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CURRICULUM AND STUDENT GUIDE

***Cellular and Molecular Pharmacology and Physiology (CMPP)
Graduate Program
University of Nevada, Reno***

Director

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A. Introduction

This Student Guide is intended to introduce the CMPP Graduate Program to prospective and new students and to provide a resource to current students and faculty. It contains information about the program requirements and what students need to do in order to graduate. This information is accurate to the best of our knowledge but is subject to change. The penultimate authority rests in the Program Director (see face page) while ultimate authority rests in the Graduate School of UNR. Information from the Graduate School can be found at their web page (<http://www.unr.edu/grad/>). To get to the Graduate Catalog and information on the Doctoral Degree program, including requirements click on “Current Students” and then click on “Graduate Catalog” under “Publications and Forms” and then scroll down to and click on “Doctoral Degree Information”.

B. Program Entrance Requirements

The University of Nevada, Reno is an Equal Opportunity/Affirmative Action employer and does not discriminate on the basis of race, color, religion, sex, age, creed, national origin, veteran status, physical or mental disability, or sexual orientation, in any program or activity it operates. Questions should be addressed to the Affirmative Action Office is located in Room 209, Clark Administration (775-784-1547 or 775-784-4300).

Application for admission to the CMPP Graduate Program must be made to the Graduate School of the University of Nevada, Reno and to the CMPP program and must include Graduate Record Examination (GRE) scores and official transcripts of all previous undergraduate and graduate work. In order to be considered by the Admissions Committee of the CMPP, applicants must meet all requirements established by the Graduate School (<http://www.unr.edu/grad/>) including at least a 3.0 undergraduate grade point average (4-point system). The Graduate School may also require a Test of English as a Foreign Language (TOEFL) score of at least 500 (paper version), 173 (computer version) or 61 (internet version). Applicants are expected to have a B.A. or B.S. in Biology, Biochemistry, Molecular Biology, Chemistry or similar discipline. Further information and application forms are available from the Graduate School (<http://www.unr.edu/grad/>), the Office of

International Students and Scholars (<http://www.unr.edu/oiss/>), and the CMPP Program (<http://www.unr.edu/med/dept/cmpp/>).

C. Program of Study

The minimum requirements for a Ph.D. are set by the Graduate School at **72** graduate credits including at least **48** credits in course work. A maximum of **24** credits of course work (with grades of "B" or better) from a master's degree program may be allocated toward the doctoral degree. (A *Credit Transfer Evaluation Request Form* available online from the Graduate School must be approved by the student's advisory committee, the Graduate Program Director and, the Dean of the Graduate School.)

The minimum CMPP Graduate Program requires

CMPP Core Curriculum	36 required course credits (see below)
Electives	12 electives (600 or 700 level)
Dissertation	24 credits
Total credits required	72 credits

The specific program of study will be determined by the student and his or her Advisory / Examination Committee (see below).

The following courses (39 credits) are required by the CMPP Graduate Program unless waived by the student's Advisory / Examination Committee and the Executive Committee.

PCB 710 Medical Cell Biology	3 credits
BCH 705 Molecular Genetics	3 credits
PCB 711 Systems Physiology	7 credits
CMB 710 Molecular Cell Biology	4 credits
PHAR 710 Molecular Pharmacology	3 credits
CMPP 770 Research Rotation	4 credits
PHAR 725 Ethics and Scientific Res.	2 credits
CMPP 790 Seminar	6 credits
CMPP 794 Research Rounds	6 credits
CMPP 795 Comprehensive Exam	1 credits

In addition to these courses, a Ph.D. student must take at least 9 graduate credits of electives selected by the student and the Advisory / Examination Committee. Appendix A

gives a list of graduate level electives. Common choices are:

CMPP 740 Neuroeffector Mechs.	3 credits
CMPP 750 Molec. Mechs. of Excit.	3 credits
PHAR 730 Intro to Imaging & Optics	3 credits
BCH 613 Molecular Biophysics	3 credits

See Appendix A for an Example Plan of Study

D. Program Completion Requirements

First Year of Study - The Executive Committee of the CMPP Graduate Program will advise students during the first year of graduate study. At the beginning of the first year the students will meet individually with the Executive Committee to determine the appropriate courses to be taken. Required first year courses include PCB 710 Medical Cell Biology, BCH 705 Molecular Genetics, PCB 711 Systems Physiology, CMB 710 Molecular Cell Biology, CMPP 790 Seminar, and CMPP 794 Research Rounds. In addition, first year students will enroll in CMPP 770 (Research Rotation in the fall and spring of their first year and complete one research rotation in CMPP laboratories in two different departments. Exceptions to this requirement policy can be approved by the Executive Committee. These rotations are intended to expose students to the range of research in the CMPP Graduate Program and to aid in the selection of an advisor. In the first two weeks of the first semester, students will attend presentations by CMPP faculty interested in recruiting students into their laboratory in order to become familiar with faculty research and available research opportunities.

Selection of the Advisory/Examining Committee – Upon completion of the second rotation, each student will select a Dissertation Advisor who will serve as chair of their Advisory/Evaluation Committee. The Dissertation Advisor must agree to take the student on and will be responsible for supporting the student's research and providing a stipend consistent with CMPP guidelines. Students who are unable to identify a willing mentor at the completion of the second rotation will be advised by the members of the Student Oversight Committee over the summer following the first year of study. If a mentor cannot be found, the Committee will provide the Program Director with a written

summary of the student's performance in course and research work and may recommend that the student be dismissed from the Ph.D. program.

The Advisory/Examining committee will consist of at least **five** members of the Graduate Faculty: the Committee Chair / Permanent Advisor, at least two members of the CMPP Graduate Program, at least one faculty member from a department in a field related to the student's major, and at least one graduate faculty member representing the university-at-large. (For doctoral students, the research advisor may be a different faculty member than the permanent chair.) Students may request the appointment of a qualified faculty member from another university or from a relevant discipline or profession. Formal approval of the student's advisory/examining committee is made by the Graduate Dean. The Advisory/Examination Committee will hold an initial meeting prior to or early in the fall semester of the second year of study. The committee will approve the Qualifying Exam, the program of study, and the dissertation. It will also conduct the formal oral part of the doctoral dissertation defense and serve in an advisory capacity to the student during his or her tenure in the CMPP program. The student and committee will meet annually to prepare a written progress report consisting of a list of the courses the student has taken, the courses proposed for the next year, and the tentative date for the Qualifying Exam. This report will be turned in to the Student Oversight Committee.

Qualifying Exam - Students must pass a Qualifying Exam consisting of a written research proposal and oral examination by the Advisory/Examination Committee in order to be a candidate for a Ph.D. degree. Students are required to enroll in CMPP 795 in the spring semester of the second year of study. Failure to complete the Qualifying Exam will result in an Incomplete in this course.

The grant proposal must be in the standard NIH format for a multi-year RO1 grant as described in PHS form 398 (not more than 25 pages, single-spaced, etc.). It must include (suggested page limits):

Title Page
Abstract (1 page)
Specific Aims (1 page)
Background and Significance (5-10 pages)
Preliminary Studies (optional)
Research Design and Methods (10 - 12 pages)
Human Subjects or Vertebrate Animals (as appropriate)
Literature Cited

It should not include personnel, budget or facilities pages. Standard English grammar and spelling and accurate citation to work by others are required.

The topic must be approved by the Advisory / Examining Committee before the student begins writing. It can be an extension of the student's current research problem if it represents a significant advance or novel approach to the problem. It cannot be the same as a research project described in any grant submitted by the advisor or collaborators. Resources that may be consulted include the library, PubMed, the Advisory / Examining Committee, other researchers and other students. The finished document must be the student's own work.

The student's doctoral committee will formally examine the student orally on the grant. If the grant proposal is not considered acceptable, a revised grant proposal will be due two months from the date of the first examination. If the student fails the second examination he or she will be dropped from the program. This exercise is viewed as an important component of the student's training and education. To pass the exercise, students will need to be well-versed in the current literature in their field, and be able to formulate and defend their research plan and methodology. Students will also be expected to answer questions about the principles and factual basis of the research being proposed as well as any principles and facts of biomedical science that the committee feels the student should know to advance to candidacy. This exam will introduce the student to the style, complexities and nuances of the grant proposal process and will begin to develop those skills necessary for obtaining extramural research grants and for defending their ideas before other scientists.

In order for a student to pass the Qualifying Exam, the Advisory/ Evaluation Committee must reach a consensus that the student has written an acceptable proposal and performed satisfactorily in the oral examination. This consensus will be provided to the Program Director. If the Committee cannot reach such a consensus, they may offer the student the opportunity to revise the written proposal, to repeat the oral examination, or both within a period determined by the Committee. Alternatively the Committee will provide the Program Director with a written summary of the student's performance in Qualifying Exam, course and research work and a recommendation that the student be dismissed from the Ph.D. program. The Program Director and Advisory/ Evaluation Committee will decide if the student's work merits awarding a Master's Degree or if the student should be dismissed from the CMPP Graduate Program. The final decision will be forwarded to the Graduate School. Per Graduate School policy, students cannot continue in the CMPP Ph.D. program without passing the Qualifying Exam.

Dissertation and Final Examination Requirements - Prior to choosing a date for the final oral examination, graduate students must submit a copy of their final dissertation for review by their examining committee. The dissertation does not have to be in its final form, but must contain sufficient information to allow their committee to make an informed decision about the state of completion of their studies. The purpose of the review is to discern whether a student has sufficiently completed their studies to schedule the public seminar and final examination.

The format of the dissertation must meet the requirements of the Graduate School. If a student has first author publications accepted in refereed journals, the student may solicit the committee to use these publications together with an appropriate introductory chapter in lieu of the standard dissertation format. The committee may determine that additional chapters are required along with the published papers.

Following acceptance of the dissertation by the Advisory/Examination Committee, all doctoral candidates in the CMPP program will schedule and present a public research seminar on their dissertation research. This seminar will constitute part of the final

examination and must be presented while the candidate is still in residence. Following the public seminar, the Advisory/Examination Committee will conduct a final oral examination in closed session. This oral examination will be conducted in accordance with the examination requirements of the Graduate School. Doctoral candidates may register for one credit of Independent Study during the semester in which this seminar is presented.

APPENDIX A: Sample course of study

		courses	dissertation
Year 1 (Fall)			
PCB 710 (Units I, III, IV, and VI)	Medical Cell Biology	3	
BCH 705	Molecular Genetics	3	
CMPP 770	Research Rotation	2	
CMPP 790	Seminar	1	
CMPP 794	Research Rounds	1	
Year 1 (Spring)			
PCB 711	Systems Physiology	7	
CMPP 770	Research Rotation	2	
CMPP 790	Seminar	1	
CMPP 794	Research Rounds	1	
Year 1 (Summer)			
CMPP 799	Dissertation		3
Year 2 (Fall)			
PHAR 710	Molecular Pharmacology	3	
Elective	Elective	3	
CMPP 790	Seminar	1	
CMPP 794	Research Rounds	1	
CMPP 799	Dissertation		3
Year 2 (Spring)			
CMPP 795	Comprehensive Exam	1	
CMPP 793	Independent Study (Qual. Exam)	3	
CMB 710	Molecular Cell Biology	4	
CMPP 790	Seminar	1	
CMPP 794	Research Rounds	1	
CMPP 799	Dissertation		3
Year 2 (Summer)			
CMPP 799	Dissertation		3
Year 3 (Fall)			
Elective	Elective	3	
CMPP 794	Research Rounds	1	
CMPP 790	Seminar	1	
CMPP 799	Dissertation		2
Year 3 (Spring)			
CMPP 790	Seminar	1	
PHAR 725	Ethics in Scientific Research	2	
CMPP 794	Research Rounds	1	
CMPP 799	Dissertation		2
Year 3 (Summer)			

CMPP 799	Dissertation		2
Year 4 (Fall)			
CMPP 799	Dissertation		
Year 4 (Spring)			3
CMPP 799	Dissertation		3
Year 4 (Summer)			
CMPP 799	Dissertation		
Totals		48	24