For students admitted into this program, one (1) section of the laboratory course (LSCBB/MBB 596/597) will be located in the laboratory of an Associate at KUMC. When the choice of an Associate as Ph.D. Research Advisor is approved, dissertation research will be performed in this faculty's research laboratory (see Section 5).

### Section 3.

## ORIENTATION

Many regulations of graduate programs at UMKC involve the School of Graduate Studies. To avoid misunderstandings, students should NOT directly contact the School of Graduate Studies. Most information is available in the Graduate Programs Office. **ALL paperwork to and from the School of Graduate Studies MUST be exchanged by way of the Graduate Programs Office** (Room 212 BSB) where copies of all submitted forms and correspondence are maintained.

#### General Information

Orientation activities by the School of Biological Sciences and the School of Graduate Studies are scheduled for the week prior to the beginning of classes in the first Fall semester of the program.

Every new graduate student in the School will receive the orientation schedule from the Graduate Programs Office approximately one month before classes begin. Each student is expected to participate in all orientation meetings, those of the School of Biological Sciences and those organized by the School of Graduate Studies and other University offices.

During Orientation each student will meet with the Graduate Student Advisor to plan coursework for the first semester of academic attendance. **Section 4** contains information on graduate course offerings. It also provides detailed information on the procedures to register for classes at UMKC, and to obtain and process fee remissions. The course syllabus for the laboratory course (LSCBB/LSMBB 596/597) with the schedule of laboratory assignments is distributed at Orientation.

If required following a presence at UMKC in a prior degree or non-degree program, a UMKC “Declaration of Major” [[http://www.umkc.edu/registrar/forms/declaration\\_major.pdf](http://www.umkc.edu/registrar/forms/declaration_major.pdf)] [**Form 3-1**] is signed by the student for submission by the Graduate Programs Office to the registrar’s office at UMKC.

Teaching assignments will be distributed to TA’s during or prior to Orientation. International Ph.D. students are required to attend general teaching information sessions even if they will not yet be involved in teaching.

During Orientation week, Graduate Teaching Assistants will have a course-specific instruction and organizational meeting with the faculty and instructors of the course.

- Orientation includes a session that provides information regarding the documentation required to make the appointment of a graduate student ‘with support’ effective. All student contracts are based on or are shorter-term variations of a 6-month renewable contract with start dates of July 1 and January 1.
- Once a student is registered for the first time for classes and has paid fees, a student ID card can be obtained if proof of registration and another picture ID is presented in the University Center (opposite of Roo Print). With this ID card, students can use student facilities like the gym in the Swinney Recreation Center.
- The Graduate Programs Office provides a building access key to every new graduate student. Students must pick up this ‘OM’ key from Room 101 in the General Services Building and sign it out [**Form 3-2**]. The key provides access to the BSB building after-hours and on weekends, to its elevators and research floors, to common laboratory equipment and to scientific journals in rooms 504 and 504A SCB and 204 BSB.
- Keys required for access to the laboratories should be provided by the faculty member in charge of the laboratory and should be signed-out to the student on a temporary basis. Application for a new or additional key requires an approved Key Request form [**Form 3-2**]. Laboratory access keys permit access to restricted common-use rooms such as the computer laboratory in Room 317A BSB.
- Parking permits (hang tags) for nearby parking lots can be purchased from the Campus Police/Parking Control window in the Academic Center building. Students should realize that Campus Police will ticket parking violations, e.g. expired parking meters and cars in non-parking locations. A very limited number of parking spaces are available for graduate students in the parking lot in front of the BSB/SCB building. The Graduate Programs Office may place your name on a list to get one of these places when one becomes available.
- Students should purchase health and other appropriate insurance coverage individually. Information about available health insurance options through UMKC will be provided at Orientation or may be obtained from the UMKC website by looking up the keyword “Student Insurance”.

- A bank account is required for automatic deposit of paychecks. The first paycheck will be issued on September 1, covering earnings over the prior two weeks but automatic check deposit of this first check is unlikely. Earnings for subsequent months will be automatically deposited by the first of the month.
- Photographs of new students will be taken during the week of Orientation. They will be part of the display case with pictures of current SBS graduate students on the first floor of the Biological Sciences Building (BSB). If students miss the opportunity to have their picture taken at the time scheduled, they may be held responsible for the additional costs of a re-take session.

One Saturday in early September, the School sponsors a **picnic** to welcome all new faculty, staff and students. Participation of all students, staff and faculty, and their families, is expected.

### Laboratory Safety

Orientation includes a session on **laboratory safety**, presented by CBARS, the UMKC office for Chemical, Biological And Radiation Safety. Each student is required to be present during this session.

Each student is required:

- to read the Safety Manual [*Form 3-3*], prior to entering any of the laboratories of the School,
- to sign the page that signifies that the Manual has been read and understood, and
- to return the signed page to the Graduate Programs Office *prior to* the start of classes.

Orientation includes a session on **radiation safety**. Although increasingly non-radioactive methods replace classical radioactive ones, some laboratories necessarily use radioactive tracers. Attendance at the Radiation Safety training session during the Orientation week is mandatory. If this training is not taken during Orientation, extensive delays may interfere with participation (and grades) in the required Advanced Experimental Cell or Molecular Biology course sessions.

### Radiation Safety Requirements for Experiments using Radioisotopes

If laboratory experiments involve the use of radioisotopes, radioisotope safety training is required which is provided by CBARS, the office for Chemical, Biological and Radiation Safety at UMKC. The Handbook for Radiological Operations and all forms are available OnLine at <http://www.umkc.edu/research/cbars.html>

The following steps are required to achieve and maintain the Radiation Worker Status:

- The Health Physicist of CBARS will meet with new graduate students during the Orientation Week for the UMKC radiation worker orientation lecture. Participation for certification to be able to do experiments involving radioisotopes is mandatory. If participation is excused for acceptable reasons, a student should participate as soon as possible in a subsequent certification program, scheduled by a Health Physicist at CBARS (235-5289).

- Complete form [<http://www.umkc.edu/research/RadSafe3.doc>] "Statement of Training and Experience for Use of Radiation Sources, Radiation Worker"; sign it; have the authorized user (the faculty member) sign and date the form; make a copy to keep on file in the laboratory; and send the original to the Division of Radiation Safety of CBARS.

Be certain that your student Email is entered on the form. This will register you automatically for the OnLine portion of the Radiation Safety training and will allow training certification to be issued.

- Request instruction by the authorized user (the faculty member) in specific laboratory and experimental safety procedures as well as the experimental protocol itself.
- Contact the Division of Radiation Safety of CBARS to arrange your interview with a staff member. This includes an observation of a "cold" run of the experimental procedure and of your first use of radioactive materials in the procedure at UMKC. (See [<http://www.umkc.edu/research/RadSafe22.doc>] "Radiation Worker Checklist" for what will be expected.)

NO RADIOACTIVE MATERIAL SHALL BE HANDLED BEFORE THE OBSERVATION HAS TAKEN PLACE.

- Check with the Division of Radiation Safety of CBARS when any of the following conditions occurs:
  - a) you change laboratories,
  - b) you change or add protocols,
  - c) you want to use another isotope.
 Another observation session may be required.
- Attend a radiation safety refresher training course at least once every year, when offered.

**Computing, Libraries and other Information Resources**

Orientation includes a session on computer use, facilities and resources. Personal student email and computer accounts are automatically established by UMKC upon registration. Your email account will be activated and password selected during Orientation.

The Computer Helpdesk phone line at phone number 2000 [(816)-235-2000] can provide help with any computer-related problems. For access from home, students must provide their own access (Internet Service Provider). Information on ISP's is provided through the Information Systems website at <http://www.umkc.edu/is/> Computers in the School are networked to provide direct access to individual computer accounts, email and the net, including information on the School's homepage <http://www.umkc.edu/sbs/> (a.k.a. <http://sbs.umkc.edu>). Windows and Macintosh based computer facilities are maintained in Room 317A BSB for graduate student use, for coursework and data analysis. The School's Information Technology specialist is located in room 109 BSB.

The School has access through the Internet and Miller Nichols' Library (<http://www.umkc.edu/lib/>, phone: 816-235-1534) subscriptions to a wide range of databases, including Medline. Personal subscriptions of faculty to journals, placed in rooms 504 and 504A SCB and in 204 BSB (For OnLine listing, look under 'Research & Resources' – 'Library Resources' on the SBS Intranet), are available for use by faculty and students provided that users resshelf all issues and maintain the rooms in good order.

Linda Hall Library (<http://www.lhl.lib.mo.us/>), located on the campus grounds, is a non-University institution to which faculty and staff of UMKC have graciously been given access. Don't abuse the privilege but use the science resources, one of the finest in the Nation, to enhance your study and research.

Some journals are located in the Miller Nichols' Library on the Volker Campus and additional ones in the Health Sciences library within the School of Medicine building and the Dental School. Another library with direct access to the journal stacks is the Dykes' Health Sciences library (<http://library.kumc.edu/>) of the University of Kansas Medical Center (KUMC), which is located at 2100 West 39<sup>th</sup> Street in Kansas City, Kansas. Patrons of UMKC can arrange services including the possibility of book loans by contacting the service desk in Dykes' library.

**Student Files and Student Database**

The Graduate Programs Office maintains a file for every graduate student. The materials relating to the application and admission process will, over time, be supplemented with all documents related to progress and completion of the degree program. This file is kept under strict abidance with the rules of access under the Family Education Rights and Privacy Act of 1974 (FERPA) [**Form 3-4**] and other applicable regulations [<http://www.umkc.edu/registrar/ferpa.html>].

In order to maintain contact with all students in the graduate programs of the School, students should provide the Graduate Programs Office with **information on address, phone numbers and email address** and should **keep this information current and up-to-date**. To update all files and obtain new addresses of residency, students are asked to fill in the "Update Graduate Student Information" form [**Form 3-5**] and return it to the Graduate Programs Office. The office will also forward the UMKC 'Change of Name or Address' form [<http://www.umkc.edu/registrar/forms/information.pdf>] [**Form 3-6**], provided it has been signed. At the time of the annual review of progress, the Graduate Programs Office will review its information and information present at the School of Graduate Studies and the University to maintain accurate and current files.

Official mail will be sent to the home address of the student. However, regular mail and notices will be distributed through the student mailboxes, located at the Graduate Programs Office.

*First-year students: **Do not forget to collect your mail in 212 BSB !***

**Student Organizations**

Independent student organizations that students may wish to participate in, for their own benefit and on their own time:

- The Lavoisier Society (<http://sbs.umkc.edu/lavoisier/>).
- The Interdisciplinary Doctoral Student Council (IDSC), which publishes the IDSC Newsletter.
- Biological Sciences Student Government (<http://sbs.umkc.edu/bssg/>).

**Student Code of Conduct**

All students enrolled in the University are expected to conduct themselves according to the rules of the Student Code of Conduct as approved and revised by the Board of Curators, May, 1994, and as published in the General UMKC Catalog (<http://www.umkc.edu/catalog>).

This document includes rules of conduct regarding academic dishonesty (such as cheating and plagiarism), obstructive or disruptive behavior, theft, possession of firearms, inappropriate usage of computers and other violations of the University rules and regulations. Students are encouraged to review this document and conduct themselves accordingly. It is the policy of the School of Biological Sciences to strictly enforce the requirements and expectations of the Student Code of Conduct.

The Graduate Programs Committee has decided as a matter of policy that cheating on an exam or falsification of laboratory results shall result in mandatory dismissal from the graduate programs of the School of Biological Sciences.

**Information for International Students**

Special information sessions for International Students are part of the Orientation program organized by the School of Graduate Studies and the International Students Affairs Office (ISAO) (<http://www.umkc.edu/isao/>).

*Be aware, the rules that apply to international students often change. We cannot control the rules passed by Immigration in the US Department of Homeland Security. If you are an international student: keep in contact with ISAO.*

- International students must clear their attendance and register at the International Students Affairs Office at 5235 Rockhill Road prior to their first registration at UMKC.
- It is imperative that international students comply with SEVIS immigration registration requirements, including annual updating of information and registration, in order to maintain their legal status at UMKC and within the USA.
- In general, to maintain status full-time enrollment is required for all regular semesters (Fall and Winter). Please review the specific information for international students provided in Section 4 under the heading 'Academic Loads'.
- International students are required to buy the Student health and accident insurance (*Look up "Student Insurance" on the UMKC website* <http://www.umkc.edu>) before they are allowed to register for classes. Exemption of this requirement should be requested **each semester prior to registration** by submitting a "Request for Exemption" [**Form 3-7**] form to ISAO and presenting the signed waiver when registering for classes. A waiver will be granted if insurance coverage exists because of employment by the University or because the student is covered as a dependent on existing insurance e.g. by an employed spouse. Note that exemption will not be granted because insurance could be purchased elsewhere by the student at a lower price.  
If a permanent change in immigration status occurs, the "Request for Exemption" [**Form 3-7**] form may need to be submitted to ISAO only once.
- ISAO arranges for students with a TOEFL of less than 600/250 (paper/computer) to take, prior to first enrollment, the English Evaluation Examination conducted by the UMKC Academic English for International Students (AEIS) program. Depending on results, AEIS coursework may be required.
- Teaching is a required part of the Ph.D. programs in the School. International students must fulfill the following requirements in their first year to demonstrate acceptable progress and to be able to fulfill the minimum of 2 semesters of teaching, typically in year 2 (see Section 5).
  - Take the Speaking Proficiency English Assessment Kit (SPEAK) test and score 50 or better, out of a maximum score of 60.
  - Participate in the Cultural Orientation for International Graduate Teaching Assistant Candidates, which is part of the new graduate student orientation week preceding the start of classes of the initial Fall Semester of enrollment, organized by ISAO.
  - Attend at least four 2-3 hour advanced teaching strategy workshops, out of a total of five (5), and demonstrate verbal communication skills in a video taped presentation.

## Section 4. COURSES

### Interim Advisor assists in coursework planning

The Graduate Programs Officer (GPO) of the School will act as the **Interim Advisor** for all graduate students until a permanent research advisor has been selected and approved.

Beginning at Orientation, the Graduate Programs Officer will help students plan their first year's coursework.

All full-time graduate students will enroll in the two-semester General Biochemistry course (LSMBB 561/562), a prerequisite for most other graduate courses in the School. Typically, the Biochemistry course is started in Fall in combination with Biophysical Principles (LIFESCI 401) (unless exempted), the first semester of the Advanced Experimental Cell or Molecular Biology laboratory course (LSCBB or LSMBB 596).

All doctoral track students must participate in the Graduate Research Seminar activities on each Thursday afternoon during the regular semester: the 3:00 p.m. pre-seminar and the 3:45-5:00 p.m. seminar. Generally, students enroll formally in this course (LSCBB/LSMBB 538) during each regular semester, starting in Year 2. During Year 1, formal enrollment in LSCBB/MBB 538 is required of those full-time students who, without this course, would be enrolled in less than 8 hours.

The Plan of Study samples (Section 1) provide overviews of coursework typically required for the Ph.D. degree.

Graduate students with the goal of a Masters' degree only (full-time and part-time, thesis option and non-thesis option alike) will likely also start with the two General Biochemistry courses. Development of a Program of Study, including all coursework required for the degree and the anticipated semester of taking each course, is recommended. This plan should be reviewed as soon as possible with the Graduate Programs Officer.

### Registering for Courses at UMKC

Schedules of UMKC course offerings are available from the Graduate Programs Office or on the web (<http://www.umkc.edu/registrar>). These class schedules provide specific registration dates, costs per credit hour, and procedures for registering by phone or in person.

Some SBS graduate courses are restricted and require specific consent to register. The Graduate Programs Office provides consent numbers for these courses. A generalized schedule of courses for current and future semesters is provided below at **Anticipated Offering**.

Registration for SBS graduate courses requires signature permission from the Graduate or Research Advisor, using the UMKC Advance Advising Form [**Form 4-1**]. Once a student is registered at UMKC, a pre-printed registration form is sent prior to the start of the next semester. Using the pre-printed form is not required but it assures a smoother process to register for courses (provided that the Graduate or Research Advisor has signed it). Receiving appropriate advising prior to registering each semester is essential. It may be required before Fee Remissions are provided.

### Fee Remissions

Tuition fee remissions [**Form 4-2**] may be provided to graduate students in the School. These are processed by the Graduate Programs Office and must be picked up from the Office prior to registration.

Students should be aware that the fee remissions do not cover the so-called 'incidental fees'. Students are responsible for paying all incidental fees themselves. A current overview of tuition and fees is available OnLine at the cashiers' webpage at <http://www.umkc.edu/adminfinance/finance/cashiers/>

### Out-of-state Fee Waivers

Ph.D. students, admitted into the Interdisciplinary Ph.D. program and who are not Missouri residents, are automatically awarded out-of-state fee waivers by the School of Graduate Studies, to a maximum of 9 credit hours for each regular semester.

Domestic students generally establish Missouri Residency by the end of Year 1, after which out-of-state fee waivers are no longer required. International students on student visa cannot establish Missouri Residency. They require processing of out-of-state fee waivers for each semester of enrollment.

Supported, full-time doctoral students who enter into the M.S. in Cell & Mol. Biology program in Fall of Year 1 and who are not Missouri residents, will also be awarded out-of-state fee waivers to a maximum of 9 hours. Upon good performance, these students will be admitted into the Interdisciplinary Ph.D. program in Summer of Year 1

(Section 5) and provided the out-of-state fee waiver support available from the School of Graduate Studies for all I.Ph.D. students.

For Masters' students the Graduate Programs Office must process each semester out-of-state fee waivers for all international students and for those US citizens or permanent residents who have yet to qualify for Missouri Residency (see <http://www.umkc.edu/admissions/idx-0101residency.html>).

### **Courses in the School of Biological Sciences**

Every course in the School of Biological Sciences supplies each student with a syllabus, detailing an outline of course content and schedule, information on student contact hours with each instructor, examination schedule, grading and appeal policies. Students may request in the Graduate Programs Office to read course syllabi of previous graduate course offerings to assist in the selection of coursework. Undergraduate advisors in the School can provide access to course syllabi for undergraduate courses.

Changes in course registration, including drop, withdraw or change to and from audit, **must** receive prior approval by the Graduate Programs Officer, **must** follow University regulations and **must** conform to University deadlines (see UMKC Class Schedule for the semester (<http://www.umkc.edu/registrar>) and the UMKC Catalog: <http://www.umkc.edu/catalog>). Approval will only be granted upon recommendation by the Graduate Advisor for New Students or by the permanent Research Advisor of the student, as indicated by a signature on the UMKC Add/Drop Form [[http://www.umkc.edu/registrar/forms/add\\_drop.pdf](http://www.umkc.edu/registrar/forms/add_drop.pdf)] [**Form 4-3**].

The graduate courses, currently offered within the School, are shown in the table on the next page. The list includes information on the anticipated offering pattern, course prerequisites and the discipline with which they are associated. This information is provided to assist in planning of coursework for the **M.S.** Program of Study [**Form 5-4**] or the **I.Ph.D.** Plan of Study [**Form 6-1**]. This information is not a promise that a course will be offered.

In view of the fact that the two Biochemistry courses are pre- and co-requisites for all other graduate courses of the School, students who have been accepted into the graduate program in Biological Sciences with CBB and MBB as the two I.Ph.D. disciplines and who have a demonstrable prior high level of competency in graduate-level biochemistry, may petition the Graduate Programs Committee prior to the start of the first semester of graduate enrollment to be allowed to 'test-out' of the two biochemistry courses. The consequences of this choice (the number of credit hours per semester in year 1 and 2; potential advanced enrollment in graduate courses; fulfilling I.Ph.D. residency requirements) must be discussed with the Graduate Programs Officer before permission is given. If permitted, the exam will be given in the week preceding the start of classes and registration into LSMBB 561 should be delayed until the result of the test has defined the appropriate section of LSMBB 561 registration.

### **Undergraduate Courses**

Undergraduate courses do not fulfill any requirement for the Ph.D. degree and should **not** be listed in any I.Ph.D. Plan of Study (see Section 6, **Form 6-1**).

Undergraduate courses, including transfer credit, may be accepted as part of the M.S. Program of Study within the numerical guidelines and minimum grades, as defined by the Transfer Credit Policy in the UMKC Catalog. LIFESCI 401, Biophysical Principles, offered each Fall, is required for graduate students in Year 1 unless exempted by petition to the Graduate Programs Committee, based on proven accomplishments and competency in physical chemistry or biophysics. As an upper-level undergraduate course, Biophysical Principles can be included as coursework towards the M.S. degree, but should not be listed on an I.Ph.D. Plan of Study. Irrespective of the degree program, the grade received for this course, as for any other course taken, becomes part of the student's overall GPA.

Note that undergraduate courses taken by International students to acquire and demonstrate proficiency in English, do not fulfill any requirement for graduate degrees in the School and should not be included in any Plan or Program of Study.

**Anticipated Offering of SBS Graduate Courses****Graduate Courses of the School of Biological Sciences**

Designation	Name	consent required	cr. hrs	Offer pattern	Required
LSCBB 505	Molecular and Cellular Neurobiology	#	3.0	FS odd years	561/562
LSCBB 520	Eukaryotic Cell Biology	#	3.0	WS even years	561/562 <sup>1</sup>
LSCBB 530	Prokaryotic Molecular Biology	#	3.0	FS odd years	561/562
LSCBB 538	Graduate Research Seminar *		2.0	FS	
LSCBB 566	Membrane Biochemistry and Biophysics	#	3.0	WS odd years	561/562 <sup>1</sup>
LSCBB 569	Structural Biology, Methods and Strategies	#	3.0	FS 2000, 2004	561/562
LSCBB 591	Directed Individual Studies in CBB	#	1 – 6	Arranged	561/562
LSCBB 596	Advanced Experimental Cell Biology I		2.0	FS even years	561 <sup>2</sup>
LSCBB 597	Advanced Experimental Cell Biology II		2.0	WS even years	561/562 <sup>1</sup>
LSCBB 599	Thesis Research in CBB (M.S. thesis-option)	#	1 – 12	Arranged	561/562
LSCBB 612	Seminar in Cell Biology and Biophysics	#	1 – 3	FS	561/562
LSCBB 690	Analytical Methods in CBB		1 – 8 <sup>3</sup>	Arranged	561/562
LSCBB 699	Dissertation Research in CBB (Ph.D.)		1 – 12	Arranged	561/562
LSMBB 503	Eukaryotic Molecular Biology	#	3.0	FS even years	561/562
LSMBB 538	Graduate Research Seminar *		2.0	WS	
LSMBB 561	General Biochemistry I	#	4.0	FS	
LSMBB 562	General Biochemistry II	#	4.0	WS	561
LSMBB 565	Structure and Function of Proteins	#	3.0	WS odd years	561/562 <sup>1</sup>
LSMBB 567	Physical Biochemistry	#	3.0	WS even years	561/562 <sup>1</sup>
LSMBB 591	Directed Individual Studies in MBB	#	1 – 6	Arranged	561/562
LSMBB 596	Advanced Experimental Molecular Biology I		2.0	FS odd years	561 <sup>2</sup>
LSMBB 597	Advanced Experimental Molecular Biology II		2.0	WS odd years	561/562 <sup>1</sup>
LSMBB 599	Thesis Research in MBB (M.S. thesis-option)	#	1 – 12	Arranged	561/562
LSMBB 611	Seminar in Molecular Biology and Biochemistry	#	1 – 3	WS	561/562
LSMBB 690	Analytical Methods in MBB		1 – 8 <sup>3</sup>	Arranged	561/562
LSMBB 699	Dissertation Research in MBB (Ph.D.)		1 – 12	Arranged	561/562
LIFESC 401	Biophysical Principles <sup>4</sup>		3	FS	
BIOL 519	Principles of Evolution <sup>5</sup>		3	FS	
BIOL 525	Bioinformatics and Data Analysis <sup>6</sup>		3	WS	
BIOL 593	M.S. Topics (M.S. thesis-option; research)		1 – 4	Arranged	561/562
BIOL 899	Required Graduate Enrollment (M.S.)		1	Arranged	
LIFESCI 899	Required Graduate Enrollment (Ph.D.)		1	Arranged	

\* Repeatable.

<sup>1</sup> LSMBB 562 is a pre- or co-requisite.

<sup>2</sup> LSMBB 561 is a pre- or co-requisite.

<sup>3</sup> At least 5 hours of Analytical Methods coursework, taken as LSCBB 690, LSMBB 690 or as a *combination* of these courses, is required for the degree (see Section 1). Maximally 8 hours may be applied to the Plan of Study (Section 6).

<sup>4</sup> LIFESC 401 is generally required for M.S. and I.Ph.D. students. It should be included in the M.S. Program of Study (Section 5) but it cannot be included in the Ph.D. Plan of Study (Section 6).

<sup>5</sup> BIOL 519 is allowed for the M.S. Program of Study (Section 5) and is *required* for the degree option Emphasis in Bioinformatics. It is not acceptable for inclusion in the Ph.D. Plan of Study (Section 6).

<sup>6</sup> BIOL 525 should be listed in the Ph.D. Plan of Study under 'Other discipline coursework' (**Form 6-1**).

**Graduate Research Seminar**

Direct interaction with a diverse array of accomplished research scientists in cellular and molecular biology is a requirement for any graduate student in the School. The weekly interdisciplinary research seminar of the School of Biological Sciences provides an effective opportunity for every graduate student. Students should register every Fall or Winter Semester for 2 credit hours in LSCBB 538 or LSMBB 538, respectively. Should course enrollment in Year 1 including LSCBB/MBB 538 exceed 9 hours in Fall or Winter semesters, participation without formal enrollment is expected. The **Pass/Fail (Credit/NonCredit) grading** of these courses, even without formal enrollment, is largely based on regular attendance at the seminar and active participation in the appropriate pre-seminar sessions. The Graduate Research Seminar courses are not considered “electives” (see Section 1) and cannot be listed on the I.Ph.D. Plan of Study [**Form 6-1**] or on an M.S. (thesis option) Program of Study [**Form 5-4**], unless specific prior permission in writing is granted by the Graduate Programs Officer. Official enrollment credit hours with passing grades are considered acceptable alternatives (typically 4 hours from enrollment in Fall and Winter semesters of Year 2) to a maximum of 8 credit hours, to fulfill elective course requirements towards the non-thesis M.S. degree (see Section 1.4).

The studies presented in the School seminars will be subject to testing in the written part of the Comprehensive Exam, a requirement for all I.Ph.D. students. At least three (3) passing grades in Graduate Research Seminar, irrespective of official enrollment, are required before the Comprehensive Exam can be taken.

In addition, every I.Ph.D. graduate student must complete at least three semesters of a 1 credit hour seminar course offered in the School on subjects of current interest (LSMBB 611, LSCBB 612). The M.S. degree in Cell and Molecular Biology requires completion of at least one semester of seminar coursework in LSMBB 611 or LSCBB 612. As part of the course requirements, the student will give oral presentations.

**Taking Courses outside the School of Biological Sciences**

Students may need to take graduate courses outside of the School of Biological Sciences to acquire graduate instruction deemed necessary by the Research Advisor and the Supervisory Committee. Before graduate students enroll in any course at UMKC, outside of SBS, it should be established that the course will be acceptable for the Plan/Program of Study. This is accomplished most effectively by inclusion of the proposed coursework (prior to enrolling) in the Plan/Program of Study and approval by the student’s Supervisory Committee or the Graduate Programs Officer. The I.Ph.D. Plan of Study requires approval by the Dean of Graduate Studies.

Some graduate courses offered by the University of Kansas Medical Center (KUMC) have been routinely accepted when no equivalent course is offered at UMKC and such a course has been approved, e.g. for inclusion in an Interdisciplinary Ph.D. Plan of Study. Students should contact the Graduate Programs Office to be informed of procedures to register for any coursework at a college or university other than UMKC, and of associated fees. Upon completion of any such coursework, students must request that an official transcript be sent to the UMKC Records Office for posting. For KUMC or KU courses, submit an “Official Transcript Request” [**Form 4-4**] to the Graduate Programs Office with required payment at the time of registration for the course, or any time thereafter, for processing. Failure to request an official transcript may delay graduation if grades for courses listed in the Plan of Study are not shown on the transcript at the time that completion of degree requirements is evaluated.

**Continuous Graduate-Enrollment Requirement**

From the time of admission to completion of all coursework all graduate students are expected to enroll in each regular semester (Fall and Winter). Students with GRA/GTA appointments in SBS are expected to enroll in each semester including Summer. Under exceptional circumstances, these students may request a leave of absence for no more than one semester. Students who do not enroll for one (1) regular semester may re-enroll without applying for readmission. Students who do not enroll for two or more regular semesters must re-apply for admission. Readmitted students are subject to changes in degree requirements.

After completion of all courses in their Plan/Program Of Study, all graduate students must remain continuously enrolled in each regular semester up to and including the semester in which their degrees are awarded. Enrollment is required during the Summer term only if the student will graduate at the end of that particular Summer term, or if the student holds a GTA/GRA appointment during that term.

In case no suitable credit registration is possible, continuous graduate enrollment status should be maintained by registering for 1 credit hour in a 899 course, using BIOL 899 for M.S. and LIFESCI 899 for Ph.D. students. Failure to comply will result in the need for readmission.

### **Academic Loads**

Detailed definitions for academic loads for graduate students are outlined in the UMKC Catalog.

The School of Biological Sciences requires that full-time graduate students with GRA/GTA support are enrolled for a minimum of **9** hours during Fall, **9** hours during Winter and **3** hours during Summer semesters, until all coursework has been completed. Subsequently, full-time graduate students with support must enroll in a minimum of **6** hours during Fall, **6** hours during Winter and **3** hours during Summer semesters (see Sample Plan of Study, section 1). Only under exceptional circumstances and with written permission from the Graduate Programs Officer will full-time students with support be allowed to enroll in fewer hours.

Generally, this level of credit hours equals or exceeds the requirements for a full academic load as defined by UMKC or the School of Graduate Studies.

The School of Graduate Studies defines a full academic load for students with GRA/GTA support as enrollment for **6** credit hours in Fall and Winter semesters and for **3** credit hours in Summer, until all coursework has been completed. After completion of coursework, registration for **3** credit hours in any semester is considered a full academic load. Any number of credit hours in the exit semester of a student with GRA/GTA support is considered a full academic load.

The School of Graduate Studies further specifies that fully admitted Ph.D. students should be enrolled in a minimum of 3 credit hours (exclusive of dissertation credit) during each Fall and Winter semester until all coursework specified on the Plan of Study has been completed.

In case, with permission, a student is enrolled for less than a full academic load, one or more of the actions listed below may be appropriate.

In such a situation, provided all course requirements have been fulfilled and a student is enrolled in at least 1 hour of Dissertation Research, *full-time status* can be declared by the Graduate Programs Office for a maximum of 6 semesters, for such reasons as listed below.

Registration for less than a full load may have consequences that require action:

- *Certification to Lending/Funding Agencies.* The Graduate Programs Officer can request that UMKC Records send an official letter to an agency to certify that a graduate student is full-time for purposes of financial aid or repayment of student loans if the student has a GRA appointment, is engaged full-time in research, and is registered for at least 1 credit hour of research.
- *Social Security (FICA) Tax.* Any graduate student enrolled and regularly attending classes at least half-time is exempt from FICA withholding (Human Resources Policy Manual sections 222 and 306: <http://www.system.missouri.edu/hrs/manual/222.htm> and [306.htm](http://www.system.missouri.edu/hrs/manual/306.htm)). Each Semester, any student that does not meet these requirements should submit to the Payroll Office a 'Request for Exemption from Social Security Withholding Tax' [**Form 4-5**]. The Graduate Programs Office will provide this form, when appropriate, prior to the start of each semester. It must be signed by the Research Advisor, submitted to the Graduate Program Officer for signature and for transmittal to the School of Graduate Studies and Payroll Office. The request will be judged in each case separately but is likely to be approved. The period for which you are allowed to request an exemption is one (1) semester. Thus, if allowed to register for less than full academic load, you will have to repeat the request for exemption prior to every semester until graduation.
- *Student visa status.* International students must provide appropriate documentation to the International Student Affairs Office (ISAO) at UMKC showing that they maintain a *de facto* full-time status. The student must obtain the required form [**Form 4-6**] from ISAO. The Graduate Programs Officer will sign the form. The ISAO will process the declaration and place the required statement on the student's transcript.

**Section 5.**  
**YEAR 1**

**Coursework Planning**

During Orientation, each new student meets with the Graduate Advisor to select classes (Section 4), to process fee remissions (see Section 4) and to register for classes (see Section 3).

During the first year, all new doctoral students will do research in three diverse laboratories, each for a 10-week period. This is a course ('Advanced Experimental Cell *or* Molecular Biology') designed to provide research preparation in a series of productive environments with different research interests. Combined over two semesters, this course amounts to a total of 4.0 credit hours of coursework. Students must register in the LSCBB/LSMBB 596 course for the Fall Semester and in the LSCBB/LSMBB 597 offering in Winter (see Section 4). A course syllabus with laboratory assignments is distributed at Orientation. Laboratory assignments are made for each student by the course coordinators. Students do NOT select the laboratories in which they will do their research but they are *allowed* to make their preference(s) known to the Graduate Programs Officer who will try to accommodate these preferences. The course is fundamentally *a laboratory course* with multiple instructors, designed to allow a new student to experience a range of experimental approaches to scientific questions, and to develop basic laboratory skills. This laboratory research is NOT directed towards the acquisition of publishable data. The presentations at the end of each laboratory period must reflect this attitude. The laboratory rotations also allow different faculty in the School to assess the potential of a student. The faculty member supervising the laboratory where the research was performed grades students for each of the three laboratory sessions. In addition, the course coordinator(s) grade the performance in presentations.

Students should realize that this laboratory course is not intended as an opportunity to shop for an advisor! Selection of a Research Advisor and research project is a separate procedure (see below).

The School of Biological Sciences presents a weekly Graduate Research Seminar. Graduate students should participate in this seminar series, whether formally enrolled in 2 credit hours of LSCBB/MBB 538 or not (see Section 4). Full-time graduate students **must** attend the weekly seminar, even if allowed not to enroll. This includes participation in the pre-seminar meeting, when offered. The formal seminar presentation is currently scheduled every Thursday in 213 SCB from 3:45 p.m. until 5:00 p.m. and is preceded at 3:00 p.m. by the pre-seminar. Current lists of seminar speakers are available on the SBS homepage (<http://sbs.umkc.edu>).

**Teaching Assignments**

All full-time doctoral students, regardless of financial support, must acquire teaching skills. This requirement, with a minimum of two semesters, is met through participation in teaching duties under faculty supervision, usually undergraduate laboratories. The Dean of the School of Biological Sciences or his designee makes all teaching appointments.

International students must fulfill English Proficiency requirements before teaching.

**Selection of a Research Advisor**

During the period of January through March, each new graduate student in a Ph.D. or M.S. research degree program must individually interview at least six doctoral faculty members in the School to discuss prospective research projects. This interview process cannot be met by a group meeting. It is designed to be a one-on-one prospective mentor-student meeting. The list of SBS doctoral faculty, along with a description of their current research interests, is maintained on the SBS web site. Students will document the interviews on the form provided by the Graduate Programs Office [**Form 5-1**]. The completed form, indicating three ranked preferences for advisor from among the interviewed faculty, must be returned to the Graduate Programs Office by April 1.

The Graduate Programs Office will produce the 'Appointment of Permanent Advisor' form [**Form 5-2**] and submit it for approval of the choice of Research Advisor to the Dean of the School of Biological Sciences. This request for approval may be delayed until the Annual Evaluation has been completed (see below).

The School of Biological Sciences will only accept doctoral faculty as Research Advisors for full-time Interdisciplinary Ph.D. students (see Section 6) if funding for graduate student support (GRA, Graduate Research Assistantship) is available or if the student indicates in writing the willingness to work for no stipend under the

direction of the doctoral faculty that will become the Research Advisor. In the latter case, a term appointment (without compensation) will be prepared by the School of Biological Sciences.

Ph.D. students that have been admitted as potential participants in the Regional Biophysics Program (see Section 2) are allowed to interview members of the Regional Biophysical Associates with a full-time tenure or tenure-track appointment at KUMC and with adjunct doctoral status at UMKC to discuss prospective research projects and may list Associates as potential Research Advisor on the ranked list. If the choice of an Associate as desirable Research Advisor is accepted, a biophysical regional associate from among the SBS doctoral faculty must be selected as chair of the Supervisory Committee. The KUMC faculty member will be co-chair and responsible for stipend and research support for the student.

Ph.D. students are permitted to interview as potential research advisors Adjunct Doctoral Faculty members in CBB or MBB who have appointments in the Stowers Institute for Medical Research (SIMR). The selection of a Stowers Scientist as Research Advisor and co-chair of the I.Ph.D. supervisory committee is governed by the agreement reached between UMKC and Stowers (“An Agreement on Graduate Education between the University of Missouri-Kansas City and the Stowers Institute for Medical Research” [*Form 5-3*]). This agreement includes that the SIMR scientist will be responsible for stipend and research support for the student and will serve as co-chair with a regular SBS doctoral faculty member as formal chair, who will be responsible for compliance with academic rules and regulations of UMKC and the Interdisciplinary Ph.D. program.

### **Annual Evaluation**

All graduate students receive a formal review annually. Until a Research Advisor has been appointed, the Graduate Programs Officer as Interim Advisor reviews student progress. Once a Research Advisor and Supervisory Committee has been established, the annual evaluation is performed by the Supervisory Committee (Section 6). Following grades of the Winter Semester, the progress of each graduate student in the School is reported and discussed in an annual meeting of all the doctoral faculty in the School. Students are informed in writing by the Graduate Programs Office of all assessments, recommendations and suggestions.

Students who fail to meet minimum requirements must seek counsel of their Interim or Research Advisor to discuss individual options.

Upon satisfactory performance during Year 1, the doctoral faculty and the Dean will confirm the selection of the doctoral Research Advisor chosen by a doctoral student and will recommend to the Dean of the School of Graduate Studies that full admission into the Interdisciplinary Ph.D. program be granted for the Summer semester of Year 1 (see below).

If deficiencies are found in the academic performance standards expected for the I.Ph.D. degree (see Section 1), options include:

- recommendation for full or provisional admission into the Interdisciplinary Ph.D. program and acceptance of the chosen doctoral Research Advisor, in combination with an academic performance contract. Such a contract may include conditions for full admission and may specify a limited period of time during which the student’s Grade Point Average must be raised above 3.0 to regain good academic standing.
- continuation in the Master’s program in Cell and Molecular Biology (thesis option) and acceptance of the chosen doctoral faculty member as graduate Research Advisor. An academic contract may be specified.
- continuation, without support, in the Master’s program in Cell and Molecular Biology for the non-thesis option. An academic contract may be specified.
- dismissal from the program.

Informed of the decision by the Graduate Programs Office, students should respond in writing to the GPO that they accept the opportunity offered with all conditions imposed.

The Graduate Programs Officer of the School will function continuously as the Advisor for students in an M.S. (non-thesis option) degree program.

**Re-taking Courses**

Graduate students in the School of Biological Sciences are not allowed to re-take any course without the prior approval in writing from the Graduate Programs Officer. Under exceptional circumstances, or after extensive proof of superior performance, such permission may be granted.

Re-taking of a course at UMKC by a graduate student (for graduate credit) *generally* results in the addition of the prior grade to the re-take grade. Both grades contribute to the calculation of the graduate Grade Point Average (GPA). This course of action could allow a student to fulfill a requirement listed on a Plan/Program of Study, provided that the re-take grade reaches or exceeds the minimum level required.

A graduate student can petition the School that the prior grade for a course be changed and replaced by the re-take grade. This requires that a “Course Repeat Form”, available from the Graduate Programs Office, be submitted prior to the fourth week of the semester in which the repeat course is taken. Only in this exceptional case will the original grade no longer contribute to the graduate GPA. In most cases, this exception can be applied maximally to two courses on a graduate student’s Plan/Program of Study.

**Application for Admission into the Interdisciplinary Ph.D. Program**

Doctoral students, admitted into the M.S. in Cell & Molecular Biology program and with satisfactory performance during the Fall and Winter semesters of Year 1, must complete *in a timely manner* the “Application for Admission” form [**Form 5-6**] for UMKC’s Interdisciplinary Ph.D. program.

Using information, materials and letters of reference used in the application for graduate study at the School of Biological Sciences, the Graduate Programs Office will prepare during the Winter semester, as far as possible, the Application for Admission [**Form 5-6**]. Students will be requested to update or supply missing information and to sign the form. The application will specify the Discipline of the approved Research Advisor, either CBB or MBB, as the coordinating discipline and the other Discipline as the co-discipline.

The Graduate Programs Office will collate the application with available transcripts and all other necessary forms and submit it, following a successful Annual Evaluation, with a recommendation for admission from the doctoral faculty of the Disciplines to the School of Graduate Studies.

Processing of the admission by the School of Graduate Studies and the Ph.D. Executive Committee must allow admission into the program, effective with the start of the Summer semester of Year 1. Thus, it is important that the Application for Admission [**Form 5-6**] be complete before the date of the Annual Evaluation.

Following expected performance during Year 1, students will be recommended for full admission into the I.Ph.D. program.

Provisional admission into the I.Ph.D. program may be recommended following evaluation of student performance during Year 1 (see above). Requirements for full admission will be specified in writing.

- Students that fail to meet these requirements will be dropped from the I.Ph.D. program [**Form 6-3**]. Termination of graduate study in the School of Biological Sciences may result.
- Students that meet these conditions will be recommended for full admission to the School of Graduate Studies, using the “Request for Change of Status” form [**Form 6-3**].
- This form is also used to recommend for full admission those students that were, on the basis of a prior Master’s degree, admitted directly into the I.Ph.D. program on a provisional basis and who have fulfilled all requirements specified for full admission.

With full admission expected, full-time enrollment to fulfill the Residency Requirements of the I.Ph.D. program can start with enrollment during the Summer Semester of Year 1 (see Section 6).

**Selection of a Research Topic**

Ph.D. and M.S. (thesis-option) students must discuss, as part of the selection process of a Research Advisor, their research project. When the advisor selection has been finalized and accepted, details of the research project should be further developed in the Summer Semester of Year 1 and throughout the research experience, in collaboration with the Research Advisor and other members of the Supervisory Committee.

**Summer Semester Course Registration**

Graduate students that continue in the program full-time and are supported by a GRA (Graduate Research Assistantship) are expected to work full-time in the laboratory during the Summer Semester of Year 1.

- Students who continue in the Ph.D. track should register for 3 credit hours of BIOL 593, M.S. Topics. This allows the student to apply for the M.S. (non-thesis option) degree in Cell and Molecular Biology by the completion of the Winter Semester of Year 2. This option is available to doctoral students if they wish to exercise it and when they have met all requirements specified for the degree (see Section 1.4). The Graduate Programs Officer will act as course coordinator for BIOL 593. At the end of the Summer Semester, the student's Research Advisor will submit the grade to the course coordinator for entry into the grade list. Students who know that they do not want to use this option should register for 3 credit hours of LSCBB or LSMBB 690, Analytical Methods, in the course *section* that bears the name of the Research Advisor.
- Graduate students who continue along the M.S. (thesis option) track should register for 3 credit hours of LSCBB or LSMBB 599, in the course *section* that bears the name of the Research Advisor. The Graduate Programs Office can provide the *section* number to be used.

The number of hours of research expected from a part-time M.S. (thesis-option) student should be discussed between student and Research Advisor.

Thesis (599) and Dissertation Research (699) credit hours, or research hours in preparation to such research like M.S. Topics (BIOL 593) and Analytical Methods (690), represent some of the few courses in the School of Biological Sciences for which a written course syllabus is not required prior to the start of the course. However, it is advised that supervisor and student discuss, before the start of the research project, the level of satisfactory performance expected.

- Grades for research should reflect performance in relation to the expectations of the advisor. Grades of A should not be awarded automatically because this will remove the opportunity to award special accomplishments or to guide a student toward better performance.
- The UMKC catalog states that a grade of I (incomplete) should only be given for coursework that can be completed without further instruction, within a period of one year, and without re-enrollment in the same course. Thus, it is inappropriate to give or receive a grade of I for Thesis or Dissertation Research with course designations 599 or 699.

### **Selection of a Supervisory Committee**

The Supervisory Committee of a graduate student is chaired by the student's Research Advisor. The Research Advisor will recommend committee members to provide a spectrum of specialties, of research expertise and interests which can guide the graduate student in the research project, provide feedback during annual progress meetings and protect the quality of the research degree. The student should meet during the Summer Semester of Year 1 with prospective committee members, doctoral faculty in CBB or MBB disciplines, to discuss the proposed research project and related coursework. Faculty may only be listed as members when they have agreed to serve.

Specific regulations regarding the composition of the Ph.D. doctoral Supervisory Committee are contained in the UMKC Catalog, e.g. regarding inclusion of adjunct doctoral faculty or outside readers. Minimally, the committee must consist of five (5) members with a maximum of three (3) from any one discipline and at least one (1) from every discipline. Once the committee has been selected, the committee must be approved by the Dean of the School of Biological Sciences. Acceptance of the composition of the Supervisory Committee for an I.Ph.D. student will be indicated by approval of the I.Ph.D. Plan of Study (see Section 6, [**Form 6-1**]).

A Supervisory Committee for a thesis M.S. degree consists of a minimum of three members, including the advisor as chair, selected from among the faculty of any of the Divisions of the School of Biological Sciences. The School requires that all members have doctoral faculty status. The recommended members are submitted to the Dean of the School of Biological Sciences for approval as part of the submission of the Program of Study [**Form 5-4**]. The Dean appoints the members of an M.S. Supervisory Committee.

### **Preparation of an M.S. Program of Study**

The Program of Study [**Form 5-4**] must be filed before 60 percent of the coursework applicable to the degree has been completed. It specifies the coursework, completed and anticipated, that will fulfill the degree requirements (see Section 1.4).

Ph.D. graduate students, electing to receive an M.S. degree (non-thesis option) in Cell and Molecular Biology by the end of Year 2 should submit the required Program of Study to the Graduate Programs Office prior to the end of the Summer Semester of Year 1, signed by their research advisor only.

M.S. (thesis option) students prepare and submit a Program of Study, which should be signed by all members of the Supervisory Committee.

M.S. (non-thesis option only) students prepare and submit a Program of Study in consultation with the Graduate Programs Officer as their Academic Advisor.

Some information on courses which can and which cannot be included in a M.S. Program of Study is provided in Section 1.4 and in Section 4.

No more than 40 percent of the credits may be 300- and 400-level courses. (The minimum acceptable grade is B—i.e. 2.7 grade points). At least 60 percent of the credits must be at the 500- and 600-level. The M.S. (non-thesis option) requires completion of at least 3 credit hours of M.S. Topics BIOL 593 (4 credit hours maximum). The M.S. (thesis option) requires 6 credit hours of Thesis Research (LSCBB or LSMBB 599).

Consult the Transfer Credit Policy for Master's Degrees in the UMKC Catalog for the rules and limitations on inclusion of up to 20 percent of graduate coursework, taken at other institutions. Students may petition to be allowed to include up to six credit hours in their Program of Study of coursework applied to a previously awarded Master's degree.

Course work must be less than seven years old at the time of graduation (see Section 8).

The completed Program of Study form is submitted to the Graduate Programs Office for approval and includes the confirmation process of the Research Advisor and Supervisory Committee. Once approved, the Graduate Programs Officer will distribute copies to the registrar, the chair of the student's supervisory committee or the student's advisor and the student.

Minor changes in the Program of Study require filing of a "Request for Program Change" form [**Form 5-5**] through the Graduate Programs Office for approval. Major changes require preparation and submission of a new Program of Study [**Form 5-4**] for approval.

### **Interdisciplinary Ph.D. Co-discipline Students**

Ph.D. students with CBB or MBB as co-discipline and the primary discipline outside the School of Biological Sciences are not subject to the timed sequence of events of full-time graduate students in the School that will select CBB or MBB as primary discipline when admitted into the Interdisciplinary Ph.D. program. However, they must select a Research Advisor within 12 months after full admission. Failure to do so may result in termination of CBB or MBB as co-discipline on the basis of inadequate progress.

The doctoral supervisory committee of a Ph.D. student with MBB or CBB as co-discipline and a primary discipline outside of the School of Biological Sciences must contain one (1) doctoral faculty member of the co-discipline.

**Section 6.**  
**YEAR 2**

For Ph.D. students, Year 2 requires a number of steps that must be executed on time to assure satisfactory progress. These include:

- In addition to *at least* half-time research in the laboratory, virtually all coursework listed on the Ph.D. Plan of Study must be completed.
- To be eligible to receive the M.S. degree in Cell and Molecular Biology, all coursework listed on the M.S. Program of Study [*Form 5-4*] must be completed and the student must apply for the degree [*Form 6-2*].
- The Residency Requirement of the I.Ph.D. program is fulfilled by full-time enrollment during the Fall, Winter and Summer Semesters of Year 2.
- The Comprehensive Exam, written and oral components (see Section 7), is completed during the Summer Semester of Year 2.

**Planning Coursework for Year 2**

Coursework for Fall and Winter Semester of Year 2 is defined by the courses listed in the approved M.S. Program of Study (see Section 5) and by the I.Ph.D. Plan of Study (see below).

A full load is expected of full-time graduate students with GRA/GTA support. This includes registration for 2 credit hours in Graduate Research Seminar, LSCBB 538 during the Fall Semester and LSMBB 538 during the Winter Semester. Students are reminded that active participation in the School's Seminar program is expected. I.Ph.D. students must earn at least 3 semesters with Passing Grades in the Graduate Research Seminar before they are allowed to take the Comprehensive Examination (see Section 7). This requirement is fulfilled by enrolling in LSCBB/MBB 538 or (as may be the case during Year 1) by active participation without formally enrolling in the course for course credit.

International students should anticipate that, with English Proficiency certified, time will be required to fulfill the teaching that will be assigned in Year 2. Failure to pass the English Proficiency Exam by the end of Year 2 is cause for dismissal from the program.

**Preparation of a Ph.D. Plan of Study**

The I.Ph.D. Plan of Study [*Form 6-1*] must be submitted to the Graduate Programs Office during the first regular semester after admission into the I.Ph.D. program, i.e. typically during the Fall Semester of Year 2.

Provide personal and discipline information. List previous colleges attended and degrees received.

**Student's Certification.** The student accepts with this signature all conditions explicitly and implicitly contained in the Plan of Study. Changes in coursework, composition of the Supervisory Committee, Research Advisor and/or discipline will require submission and approval of "Request for Change" forms (see Section 8).

**Approvals.**

1. **Supervisory Committee.** These doctoral faculty, members of the Coordinating and Co-disciplines chosen, must have agreed to serve on the committee, must have met with the student and must have agreed with the description of the Research Proposal.
2. **Administrative Approval** by the Dean of the School, or the Graduate Programs Officer as his designee, will be given after all members of the Supervisory Committee and the student have signed a Plan of Study that meets all requirements.

**A. Special Program Requirements.** CBB and MBB do not have language requirements or prerequisite courses and typically do not require *Other activities*.

The *Residency Requirement* is fulfilled by enrolling for a minimum of 21 coursework credit hours within a period of 18 months, following full or provisional admission into the Interdisciplinary Ph.D. program. Typically, specify **all** coursework taken during the Summer semester of Year 1 and during the Fall, Winter and Summer semesters of Year 2 (see “Sample Plan of Study” in Section 1).

*Comprehensive Examination* in CBB and MBB disciplines contains both written and oral components (see Section 7).

*Preliminary Research Proposal.* The narrative of the research plan should preferably be developed to the extent that approval of the Research Proposal can be obtained. If this is not possible, a separate request for Approval of the Research Proposal [**Form 6-4**] must be submitted at a later date.

**B. Coursework applying to Ph.D. degree.** General Interdisciplinary Ph.D. coursework requirements are provided on the form. The Plan of Study should meet or exceed these requirements.

For students with CBB and MBB as disciplines, some degree requirements are higher or more specific (see Section 1). Guidance is provided below at ‘Planning of Coursework’. Some information on courses which can and which cannot be included in an I.Ph.D. Plan of Study is also provided in section 1.4.

Not more than 60% of the total coursework may be from any discipline. Thus, independent of the choice of Research Advisor, which defines the “Coordinating Discipline”, a student can have a majority of coursework in either CBB or MBB.

CBB and MBB disciplines require a minimum of 15 credit hours of dissertation research (LSCBB or LSMBB 699) (see Section 1).

The Graduate Programs Office submits the signed Plan of Study to the Dean of the School of Graduate Studies for approval. When approved, it is the basis for the degree check when the student files for graduation.

**Planning of Coursework for the Ph.D. Plan of Study.**

UMKC’s Interdisciplinary Ph.D. degree requirements are as follows:

- A minimum of 30 hours of coursework, including at least 9 hours in a co-discipline and excluding dissertation research (699) hours, is required.
- Coursework of any one discipline should not represent more than **60 percent** of all coursework, taken at UMKC and included in the Plan of Study. Dissertation research credit hours are excluded from this calculation. It is common but not required that a larger fraction of coursework is from the Coordinating Discipline.
- At least **75 percent** of the coursework, exclusive of dissertation credits, must be in disciplines of the Interdisciplinary Ph.D. degree program of the University.
- The Ph.D. degrees in MBB and CBB require a **minimum of 30** credit hours in basic core and research courses from the two disciplines and will allow inclusion of **up to 9** additional credits of appropriate graduate coursework (see Section 1). A **minimum of 15** credit hours of dissertation research is required.

When the complete program of coursework has been designed, compliance with all conditions (and their details as specified in Section 1) should be confirmed.

Coursework should be selected by the student and the Research Advisor in consultation with other members of the Supervisory Committee. Courses should provide a foundation for the research project and improve background knowledge. Additionally, coursework selection must take into account the required courses for the degree (see Section 1) as well as the required distribution of credit hours among the disciplines.

- Students should refer to the ‘Sample Plan of Study’ examples (see Section 1).
- Students should use the information of Section 4 to create a combination of coursework that realistically matches the anticipated offering of courses.

- Courses taken for credit or audit that are not taken to fulfill degree requirements should not be listed.
- Undergraduate coursework can not be listed. Thus, you may **not** include LIFESCI 401, Biophysical Principles, or any other undergraduate coursework in the Plan of Study.
- Graduate Research Seminar credit (LSCBB/MBB 538) should not be listed (see Section 5) unless prior permission in writing is given by the Graduate Programs Officer.
- Courses within the 700 number range are not acceptable.

All coursework taken at UMKC, prior to admission into the Interdisciplinary Ph.D. program, towards the M.S. degree ‘in-progress’ should be included in the Ph.D. Plan of Study at “Section B”, provided it fulfills requirements towards the Ph.D. degree (see Section 1). Coursework should be listed as Coordinating Discipline Coursework (B-1), as Co-Discipline Coursework (B-2) or as coursework from other disciplines (B-3) to a maximum of 25 percent. The members of the Supervisory Committee *implicitly* specify by signing the Plan of Study that this coursework is required and acceptable for inclusion in the Plan of Study.

Consistency between the coursework specified for the Ph.D. degree and graduate coursework listed in a current M.S. (non-thesis option) Program of Study (see Section 5) is expected. If adjustments must be made to the Program of Study, a “Request for Program Change” form [**Form 5-5**] should be submitted.

As specified by the School of Graduate Studies, coursework taken towards a completed Master’s degree at UMKC or elsewhere may be included in a Ph.D. Plan of Study *without any maximum*. It requires that the Supervisory Committee *explicitly* declare included courses as necessary for the Ph.D. degree program. However, inclusion of any graduate coursework, applied towards a completed degree, in a Ph.D. Plan of Study for students with CBB or MBB as coordinating discipline, will require approval in writing from the Graduate Programs Officer. A numerical limit may be applied.

A typical enrollment for the Fall and Winter semesters of Year 2 in 9 or more credit hours per semester is illustrated in the Sample Plan examples (Section 1):

- Two (2) graduate 3 credit hour courses per semester. A single instance of a semester with 1 graduate course generally is compatible with a timely completion of M.S. and Ph.D. course requirements and taking the Comprehensive Examination (Section 7) in the Summer of Year 2. Two semesters with only 1 graduate course often causes a problem for both.
- 1 credit hour of seminar course (LSCBB 612, LSMBB 611) each semester
- 2 credit hours of Graduate Research Seminar (LSCBB 538, LSMBB 538) each semester
- Research: 1 credit hour of Analytical Methods (LSCBB 690 or LSMBB 690) each semester. In case of enrollment into one rather than two graduate 3 cr.hr. courses, enrollment in 3 hrs 690 is expected.

**NOTE** that a combination of LSCBB 690 and LSMBB 690 enrollment may be required to meet I.Ph.D. degree requirements (see below) and not to exceed the 60% maximum of coursework in any discipline (see above).

Virtually all required coursework should be completed by the end of Year 2. Only one (maximally two) seminar course (LSCBB 612, LSMBB 611) should remain to be taken in Year 3 unless a specific graduate course is judged essential for the program of the student and is only scheduled to be offered in Year 3.

Scheduling coursework in Year 2 and beyond, the student should use the anticipated offering pattern of courses (see Section 4) to assure compliance with the following directive of the School of Graduate Studies: fully admitted Ph.D. students should be enrolled in a minimum of 3 credit hours (exclusive of dissertation credit) during each Fall and Winter semester until all coursework specified on the Plan of Study has been completed.

**Dissertation and Thesis Research**

For Fall and Winter semesters, supported full-time students should register for at least 1 credit hour of research, and are expected to be active in laboratory research *at least half-time*. For the Summer semester of Year 2, they should register for a full academic load of research and can devote full-time to dissertation or thesis research.

- The M.S. (thesis option) degree requires registration in Thesis Research, LSCBB or LSMBB 599, using the *section* reference number assigned to their Research Advisor.
- Students in the Ph.D. track, recommended for admission or admitted into the Interdisciplinary Ph.D. program, should enroll for the Fall and Winter Semesters in at least 1 hour of Analytical Methods, LSCBB/MBB 690 (see above), using the *section* reference number assigned to their Research Advisor. Students are expected to continue the research project initiated during the Summer Semester of Year 1 and to develop it into a viable dissertation research project which can be approved as a “Research Proposal” (see below), part of the I.Ph.D. Plan of Study.
  - More than 1 credit hour research may be required to meet the requirements of a full academic load (see Section 4) and the requirements imposed by the Ph.D. Residency Requirement (see below).
  - Students should enroll in 3 hours of Analytical Methods for the Summer of Year 2. It is likely that a significant part of the semester will involve passing requirements of the Comprehensive Examination (see Section 7).
  - Maximally 8 credit hours of the research course Analytical Methods may be taken and applied to the Ph.D. degree.

Note that it may be necessary to calculate the expected course distribution between planned CBB and MBB courses and select during Year 2 only LSCBB 690, only LSMBB 690 or a mixture (see “Sample Plan Of Study” in Section 1), to assure that the courses in neither discipline exceed the maximum of 60 percent of all coursework, excluding Dissertation Research, on the I.Ph.D. Plan of Study (see below).

**Narrative of the Research Proposal**

The Plan of Study requires at least a preliminary description of the anticipated research project. Most Ph.D. students can describe the research project in the Plan of Study in such detail that it will fulfill the separate requirement to obtain approval of the Interdisciplinary Ph.D. Research Proposal. In this case, mark the box provided on the Plan of Study form. The signatures of the proposed members of the Supervisory Committee on the Plan of Study indicate that they approve the planned research project.

Required elements for the Research Proposal include:

- **Abstract.**
- Statement regarding the general purpose of the research.
- Background information including a review of relevant literature and the rationale for the research.
- A concise description of the research questions to be answered and the Methods that will be employed.
- If human subjects, animals or radioactive materials are involved in the research, appropriate protocol information must be provided.

Students with CBB or MBB as co-discipline, and students who do not include a complete Research Proposal as part of the Plan of Study, are required to develop a complete Research Proposal [*Form 6-4*]. This form must be submitted before significant progress in the research project has been made.

Every accomplished researcher knows that the experimental research project described at this point will have changed by the time a Ph.D. dissertation is written. One of the functions of the annual review of the research project by the Supervisory Committee is to guide the gradual development of the research project. The report of the annual review meeting represents approval of changes in research questions and methods of study that will occur unavoidably during the experimental progress of the research project.

**Submission of Ph.D. Plan of Study**

- The Plan of Study should be submitted to the Graduate Programs Office *by the end of the Fall Semester of Year 2*, well before the deadline of 12 months after full admission into the Ph.D. program.
- The Plan of Study must be signed by all members of the proposed Supervisory Committee.
- With approval of the Dean of the School of Biological Sciences, the Graduate Programs Office will forward the Plan of Study to the Dean of Graduate Studies for approval by the UMKC Ph.D. Executive Committee. Failure to gain approval results in the return of the proposed Plan of Study to the student for modification and resubmission.
- The Dean of the School of Graduate Studies confirms the appointment of the Supervisory Committee members and files the approved plan with the registrar.

The expected time of submission of the Plan of Study *with* the Research Proposal assures compliance with the deadline that the dissertation abstract and proposal must be submitted to and approved by the Supervisory Committee prior to beginning the third academic year of full-time study after enrollment in the graduate program of the School. In case approval of the Research Proposal is not part of the Plan of Study, a separate request for approval [**Form 6-4**] must be submitted before this deadline.

Once the Research Advisor, the Supervisory Committee, and the Plan of Study have been approved, the advisor and committee begin supervision of the student's work and are responsible for submitting annual progress reports to the Graduate Programs Officer for filing as part of the student's record.

**Establishing Ph.D. Residency**

It is required that Interdisciplinary Ph.D. students establish their “*residency*” within the program as a requirement for graduation. The intent of the Ph.D. Executive Committee has been that this forces full-time immersion of a student into the Ph.D. environment for a significant period of time. Residency is fulfilled by taking at least 21 credits, excluding dissertation research (699), over a period of maximally 18 months. Students must achieve a cumulative graduate grade point average (GPA) of at least 3.0 for all courses counted towards satisfying the requirement.

Full-time Ph.D. students with CBB and MBB as disciplines, fully admitted starting with the Summer semester of Year 2, should start their Residency in the Summer semester of Year 1 or the Fall Semester of Year 2 by enrolling for full academic load (see Section 3) and complete the 21 credits requirement over a period of maximally 18 months, typically by maintaining a full load, or more, until the end of the Summer semester of Year 2. Failure to comply with this requirement will force a delay in the Comprehensive Examination, may cause a delay in program completion and could result in termination from the program.

**Application for the M.S. (non-thesis) degree in Cell and Molecular Biology**

I.Ph.D. students who have submitted a M.S. (non-thesis option) Program of Study (see Section 5) and anticipate to complete all degree requirements specified by the end of the Winter Semester of Year 2, can be awarded the M.S. degree in Cell and Molecular Biology provided that they file for the degree [**Form 6-2**] and in fact complete all requirements for the degree. Delay in completion of the requirements will result in the need to file anew for the degree to be awarded [**Form 6-2**] for the semester of completion.

Filing for the M.S. degree should be done *early* in the semester, well before the deadline noted in the Academic Calendar (<http://www.umkc.edu/registrar>), distributed as part of each semester's Class Schedule.

The official check on fulfilling all degree requirements will be performed when a student files for graduation.

The School of Biological Sciences expects that students who want to receive the M.S. degree participate in the Commencement ceremony. The Graduate Programs Office should be informed whether or not you will attend.

- Cap and gown may be rented at the UMKC Bookstore.
- Graduate students of the School of Biological Sciences will not be allowed to ‘walk-through’ commencement until they have fulfilled all degree requirements.

**Annual Performance Review**

Each student's committee meets with the student annually during the Winter semester.

- Ph.D. students receive from the School of Graduate Studies an updated Ph.D. Annual Evaluation form [**Form 6-5**] with advising transcript that reflects progress as known. **Carefully check all entries and correct incorrect or out-of-date information.** Corrections submitted to the Graduate Programs Office will be transmitted to the School of Graduate Studies and, added to the student's file, will corroborate the changes or updates. If the student's file lacks supportive evidence for corrections or changes, the Graduate Programs Office will request that such evidence be provided.
- M.S. students receive from the Graduate Programs Office the Annual Master's Student Evaluation form [**Form 6-6**] and advising transcript.

The student's advisor is responsible for convening the annual review meeting. The School of Graduate Studies has set the deadline of April 15 for completion of the annual review process of Interdisciplinary Ph.D. students. Annual reviews of M.S. students and submission of their annual review form should conform with this schedule as well.

The student's Research Advisor is also responsible for assuring that the student's Plan or Program of Study, approved committee, and dissertation or thesis proposal are available at the time of the annual meeting. This information can be made available from the student's file in the Graduate Programs Office.

Following the meeting, the research advisor and student fill in their respective parts of the annual evaluation report [**Form 6-5** for Ph.D.; **Form 6-6** for M.S.]. Once the report is submitted to the Graduate Programs Office, the original will be added to the student's file and, as required, copies will be transmitted to the School of Graduate Studies and the advisor(s) of any co-discipline which is neither CBB nor MBB.

At the time of the annual meeting in Year 2 for Ph.D. students, the "Application for Interdisciplinary Doctoral Comprehensive Examination and Request for Appointment of Examining Committee" [**Form 7-1**] should be signed by the Research Advisor in preparation for the upcoming Comprehensive Examination. The signed form should be submitted to the Graduate Programs Office at the same time as the annual report.

Typically but not necessarily, the Examination Committee consists of all the members of the Supervisory Committee (see Section 7 for possible exceptions).

In case coursework results of a student have been marginal or have violated the Academic Performance Standards of the degree program (see Section 1) and/or if laboratory progress has been judged unsatisfactory by the Supervisory Committee of the student, the possibilities for continuation, program re-direction or termination are discussed in the Graduate Programs Committee. Decisions, after consultation with the supervisory faculty of the student, are made by this committee.

The doctoral faculty in CBB and MBB meets formally at the end of each academic year to discuss and evaluate progress of every graduate student in the School. A report on the student's progress is presented by the Research Advisor. After this doctoral faculty meeting, each student will receive a written evaluation of his/her status from the Graduate Programs Officer.

**Section 7.**  
**COMPREHENSIVE EXAMINATION**

Master's degree programs do not require a Comprehensive Examination.

To become a Ph.D. candidate ('advance to candidacy'), the student must pass a Comprehensive Examination.

- The comprehensive exam should be passed before the beginning of the third academic year after admission to UMKC with full-time graduate student status, or (for part-time students) after completion of 30 credit hours approved by the discipline doctoral program at UMKC. This time may be further limited by the requirements that Ph.D. students have maximally 5 or 4 years to progress to candidacy if they entered the program with a baccalaureate or Master's degree, respectively.
- Three (3) Passing Grades in Graduate Research Seminar (from formal course enrollment in LSCBB/MBB 538 or from *de facto* participation without enrollment) are required before a student is allowed to apply for the Comprehensive Examination (see Section 4).
- Five (5) research coursework credits in Analytical Methods (LSCBB and/or LSMBB 690) are required prior to completion of the Comprehensive Examination (see Section 6).
- The Interdisciplinary Ph.D. Residency Requirement must be fulfilled prior to or in the semester that the Comprehensive Examination is completed. Courses that fulfill this requirement are listed in the Plan of Study [*Form 5-6*]

The form "Application for Interdisciplinary Doctoral Comprehensive Examination and Request for Appointment of Examining Committee" [*Form 7-1*] must be submitted to the Research Advisor for signature and subsequently to the Graduate Programs Office in such a timely manner that it can be submitted to the Dean of the School of Graduate Studies at least 4 weeks prior to the date of the Comprehensive Examination.

Typically but not necessarily, the Examination Committee consists of the members of the Supervisory Committee. However, not all members of the Supervisory Committee are required to participate. If any member of the Supervisory Committee, including the Research Advisor, perceives that a conflict of interest might exist that could prevent an unbiased assessment of the student's capabilities and knowledge, such a member need not be proposed to the Dean of the School of Graduate Studies as a member of the Comprehensive Examination Committee.

Independent of this possibility, the Dean of the School of Graduate Studies can appoint additional members to an Examination Committee.

The first section of the Comprehensive Exam for a full-time Ph.D. graduate student is typically scheduled for the first Friday in June of Year 2. Thus, this form should be received in the Graduate Programs Office at the *same* time, mid April, that the report of the annual review meeting of Year 2 is submitted.

The exam has both written and oral components. It will test the student's knowledge of background material and the student's ability to analyze and interpret information and solve problems.

**Written Examination**

The written examination for Ph.D. students who have CBB or MBB as their primary discipline will have two components. All students who have completed the required courses in the discipline and the co-discipline (by the end of the second year of full-time graduate study) will take the examination at the same time.

Students with CBB or MBB as co-discipline and a primary discipline outside the School of Biological Sciences fulfill the co-discipline specific requirement for the comprehensive exam by passing only the first component of the written examination.

- The first component consists of a written general comprehensive exam testing an integrated knowledge of material acquired through courses and the seminar components in the primary discipline and co-discipline. The Graduate Programs Committee has decided that all scheduled graduate courses over the two year period preceding the exam should contribute to this exam, even for courses that were cancelled. Students who have CBB or MBB either as primary discipline or as co-discipline must take this exam. The written general comprehensive exam will contain questions for the primary discipline and the co-discipline.

The examination exists of two parts that each will last no more than three hours and that will take place on the same day near the start of June each year. The first part covers the LSMBB 561/562 courses and consists of 18 questions. Each student must answer 12 questions within a period of, on average, 15 minutes per question.

The second part covers all other coursework and may contain questions related to SBS Graduate Research Seminars. Each I.Ph.D. student with CBB and MBB as coordinating and co-discipline must answer 12 of the 18 questions presented. Students with CBB or MBB as co-discipline only will be required to answer 6 questions from the second part of the exam (see Section 1.3).

The Graduate Programs Officer will inform students in writing of the result of this component of the comprehensive exam. The letter to students with CBB or MBB as primary discipline will contain the permission to proceed to the next components of the comprehensive exam.

Students who fail this part of the examination may be allowed, upon successful petition to the Graduate Program Officer of the discipline, to retake the examination in the first week of August. Failure to pass the written exam a second time will result in dismissal from the Ph.D. program.

- The second component of the written examination consists of an NIH-style grant proposal that the student will prepare on his or her own. The intent of this requirement of the Exam is to demonstrate independent creative scientific thinking, the ability to evaluate and use appropriately published scientific literature and other scientific resources and to demonstrate in an extensive but limited, carefully worded proposal how an independent researcher might approach an interesting research question. The proposal should try to convince a review panel of scientific peers of the importance of the subject of study. It also should demonstrate that the methods proposed for the study are appropriate, feasible and complete and that the budget is justified. It should be made as “real” and complete as reasonably can be expected.

The student selects the grant proposal topic in consultation with the student's Supervisory Committee. The topic will be distinct from the student's proposed doctoral research project or the research specialty of the advisor. This is to give the student the incentive to develop independent thinking and problem solving capabilities.

Once a subject for the proposal has been chosen, students should contact all Supervisory Committee members, providing them with a written abstract, and obtain their permission to proceed. Committee members should refrain from proof-reading or specifying detailed content of the proposal, but should make themselves available to the student as a resource, as collegial fellow researchers, each with their own specialized expertise. The final draft of the research proposal, approved by the Research Advisor (approval is for format, not an endorsement of the quality of the proposal), must be submitted to all members of the student's Supervisory Committee at least 10 working days before the date of the oral examination.

### **Oral Examination**

The oral examination should be scheduled near the end of the Summer Semester of Year 2 and not be delayed into the Fall of Year 3. Specific exceptions to this rule may be granted by the Graduate Programs Officer of the School.

Students must successfully pass the written general examination before they write their grant proposal and have their oral examination. Foreign students must have passed the tests of written and spoken English before they may take their comprehensive examination.

The oral examination has two components, (a) questions covering the grant proposal, prepared by the student for the written examination, and (b) other related material in the student's area of specialization, including fundamental knowledge of the primary and secondary disciplines.

In the event a student does not pass the oral examination, one additional attempt may be made at a date no sooner than 12 weeks after the original examination. In case of clear initial failure to pass successfully, or in case significant doubt is raised by one or more members of the Examination Committee as to expected proficiency and knowledge on the part of the student, the Committee should positively consider offering the possibility of a re-take. This provides important teaching and learning opportunities. The Committee should

explicitly specify the extent of re-writing of the NIH-style proposal expected, and any other aspects of the examination that it considers relevant.

Alternatively, minor but specific deficiencies in knowledge which surface during the examination may be remedied by a requirement of no more than one additional graduate level course stipulated by a majority decision of the examining committee. Conditional pass status is removed after the student receives a grade of B or better in the designated course.

Upon satisfactory completion of the written and oral portions of the comprehensive exam, a student becomes a candidate for the Ph.D. degree. The proper form [**Form 7-2**], with all committee members' signatures, must be submitted to the Graduate Programs Office within 48 hours after reaching a final decision (including that of conditional pass), for transmission to the Dean of Graduate Studies. The Dean of Graduate Studies officially informs the student and the Registrar of the final results of the examination.

In case the written and oral components of the Comprehensive Exam are distributed over more than one semester, the results of each component should be reported separately using the same form [**Form 7-2**].

**Section 8.**  
**RESEARCH (Year 3 and Beyond)**

**Required Coursework during Research Years**

M.S. (thesis option) students are expected to complete all degree requirements by the end of Year 3 following full admission into the graduate program of the School.

Ph.D. students have a maximum of 5 years after attaining candidacy to complete all of the degree requirements and graduate. Failure to do so will lead to re-evaluation of the entire Plan of Study and may result in termination.

- Ph.D. students should plan to complete all required coursework, including seminar courses, in Year 3.
- Full-time Masters and Ph.D. students should register each regular Fall and Winter semester for 2 credit hours of Graduate Research Seminar, LSCBB or LSMBB 538. Attendance and active participation in the SBS seminars is mandatory.
- During the annual review, students and research advisors should identify any changes in (1) the Plan or Program of Study and/or (2) in the composition of the Supervisory Committee. The forms required for approval of such changes are listed in the section ‘Actions Required when Conditions Change’.
- The Supervisory Committee should carefully monitor student progress so that errors due to oversight can be corrected without affecting the planned timing of graduation. The official check on fulfilling all degree requirements is not performed until a student files for graduation (see Section 9). This is too late to correct problems conveniently.
- Transcripts from other institutions must be sent to UMKC for coursework included on the Plan or Program of Study.
- Advisors and committees should confirm that minimum passing grades have been obtained for all courses in the Plan or Program of Study. A grade of B– (2.7) or better for 300 and 400 level courses and a C (2.0) or better for 500 level courses and above is required.
- Continuous enrollment is a requirement for graduation.
- Generally, full-time graduate students should continue to enroll for the full academic load required by the School of Biological Sciences (see Section 4). With all coursework completed, enrollment should be for a minimum of 6 hours in Fall and Winter semesters and for a minimum of 3 hours in Summer semesters, unless prior permission in writing has been obtained from the Graduate Programs Officer.  
In Fall and Winter semesters this enrollment includes 2 hours of Graduate Research Seminar.
- A student involved in Thesis or Dissertation Research should register in each semester for at least 1 credit hour of thesis or dissertation research to attain the minimum required number of 6 thesis or 15 dissertation research credit hours (see Section 1). Enrollment in more than 1 hour is likely required to meet minimum enrollment levels (see above).
  - ◆ M.S. (thesis option) students should enroll in LSCBB or LSMBB 599, in the *section* assigned to their Research Advisor.
  - ◆ Following successful completion of the Comprehensive Examination, Ph.D. students should enroll in LSCBB or LSMBB 699, in the *section* assigned to their Research Advisor. If completion of the Comprehensive Examination is delayed, enrollment for research should be in Analytical Methods, LSCBB or LSMBB 690, or in Directed Individual Studies, LSCBB or LSMBB 591.
- When research and all coursework have been completed, students should register for 1 credit hour of BIOL 899 (M.S.) or LIFESCI 899 (Ph.D.) until graduation.
- Graduation is expected by the end of Year 3 for M.S. (thesis option) students and by the end of Year 5 for Ph.D. students.

**NOTE:** If a full-time graduate student is allowed to enroll for less than a full academic load, some action may be required, once or each semester, to prevent unintended consequences such as withholding of Social Security Tax (see *Academic Loads* in Section 4).

- ◆ **IF** you receive a stipend and enroll for less than half-time, submit at the time that a Fee Remission form [*Form 4-2*] is collected from the Graduate Programs Office, a copy of *Form 4-5*, filled in for the coming semester and signed by the Research Advisor, for transmittal to the School of Graduate Studies and the Payroll Office.
- ◆ International students may need to submit *Form 4-6* (see Section 4).

### **Coursework Validation**

Course credit over seven (7) years old at the time of graduation, which is included in the M.S. Program of Study and has not been applied to a previous degree, may not be counted towards the fulfillment of an M.S. degree program unless (re)validated to the satisfaction of the Graduate Programs Committee of the School to a maximum of 30 percent of the student's Program of Study [*Form 8-1*].

Expiration of course credit after 7 years does not apply to the Interdisciplinary Ph.D. program. However, the acceptance of course credit is constrained by the maximum number of years allowed to progress to candidacy (4 years, starting from a Master's degree, or 5 years, starting from a baccalaureate degree) and, subsequently, to graduation (5 years).

### **Support for Research Presentations**

Research progress implies that students will present experimental results in scientific meetings or conferences through poster or oral presentations. While support for travel and meeting expenses may be available from the Research Advisor, students should not overlook the opportunity to request travel support from the Interdisciplinary Doctoral Student Council at UMKC (<http://www.umkc.edu/iphd/dsa.html>), from student organizations within the School, from professional scientific organizations that the student belongs to or from organizers of the scientific meeting.

### **Writing the Dissertation/Thesis**

After completing their research and all other degree requirements, candidates in a Ph.D. or M.S. (thesis-option) degree program will prepare a Ph.D. Dissertation or M.S. Thesis following format guidelines provided by the School of Graduate Studies.

- A "Guide to Formatting Theses and Dissertations" is available OnLine (<http://www.umkc.edu/sgs/T-Dguidelines/tdguide2003WP.pdf>). Please note that the abstract of a dissertation is maximally 250 words while a thesis one is limited to 150 words.
- Even though "Turabian" is considered the *standard format* by the School of Graduate Studies, it is accepted and common usage for graduate theses and dissertations in the School of Biological Sciences to use the format of one of the main scientific journals in the field. To use this option, the journal must be identified by name and "Instructions for Authors" for the journal, including formatting guidelines for references, should be provided to the School of Graduate Studies at the time that the Final Draft of Thesis or Dissertation is submitted for approval of format. Many different common journals in biological sciences have been judged acceptable by the School of Graduate Studies. Please inquire whether your preferred format has already been accepted.
- One or more information sessions ("Thesis/Dissertation Format Workshops") are scheduled each year by the School of Graduate Studies for prospective graduates to become familiar with these requirements.

The School of Graduate Studies sets the standard rules that apply to research Thesis and Dissertation format. The Dean of the School of Graduate Studies is the only person who may grant a variance. It is the Research Advisor's responsibility to supervise preparation of the thesis or dissertation and to assist the student in conforming with these regulations, as well as those set by CBB, MBB or the School of Biological Sciences.

**Electronic Submission of Thesis or Dissertation**

UMKC requires submission of Theses and Dissertations in the specified, printed format. Submission of accepted Theses and Dissertations to UMI [**Form 9-8**] will automatically create an electronic record. In case electronic multimedia are a necessary part of a thesis or dissertation, the School of Graduate Studies should be contacted for information on current requirements, acceptable software and disk formats.

**Actions Required when Conditions Change**

Ph.D program changes:

- Changing a limited number of courses in an approved Ph.D. Plan of Study requires filing a “Request for Change in Ph.D. Plan of Study” form [**Form 8-2**]. Extensive revisions may require the filing of a completely new Plan of Study (see Section 6).
- Events may require the replacement of a Supervisory Committee member. This change requires filing of a “Request for Change in Supervisory Committee” form [**Form 8-3**].
- A change in Research Advisor requires the approval of the Dean of the School of Biological Sciences and a completely new Plan of Study and Supervisory Committee [**Form 6-1**], following procedures as outlined in Section 6. Approval of the Dean of the School of Graduate Studies is required. A “Change of Discipline” form [**Form 8-4**] may also be required.

M.S. program changes:

- Changing a limited number of courses in an approved M.S. Program of Study requires filing a “Request for Program Change” [**Form 5-5**] with the Graduate Programs Office. Extensive revisions may require the filing of a completely new Program of Study (see Section 5).
- A change in Research Advisor or composition of the Supervisory Committee requires re-filing of a Program of Study, with signatures of all new committee members. Approval of the Dean of the School of Biological Sciences is required.

**Stipend Support**

Full-time graduate student support by a Research Advisor is frequently based on grants with limited life spans. Resources may become depleted. It is the School’s intent to continue support for a student who is making satisfactory progress. Support may be provided for a maximum of five years from the date the student began *receiving support from any source at UMKC*. However, graduate student status and financial support are not mandatorily linked.

Any student receiving GTA support from the School is expected to work as a teaching assistant each semester support is received.

Student support is not guaranteed beyond the term dictated in each contract. At the end of each contract period, the Research Advisor can request to terminate support, for poor performance as well as for lack of financial resources to continue the project.

Any graduate student registered at UMKC can work in a research laboratory without compensation and under supervision of an SBS faculty member. However, this person must be *both* a registered student at UMKC during that semester and have received a term appointment (without compensation) at the School of Biological Sciences.

**Section 9.**  
**GRADUATION**

M.S. students (non-thesis) should file for graduation in the semester that completion of all coursework is anticipated.

Ph.D. students and M.S. (thesis option) students should use the worksheet provided below to plan for Graduation. **Approximate dates** are provided. Target date descriptions are appropriate for *regular* semesters in Fall and Winter. An open box is available to enter the **actual dates** for the intended semester of graduation. These dates are published in the UMKC Class Schedule for the semester and the UMKC event calendar of the academic year. **Work backward** from the end of the semester to determine deadlines and target dates.

Step		Fall	Winter	Summer	Actual
1	Dissertation Final Draft to Supervisory Committee <b>Forms Required:</b> none <b>Target date:</b> 2 weeks before filing for Graduation	SEP 4	JAN 24	JUN 5	
2	Committee reviews and reports on Final Draft <b>Forms Required:</b> 9-1 (Ph.D.) or 9-2 (M.S.) <b>Target date:</b> 1 week prior to filing for Graduation	SEP 11	JAN 31	JUN 12	
3	Committee chair approves Final Thesis/Dissertation <b>Forms Required:</b> 9-3 Preliminary Approval <b>Target date:</b> 1 day prior to filing for Graduation	SEP 17	FEB 5	JUN 18	
4	Student files for Graduation <b>Forms Required:</b> 6-2 Application for Graduation <b>Target date:</b> Third week of the semester	SEP 18	FEB 6	JUN 19	
5	Submit Final Dissertation to GPO <b>Forms Req'd:</b> 9-1+9-3 (Ph.D.) or 9-2+9-3 (M.S.) <b>Target date:</b> 8 weeks prior to exam week	OCT 19	MAR 8	JUN 18	
6	GPO submits Thesis/Dissertation to Graduate Studies <b>Forms Req'd:</b> 9-1+9-3 (Ph.D.) or 9-2+9-3 (M.S.) <b>Target date:</b> 6 weeks prior to exam week	NOV 2	MAR 22	JUL 2	
7	Dean SGS returns 'Certification of Acceptance' <b>Forms Req'd:</b> 9-4+9-5 (Ph.D.) or equivalent (M.S.) <b>Target date:</b> 2 weeks after submission	NOV 16	APR 5	JUL 16	
8	Schedule Oral Defense <b>Forms Required:</b> none <b>Target date:</b> 3 weeks prior to exam week	NOV 25	APR 14	JUL 16	
9	Conduct Oral Defense <b>Forms Required:</b> none <b>Target date:</b> 1 week prior to exam week	DEC 7	APR 28	JUL 24	
10	Chair reports 'Results of Examination' to GPO for SGS <b>Forms Required:</b> 9-6 (Ph.D.) or 9-7 (M.S.) <b>Target date:</b> 2 days after Oral Defense	DEC 9	APR 29	JUL 26	
11	Changes, if required, are completed <b>Forms Required:</b> none <b>Target date:</b> Prior to last day of coursework	DEC 12	MAY 2	JUL 26	
12	Student submits Thesis/Dissertation to UMKC Libraries <b>Forms Req'd:</b> 9-4+9-8 (Ph.D.) or equivalent (M.S.) <b>Target date:</b> Last day of exam week	DEC 19	MAY 9	JUL 31	
13	Student submits Thesis/Dissertation to GPO <b>Forms Required:</b> none <b>Target date:</b> After submission to Library	DEC 19	MAY 9	JUL 31	

**Note:** Enrollment is mandatory for the semester of graduation.

**Step 1:** The thesis or dissertation, in the form of a final typed draft (or in electronic form, acceptable to the School of Graduate Studies and the members of the Supervisory Committee), must be submitted to each member of the Supervisory Committee *at least 10 working days before* the approval target date. For a Ph.D. Dissertation, each copy should contain the *readers report* “Doctoral Dissertation Report” [**Form 9-1**], with the top section filled in. For an M.S. Thesis the *readers report* is “Master’s Thesis Report” [**Form 9-2**].

**Step 2:** Inform the committee members of the deadline for giving their judgment to the chair of the Supervisory Committee. Members of the Supervisory Committee should also submit completed **Form 9-1** (Ph.D.) or **Form 9-2** (M.S.).

**Step 3:** With approvals obtained from all members of the supervisory committee, the chair reviews the dissertation or thesis for compliance with UMKC’s requirements and signs the “Preliminary Committee Approval” [**Form 9-3**].

The use of Reference citation formats other than ‘Turabian’ require that the name of the scientific journal format used (and approved) be listed and that ‘Instructions for Authors’ for the journal, including reference formatting instructions be supplied.

**Step 4:** The deadline to file for graduation is very **early** in the semester. Students must check the published Class Schedule for the actual deadline. “Application for Graduation” forms [**Form 6-2**] can be obtained from the Graduate Programs Office or from UMKC Records.

An official degree check is conducted at the time of filing. Any discrepancies may delay or prevent graduation. The degree check includes: verification of continuous enrollment and a line-by-line comparison between the official transcript of recorded courses and the Ph.D. Plan of Study or the M.S. Program of Study.

- It may be necessary to remind other institutions to provide official transcripts to UMKC for coursework included in the Plan/Program of Study.
- The composition of the Supervisory Committee is compared with that on record. The required doctoral or graduate status of the committee members is checked. Correction of deficiencies in these areas may require the filing and approval of additional forms (see Section 8).

**Step 5:** A complete copy of the dissertation or thesis is submitted, with the signed “Preliminary Approval of Thesis or Dissertation” form [**Form 9-3**] and with all signed copies of the “Doctoral Dissertation Report” [**Form 9-1**] (Ph.D.) or “Master’s Thesis Report” [**Form 9-2**] (M.S.) to the Graduate Programs Officer of the School, for verification and transmittal to the School of Graduate Studies.

**Step 6:** The GPO must submit all material for approval to the Dean of the School of Graduate Studies *no less than six weeks* before the expected graduation date.

**Step 7:** *After* the thesis/dissertation has been approved by the Dean of Graduate Studies, a certified copy of the thesis/dissertation is returned to the candidate with a “Certification of Acceptance” [**Form 9-4**] (Ph.D.) or equivalent (M.S.).

At the same time that the certification for a Ph.D. dissertation is received, the candidate will receive from the School of Graduate Studies a “Survey of Earned Doctorates” questionnaire [**Form 9-5**] which must be filled in and *returned* to the School of Graduate Studies.

A thesis/dissertation that fails to meet all requirements will be returned to the student without the certification of approval, for additional editing.

**Step 8:** The final oral defense should be scheduled in such a way that all Supervisory Committee members can attend and while UMKC is officially in session, i.e. within a semester.

- The date, time and location of the public presentation and oral defense of a Ph.D. dissertation must be announced and published, by posting in the School of Biological Sciences, *at least two weeks prior* to the day scheduled.
- It is suggested that a similar procedure is followed in the defense of an M.S. thesis.

**Step 9:** After the public presentation of the research described in the thesis or dissertation, the student defends the research in a closed meeting with the Supervisory Committee. The final examinations in defense of a Ph.D. dissertation must be open to all members of the doctoral faculty, who may attend as interested observers.

- The format of the defense is determined by the chair of the Supervisory Committee.
- If a majority of the committee accepts the oral defense and recommends approval, each committee member signs the official approval page in black ink, printed on archival quality acid-free paper.
- ❖ For an Interdisciplinary **Ph.D. Dissertation**, the “Report of Results of Examination for Doctoral Students” [**Form 9-6**] is signed by all members of the Supervisory Committee.
- ❖ For an **M.S. Thesis**, the “Report of Results of Final Examination for Master’s Students” [**Form 9-7**] is signed by all members of the Supervisory Committee.

**Step 10:** Within 48 hours of the defense of an **M.S. Thesis** or **Ph.D. Dissertation**, the Supervisory Committee chair shall:

- report the results of the final thesis examination in writing to the candidate.
- submit the original Report (**Form 9-6** for Ph.D., **Form 9-7** for M.S.) to the Graduate Programs Office. The Graduate Programs Office will place copies of the Report in the student’s file and submit the original Report to the Registrar (Graduate Records Office).

**Step 11:** The oral defense may result in the requirement that parts of the written Thesis or Dissertation be modified. These changes should be made *prior to the last day of coursework* of the semester in which the student plans to receive the degree.

- Changes or corrections must be made within all guidelines for the thesis or dissertation format.
- The research advisor must declare that all changes required by the supervisory committee have been made.

**Step 12:** Two *unbound*, complete copies of the approved thesis/dissertation, printed on certified archival quality acid-free paper, one including the original signed approval page and the other one a photocopy of the original approval page on archival quality acid-free paper, must be submitted to the UMKC Libraries.

**NOTE the “hard” deadline:** Submit prior to the first day of the term following the one in which the degree will be conferred.

The original copy of the “Certificate of Acceptance” [**Form 9-4** for I.Ph.D. or the M.S. equivalent], signed by the Dean of the School of Graduate Studies, must accompany these copies as a cover sheet.

The edited version of the electronic version of Thesis or Dissertation, if produced or required, will be submitted in the format specified by the School of Graduate Studies.

In case of a Ph.D. dissertation, the following documents are also required:

- one additional copy of the **abstract** (250 word maximum)
- two additional copies of the **title page** of the dissertation
- a completed “Doctoral Dissertation Agreement Form” [*Form 9-8*] (available in the Graduate Programs Office, Room 212 BSB)
- *One* cashiers check or money order made out to ProQuest Information and Learning Company for the total amount of the current microfilming fee (\$ 68.00 as of June 2003), and the *optional* copyright fee (\$ 45.00 in 2003).

In case of an M.S. thesis, the same requirements apply (**abstract**: 150 word maximum), with the exception that the form is named “Master’s Thesis Agreement Form” and the microfilming fee is \$58.00 (June 2003).

**Step 13:** One *bound*, complete copy of the approved thesis/dissertation, containing a copy of the signed approval page, must be submitted *within one month* of the Final Examination to the Graduate Programs Office for deposit in the School of Biological Sciences.

- One bound, complete copy should be presented to the Research Advisor.
- Most likely the graduate student would want to produce at least one bound, complete copy for personal use.

THE DOCTORAL STUDENT ASSOCIATION MAY PROVIDE FINANCIAL SUPPORT FOR THE PRODUCTION OF MICROFILMED, UNBOUND AND/OR BOUND COPIES OF THE THESIS/DISSERTATION.

### Commencement

Commencement ceremonies are held twice a year, near the end of the Fall and Winter Semesters. Dates are published in the UMKC Class Schedule (<http://www.umkc.edu/registrar>).

- Students should plan to participate in the commencement ceremony. The Graduate Programs Office should be informed whether or not you will attend.
- Cap and gown may be rented at the UMKC Bookstore. Graduating Ph.D. students will be provided hoods by the Graduate Programs Office.

Graduate students of the School of Biological Sciences will not be allowed to ‘walk-through’ commencement until they have fulfilled all degree requirements.

### Termination of Employment

Employment of a graduate student in the School of Biological Sciences may terminate upon:

- completion of all graduation requirements including the successful defense of dissertation or thesis
- non-renewal of contract due to the absence of funds or completion of the maximal number of years of support  
In case of appropriate progress towards fulfilling degree requirements, continuation in the program without support may be an option if the student declares in writing the willingness to work for no stipend. A term appointment (without compensation) will be prepared by the School of Biological Sciences.
- dismissal from the program

In every case, the Dean’s Office must be contacted to complete all necessary paperwork.

The student is responsible for returning all keys upon ending employment.

## FORMS

Warning: To the best of our knowledge, the following forms are in use at the time that this handbook was printed. However, over time, changes will be made so that it may become necessary to use an updated version of a form.

Forms that can be printed are listed in the **Table of Forms**, immediately following the Table of Contents. The pdf file link gives access to the most up-to-date file available, ready for printing using Acrobat Reader version 3.01 or later.