

Student Name: _____ Perm: _____ Qtr/Yr Enrolled: _____

MASTER OF ARTS – MOLECULAR, CELLULAR AND DEVELOPMENTAL BIOLOGY**Emphasis in Pharmacology and Biotechnology – 2018-19**

In addition to departmental requirements, candidates for graduate degrees must fulfill University requirements described in the "Graduate Education" section of the UCSB General Catalog.

M.A. students are required to demonstrate competency in fundamental areas of Molecular, Cellular and Developmental Biology by achieving an average of a B or better in the core course modules given each quarter with no grade lower than a "C" in a module, and a B or better in elective courses. It is expected that all M.A. students are enrolled as full-time students and earn a minimum of 12 course units each quarter.

The Emphasis in Pharmacology and Biotechnology involves faculty from the departments of MCDB, Chemistry and Psychology, and the interdepartmental graduate program in Biomolecular Science and Engineering (BMSE). The interdisciplinary nature of the program allows students to gain a broad understanding of topics relevant to the pharmaceutical/biotechnology industries including molecular pharmacology, drug design, large scale production of protein-based therapeutics, molecular modeling, animal models as behavioral screens for psychotherapeutic drugs, and current methods in biotechnology. The program features a structured set of courses which are taught individually and collaboratively by faculty from a variety of disciplines. Additional summer internships in the pharmaceutical and biotechnology industry, or thesis projects in an academic setting give students an opportunity to gain experience in the field. This Emphasis meets the growing need of the pharmaceutical and biotechnology industries for scientists with a master's degree in the area of pharmacology and biotechnology.

M.A. Plan (select one):

- M.A. Plan 1 (Thesis): Minimum of 30 units, distributed as outlined below and a research thesis required
- M.A. Plan 2 (Examination): Minimum of 36 units, distributed as outlined below, and internship required

CORE COURSES (16 units)				
COURSE #	COURSE NAME	UNITS	QTR/YR	GRADE
MCDB 229	Protein Biochemistry	2	F	
MCDB 235	Experimental Strategies in Molecular Genetics	1	F	
BMSE 205A	Biochemical Techniques	1	F	
MCDB 220A	Chromosomes and Cell Cycle	2	W	
MCDB 220B	The Cytoskeleton	2	W	
MCDB 220C	From RNA to Membranes	2	W	
MCDB 230	Gene Regulation	2	W	
MCDB 223	Signal Transduction	2	S	
MCDB 225	Development	2	S	

ELECTIVE COURSES**Plan 1: 7-13 units****Plan 2: 14-15 units**

Electives should be taken from a selection of graduate courses chosen from the MCDB, Chemistry and Biochemistry, and Psychology departments. The electives are grouped into three **tracks**. The tracks have been established to reflect the three traditional areas of research in the field of pharmacology and biotechnology, and serve as a guideline for students to help shape their curriculum. The intention is to keep the choice of electives as flexible as possible and to allow students to explore different areas of pharmacology. Students who have not previously completed 8 units from the courses MCDB 126A-B-C-AL-BL are required to include at least 8 units from MCDB 226A-B-C-AL-BL in their electives.

Plan 1 students are required to take a minimum of 7 units from among the tracks.

Plan 2 students are required to take at least 8 units of electives in one of the tracks, and the remainder of the electives may be taken from among any of the tracks.

Recommended Courses for the Tracks:

Molecular and Cellular Biology

MCDB 203, 208AL, 222, 226A-B-C, 226AL-BL, 233, 245, 246, 247, 251, 252, 253, 293

Chemistry and Biochemistry

BMSE 201A-B, 203, 204, 205A-B, 207, 250, 251, 252, 253, CHEM 241, 243, 245, 246, 261, 262A-B

Neurobiology and Behavior

MCDB 251, 252, 253. PSY 215, 219, 221A-B, 231, 235, 268, 269

COURSE #	COURSE NAME	UNITS	QTR/YR	GRADE

LITERATURE COURSES
Plan 1: 1 unit
Plan 2: 1-2 units

MCDB 265, 266, 268, 595

COURSE #	COURSE NAME	UNITS	QTR/YR	GRADE

Research / Internship
Plan 1: up to 6 units
Plan 2: 4 units

Plan 1: Thesis research: up to 6 units of MCDB 596 may be counted towards the degree for Plan 1 students.

Plan 2: Internship research: 4 units of MCDB 596. Internship in an industry or academic laboratory will give students an opportunity to gain research experience in an industry setting. The internship is expected to last for a minimum of 10-12 weeks, and is expected to be an independent research project under the supervision of an experienced researcher at the company or academic laboratory. A report by the student is due at the end of the term, describing the research project, and the outcome. The results of the project also should be communicated with a poster and/or PowerPoint presentation under the supervision of a graduate review committee. A short evaluation of the student's performance by his/her supervisor is to be included in the student's report.

COURSE #	COURSE NAME	UNITS	QTR/YR	GRADE
MCDB 596				

SEMINAR REQUIREMENTS

Students are expected to enroll quarterly and attend MCDB 262 (Research Progress in MCDB (FNS)) as well as MCDB's weekly research seminars MCDB 260 and MCDB 263 each quarter until completion of degree. (No credit towards degree unit requirements for MCDB 260, 262, 263 or 269).

COURSE #	REQUIREMENT	FULFILLED:
MCDB 260	Research Seminar, each quarter	

MCDB 262	FNS Seminar, each quarter	
MCDB 263	Research Seminar, each quarter	

Teaching Assistantships

Teaching Assistantships are not a requirement of the Plan 1 or Plan 2 M.A. degree. Students with Teaching Assistant (TA) appointments must complete the appropriate TA orientation and techniques courses (MCDB 500 and 502; taken once, without degree credit). When serving as a TA, students should enroll in the TA practice course (MCDB 501) for the appropriate number of units (maximally 4 units for a 50% TAship; without degree credit).

M.A. Plan 1 (Thesis)

Students will complete the degree once all core course and elective requirements are met and the written thesis is approved by the Thesis Committee.

Thesis Committee: Chair: _____

Member: _____

Member: _____

Date Requirements Completed: _____

M.A. Plan 2 (Examination)

Students will complete the degree once all core course, elective, and internship requirements are met.

Date Requirements Completed: _____

<p>M.A. DEGREE REQUIREMENTS SATISFIED: _____ <div style="text-align: center;">Quarter/Year</div> <p>DEPT GRADUATE ADVISOR SIGNATURE: _____ <div style="text-align: center;">_____</div> <div style="text-align: center;">Print Name</div> </p></p>
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Residence requirement-minimum 3 quarters	
Required units completed = 30.0 (Plan 1), 36.0 (Plan 2)	
Language requirement Satisfied <i>(if required)</i>	
No grades of I, NR, or NG	
3.0 or better GPA overall	
B or better in all core courses <i>(200-level – verify if departmental requirement)</i>	
Registered quarter of degree or Filing Fee LOA: _____	
Master's Form I / COI and committee entered	
Master's Thesis date received <i>(signature page/e-filed and entered in SReg):</i> _____	
Master's Thesis Submission Fee:	

ProQuest ID _____ Permission Ltrs uploaded?	
	Master's Degree Awarded (mm/dd/yy)