1-15-1996

1995 - 1998 Bulletin

Loma Linda University

Loma Linda University

Graduate School

1995 ❦ 1998

Loma Linda University

GRADUATE SCHOOL

Bulletin 1995-98

Loma Linda, California

Cover: The Good Samaritan sculpture, located on the campus mall, is a graphic representation of the parable told by Jesus in Luke 10:30-37.

The information in this BULLETIN is made as accurate as is possible at the time of publication. Students are responsible for informing themselves of and satisfactorily meeting all requirements pertinent to their relationship with the University. The University reserves the right to make such changes as circumstances demand with reference to admission, registration, tuition and fees, attendance, curriculum requirements, conduct, academic standing, candidacy, and graduation.

BULLETIN OF
LOMA LINDA UNIVERSITY
Volume 85, Number 3, January 15, 1996

Published twice a month September 1 and 15, 1995; twice a month January 15 and 30, 1996; once a month February 15, 1996.

Entered June 7, 1923,
as second-class matter,
Loma Linda, California 92350
USPS 0-74-440

Bulletin of the

Graduate School

This is a three-year BULLETIN.

LOMA LINDA UNIVERSITY
Loma Linda, California 92350
1995-98

a health-sciences university

CONTENTS

I

II

III

I

LOMA LINDA UNIVERSITY

History
Philosophy
Our Mission
Nondiscrimination Policy
Affirmative Action
The Calendar
Letter from the Dean

History

Loma Linda University has grown out of the institution founded at Loma Linda, California, by the Seventh-day Adventist church in 1905. The original schools — Nursing and Medicine — have been joined by Allied Health Professions, Dentistry, Public Health, the Graduate School, and the Faculty of Religion.

The University, operated by the Seventh-day Adventist church, is committed to the vision of its founders and is sustained by its close association with the church.

Loma Linda University is a Seventh-day Adventist coeducational, health-sciences institution located in inland southern California. It is part of the Seventh-day Adventist system of higher education. Professional curricula are offered by the Schools of Allied Health Professions, Dentistry, Public Health, Medicine, and Nursing. Graduate programs in various biomedical sciences of the schools are offered by departments. The professional curricula of the University are approved by their respective professional organizations.

The core of the combined faculties consists of approximately 918 full-time teachers. Part-time and voluntary teachers, largely clinicians in the professional curricula, bring the total to approximately 2,066. Men and women from as many as 81 nations are represented in the annual enrollment well over 3,200 students.

Philosophy

As implied by its motto, "TO MAKE MAN WHOLE," the University affirms these tenets as central to its view of education:

God is the creator and sustainer of the universe.

Mankind's fullest development entails a growing understanding of the individual in relation both to God and society.

The quest for truth and professional expertise, in an environment permeated by religious values, benefits the individual and society and advances the ministry of the Seventh-day Adventist church.

Our Mission

Loma Linda University, a Seventh-day Adventist Christian health-sciences institution, seeks to further the healing and teaching ministry of Jesus Christ "to make man whole" by:

Educating ethical and proficient Christian health professionals and scholars through instruction, example, and the pursuit of truth;

Expanding knowledge through research in the biological, behavioral, physical, and environmental sciences and applying this knowledge to health and disease;

Providing comprehensive, competent, and compassionate healthcare for the whole person through faculty, students, and alumni.

In harmony with our heritage and global mission:

We encourage personal and professional growth through integrated development of the intellectual, physical, social, and spiritual dimensions of each member of the University community and those we serve.

We promote an environment that reflects and builds respect for the diversity of humanity as ordained by God.

We seek to serve a worldwide community by promoting healthful living, caring for the sick, and sharing the good news of a loving God.

To achieve our mission we are committed to:

OUR STUDENTS

Our primary responsibility is the education of students, who come from diverse ethnic and cultural backgrounds, enabling them to acquire the foundation of knowledge, skills, values, attitudes, and behaviors appropriate for their chosen academic or healthcare ministry. We nurture their intellectual curiosity. We facilitate their development into active, independent learners. We provide continuing educational opportunities for our alumni and professional peers. We encourage a personal Christian faith that permeates the lives of those we educate.

OUR FACULTY, STAFF, AND ADMINISTRATION

We respect our faculty, staff, and administration who through education, research, and service create a stimulating learning environment for our students. They contribute to the development of new understandings in their chosen fields. They demonstrate both Christian values and competence in their scholarship and professions.

OUR PATIENTS AND OTHERS WE SERVE

We provide humanitarian service through people, programs, and facilities. We promote healthful living and respond to the therapeutic and rehabilitative needs of people. We seek to enhance the quality of life for individuals in local, regional, national, and world communities.

OUR GOD AND OUR CHURCH

We believe all persons are called to friendship with a loving God both now and throughout eternity. We support the global mission of the Seventh-day Adventist church by responding to the need for skilled Christian health professionals and scholars. We seek to honor God and to uphold the values of the Seventh-day Adventist church and its commitment to awakening inquiry. We are drawn by love to share the good news of God expressed through the life and gospel of Jesus Christ and to hasten His return.

Nondiscrimination Policy

The University was established by the Seventh-day Adventist church as an integral part of its teaching ministry. It is committed to equal education and employment opportunities for men and women of all races and does not discriminate on the basis of handicap, sex, race, color, or national origin in its educational and admissions policies, financial affairs, employment programs, student life and services, or any University-administered program.

To this end, the University is in compliance with Titles VI and VII of the Civil Rights Act of 1964 as amended, and in substantial compliance with Title IX of the Education Amendments of 1972 (34 CFR 106 et seq.) and Sections 503 and 504 of the Rehabilitation Discrimination in Employment Act of 1967 and Section 402 of the Vietnam Era Veterans Adjustment Act of 1974; and does not discriminate against any employees or applicants for employment on the basis of age or because they are disabled veterans or veterans of the Vietnam era. In addition, the University administers student programs without discrimination on the basis of age, except in those programs where age is a bona fide academic qualification for admission in accordance with the provisions of the Age Discrimination Act of 1975.

The University reserves constitutional and statutory rights as a religious institution and employer to give preference to Seventh-day Adventists in admissions and employment, including but not limited to 42 USC Secs. 2000e-1, 2000e-2; Sec. 6-15 of Federal Executive Order 11246; 41 CFR Sec. 60-1.5(5); 20 USC Sec. 1681 (a) (3); 34 CFR Secs. 106.12 (a) (b), 106.21, 106.31, 106.39, 106.40, 106.51, and 106.57; California Government Code Sec. 12926 (d) (1); Title II, Division 4, Chapter 2, Sec. 7286.5 of the California Code of Regulations; the First Amendment to the United States Constitution; and Article I, Sec. 4 of the California Constitution. The University believes that Title IX regulations are subject to constitutional guarantees against unreasonable entanglement with or infringements on the religious teachings and practices of the Seventh-day Adventist church. The University expects students and employees to uphold biblical principles of morality and deportment as interpreted by the Seventh-day Adventist church. The University claims exemptions from the provisions of Title IX set forth in 34 CFR Secs. 106.12 (a) (b), 106.21, 106.31, 106.39, 106.40, 106.51, and 106.57.

Affirmative Action

The University routinely monitors its educational and employment practices regarding women, minorities, and the handicapped to ensure compliance with the law and University policy. The University's affirmative action policy is to provide equal access to admissions, educational programs and activities, financial aid, student services, and employment.

In compliance with Title IX of the Educational Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973, a grievance procedure has been established to process student complaints alleging violation of these regulations or of the University's policy of nondiscrimination based on sex or handicap. Inquiries concerning Title IX may be directed to the affirmative action officer. Employment-related discrimination complaints, including those filed by student employees, are processed in conformity with the provisions outlined in existing staff personnel policies. Complaints related to discrimination in academic areas are reviewed in conformity with the procedures established by the academic administration.

The Calendar

1995

JUNE

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

MAY 31-JUNE16	Registration
5-8	Final examinations
11	*Spring Commencement*
	SUMMER QUARTER 1995
19	Instruction begins
27	Last day to submit Petition for Graduation (Form C) for Fall completion

JULY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

4	Independence Day recess
26	Last day to submit Petition for Candidacy (Form A) for Winter completion

AUGUST

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

7	Certain basic medical science classes commence
25	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Summer completion
31	Instruction ends
31-SEP 1	Registration for post-Summer session

SEPTEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

4	Labor Day recess
	POSTSUMMER SESSION
5	Instruction begins
	FALL QUARTER 1995
5-22	Registration
25	Instruction begins

OCTOBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

2-6	Week of Devotion
3	Last day to enter a course
3	Last day to submit Petition for Graduation (Form C) for Fall and Winter completion
10	Last day to withdraw with no transcript record

The Calendar

1995

NOVEMBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

13	Last day to submit Petition for Candidacy (Form A) for Spring completion
22-26	Thanksgiving recess
27	Instruction resumes
27	Last day to withdraw with a W grade or to submit S/U petition

DECEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

4-29	Registration for Winter Quarter
8	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Fall completion
11-15	Final examinations
15-JAN 1	Christmas recess

1996

JANUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

	WINTER QUARTER 1996
2	Instruction begins
8-13	Student Week of Spiritual Emphasis
9	Last day to enter a course
9	Last day to submit Petition for Graduation (Form C) for Spring completion
13-20	Mission Emphasis Week
15	Martin Luther King, Jr., Day recess
16	Last day to withdraw with no transcript record

FEBRUARY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

5-11	Black Emphasis Week
13	Last day to submit Petition for Candidacy (Form A) for Summer completion
19	Presidents' Day recess
26	Last day to withdraw with a W grade or to submit S/U petition

MARCH

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

4-22	Registration for Spring Quarter
8	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Winter completion
11-14	Final examinations
15-24	Spring recess
	SPRING QUARTER 1996
25	Instruction begins

The Calendar

1996

APRIL

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

1-5	Week of Devotion
2	Last day to enter a course
2	Last day to submit Petition for Graduation (Form C) for Summer completion
9	Last day to withdraw with no transcript record
21-28	Fine Arts Festival

MAY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

7	Last day to submit Petition for Candidacy (Form A) for Fall completion
20	Last day to withdraw with a W grade or to submit S/U petition
27	Memorial Day recess
28-JUN 14	Registration for Summer sessions
31	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Spring completion

JUNE

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

3- 6	Final examinations
9	*Spring Commencement*
	SUMMER QUARTER 1996
17	Instruction begins
25	Last day to submit Petition for Graduation (Form C) for Fall completion

JULY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

4	Independence Day recess
24	Last day to submit Petition for Candidacy (Form A) for Winter completion

AUGUST

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

5	Certain basic medical science classes commence
16	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Summer completion
29-30	Registration for post-Summer session

The Calendar

1996

SEPTEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

	POSTSUMMER SESSION
2	Labor Day recess
3	Instruction begins for post-Summer session
3-20	Registration for Fall Quarter
20	Instruction ends for post-Summer session
	FALL QUARTER 1996
23	Instruction begins
30-OCT 4	Week of Devotion

OCTOBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1	Last day to enter a course
1	Last day to submit Petition for Graduation (Form C) for Fall and Winter completion
8	Last day to withdraw with no transcript record

NOVEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

11	Last day to submit Petition for Candidacy (Form A) for Spring completion
25	Last day to withdraw with a W grade or to submit S/U petition
27-DEC 1	Thanksgiving recess

DECEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

2	Instruction resumes
2-31	Registration for Winter Quarter
6	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Fall completion
9-12	Final examinations
13-JAN 1	Christmas recess

1997

JANUARY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

	WINTER QUARTER 1997
2	Instruction begins
6-10	Student Week of Spiritual Emphasis
9	Last day to enter a course
9	Last day to submit Petition for Graduation (Form C) for Spring completion
13	Martin Luther King, Jr., Day recess
16	Last day to withdraw with no transcript record
20-25	Mission Emphasis Week

The Calendar

1997

FEBRUARY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

11	Last day to submit Petition for Candidacy (Form A) for Summer completion
12	Chapel for Black Emphasis Month
17	Presidents' Day recess

MARCH

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

3	Last day to withdraw with a W grade or to submit S/U petition
	SPRING QUARTER 1997
10-28	Registration
14	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Winter completion
17-20	Final examinations
21-30	Spring recess
31	Instruction begins

APRIL

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

7-11	Week of Devotion
8	Last day to enter a course
8	Last day to submit Petition for Graduation (Form C) for Summer completion
15	Last day to withdraw with no transcript record

MAY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

6	Last day to submit Petition for Admission to Candidacy (Form A) for Fall completion
26	Memorial Day recess
27	Last day to withdraw with a W grade or to submit S/U petition
30	Last day to submit final copy of thesis, publishable paper, or dissertation; signed approvals; and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for Spring completion

JUNE

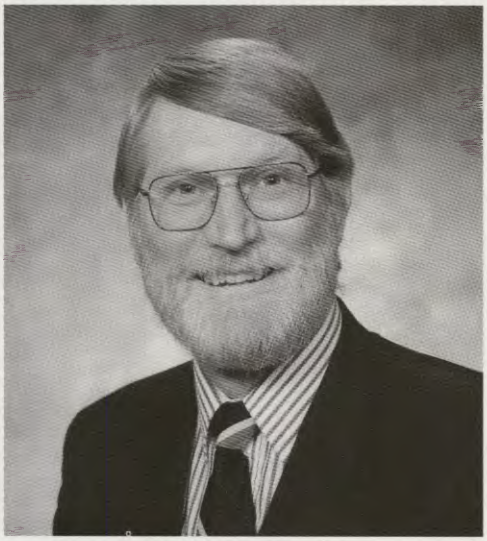
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

2-20	Registration for Summer Quarter
2-5	Final examinations
8	*Spring Commencement*
	SUMMER QUARTER 1997
16	Instruction begins

For 1997-98 Calendar, see supplement from Graduate School Office of Admissions and Records.

II

THE GRADUATE SCHOOL



We're glad you have chosen to consider Loma Linda University Graduate School as you make plans to continue your educational goals. This bulletin describes who we are and what we have to offer. It will familiarize you with the philosophy and structure of our programs along with a listing of the participating faculty and their educational backgrounds.

The Graduate School is a diverse entity with programs whose faculty are drawn from all the schools of the University. We embrace the University mission as articulated in this BULLETIN and are committed to education, research, and service within the Christian context.

You'll find vigorous academic programs that will stretch your mind as you take time to make new discoveries, get to understand our world, and apply Christian principles to your life and profession.

Our administrators, faculty, and staff are here to work with you and help you prepare for your future as a caring, Christian professional in the world of service to mankind.

If you'd like to know more about us, you can call us toll free at 1-800-422-4LLU.

W. Barton Rippon, Ph.D.
Dean

Philosophy and Objectives

PHILOSOPHY

In the Graduate School of Loma Linda University the essential concern of both faculty and students is the quest for meaning. Because this quest is served by knowledge, graduate students are obliged to achieve both broad and detailed mastery of their field of study. They also participate with the faculty in the process by which knowledge is augmented.

OBJECTIVES

The Graduate School attempts to create an environment favorable to the pursuit of knowledge and meaning by:

1. Making available to graduate students who wish to study in a Seventh-day Adventist Christian setting the education necessary for scholarly careers in the sciences and the health professions.

2. Encouraging development of independent judgment, mastery of research techniques, and contribution to scholarly communication.

3. Relating intellectual achievement to the service of mankind.

Admission Information

The program admission committees of the University intend that an applicant to any of the schools is qualified for the proposed curriculum and is capable of profiting from the educational experience offered by this University. The admission committees of the Graduate School accomplish this by examining evidence of scholastic competence, moral and ethical standards, and significant qualities of character and personality. Applicants are considered for admission only on the recommendation of the program in which study is desired.

APPLICATION AND ACCEPTANCE

Where to write

Inquiries regarding application and admission should be addressed to:

Office of Admissions
Graduate School
Loma Linda University
Loma Linda, California 92350

Application procedure

1. Two copies of the graduate application should be filled out and mailed, together with the application fee, to the above address. Applications and all supporting information, transcripts, test results, and references should be submitted at least two months before the beginning of the term for which admission is sought. Some programs require applications to be completed by a much earlier date.

2. Two complete official transcripts of all academic records from all colleges, universities, and professional or technical schools should be provided. It is the applicant's responsibility to arrange to have the transcripts, including official English translations if applicable, sent directly by the registrar of each school attended to the Graduate School Office of Admissions. Transcripts that come via an intermediary are unacceptable.

3. A personal interview is often desirable and should be arranged with the coordinator of the program in which the student wishes to study.

Acceptance procedure

1. When the program which the student wishes to enter has evaluated the application and made its recommendation, the dean of the Graduate School takes official action and notifies the applicant. The formal notice of admission should be presented at registration as evidence of eligibility to enter the Graduate School.

2. As part of registration, accepted students will be asked to file with Student Health Service a medical history with evidence of certain immunizations.

3. Transcripts of records and all other application documents are retained by the University and may not be withdrawn and used by students for any purpose. Records of students who do not enroll, or who withdraw prior to completion, are retained for two years from the date of original acceptance to the Graduate School program.

ADMISSION REQUIREMENTS

A four-year baccalaureate degree (or its equivalent) from an accredited college or university is a prerequisite for admission to the Graduate School. Transcripts of the applicant's scholastic record should show appropriate preparation, in grades and content, for the curriculum chosen. Since there is some variation in the pattern of undergraduate courses prescribed by different programs, the student should note the specific requirements of the chosen program. Deficiencies may be fulfilled while enrolled; prerequisites must be completed prior to matriculation.

Scholarship

Applicants are expected to present an undergraduate record with a grade point average of B (3.00) or better in the overall program and in the field of the major. Some students with an overall grade point average between 2.50 and 3.00 may be admitted provisionally to graduate standing, provided the grades of the junior and senior years are superior or there is other evidence of capability.

Graduate Record Examinations

Scores on the general test of the Graduate Record Examination (GRE) are required with applications for admission to degree programs. Requirements for certificate programs vary, and applicants are advised to request information specific to their proposed program of study. Students may address inquiries about these examinations to Office of Admissions, Graduate School, which can provide application forms and information about special administration of the examination on days other than Saturday.

Application forms for the GRE and information as to examination times and places are furnished by Educational Testing Service, 1947 Center Street, Berkeley, California 94701 (for the West); and Princeton, New Jersey 08540 (for the East).

When pressure of time makes it impossible to secure the GRE results, students seeking admission who have otherwise above-average achievement may be admitted provisionally, subject to review when the required test results are received. In such cases, test results are to be submitted within the first quarter of attendance. Certain programs with limited admissions may require the GRE results prior to acceptance, while some programs require the subject test. Please check student guides from individual programs for further information.

Reentrance

A student who discontinues studies at the University must meet the entrance requirements effective at the time of reentrance, unless a leave of absence has been granted. Fees are required for reentrance applications, and supplementary documents may also be required.

Change of program or degree

Students who are currently enrolled in the Graduate School may request transfer to a different program, or a more advanced degree level, by completing an application form and submitting two letters of reference along with the appropriate fee. Transcripts on file with the University are acceptable.

International students

The admission of students from countries where English is not the first language is limited to those who meet all requirements for admission; submit official English translations of their transcripts; furnish suitable recommendations from responsible persons; pass the Test of English as a Foreign Language (TOEFL) or the Michigan Test of English Language Proficiency (MTELP); and give evidence of ability to meet all financial obligations to the University during the course of study.

Inquiry about the time and place of administration of the tests should be addressed to Educational Testing Service at the addresses noted under the section "Graduate Record Examinations."

Scholarships and assistantships for first-year graduate students from abroad are extremely limited; consequently, applicants should assume that they will need to have financial resources sufficient for a full year's study. A deposit must be made to the International Student Affairs Office before immigration documents are furnished.

Exchange visitor

The University program for exchange visitors, through the United States Department of State, may be advantageous for international students. Persons entering the United States on an exchange visitor visa (J-1) are subject to the same regulations on study load and work as are F-1 students. In addition they are required to have health insurance for themselves and their families. Further information may be obtained from the University Student Affairs Office.

Visa forms

Forms for both the F-1 and the J-1 visas are issued by the adviser in the International Student Affairs Office to a student after acceptance and after financial arrangements have been made with that office.

Student visa

A graduate student entering the United States on a student visa (F-1) must successfully carry a study load of at least 8 units during each quarter of the academic year. The applicant must be prepared to provide such advance deposit as is required by Student Finance and must give assurance that additional funds will be forthcoming to meet school expenses. Fellowships and assistantships for international students are limited, and employment is limited by regulations of the Immigration and Naturalization Service to no more than twenty hours per week.

English competence

All international students are encouraged (particularly those who do not have an adequate score on TOEFL or MTELP or other evidence of English proficiency) to attend an intensive American Language Institute prior to entering their program. Further information about opportunities for such programs can be obtained from the Office of Admissions. Further study of English may be required to assure progress toward the degree.

ADMISSION CLASSIFICATIONS

Applicants are admitted to one of the following classifications. For regular or provisional status, applicants must be approved for acceptance by the program in which they propose to study. Others may be permitted to enroll, subject to availability of facilities, and will be classified as nondegree students.

Regular

Regular status is given to a student who meets the scholarship and examinations requirements for admission to the graduate program of choice, has met all prerequisites, and has no undergraduate deficiencies.

Provisional

Provisional status is given to a student (a) whose scholarship does not reach the level for regular graduate standing but who shows strong promise of success in graduate studies, (b) who has the prerequisites but whose undergraduate preparation is inadequate for the chosen graduate program, or (c) whose admissions documentation is incomplete at the time of notification of acceptance. To continue eligibility for graduate study, a student admitted on provisional status must achieve a grade point average of 3.00 quarter by quarter, with no course grade less than C (2.00).

Nondegree

Nondegree status is given to a student who wishes to enroll in graduate courses for personal or professional benefit but who is not seeking a graduate degree. Such applicants complete a special application form.

Nondegree students in the Graduate School are permitted only 12 units of study for regular grades. Beyond the 12 units, only audit (AU) may be recorded.

Certificate

Students seeking admission to one of the Graduate School's postbaccalaureate or post-master's certificate programs apply in the usual way for regular or provisional admission but are classified as certificate students.

Auditor

A student in any classification may register for a course as auditor with the consent of the adviser and the instructor of the course. The student is required to pay half the normal tuition and agrees to attend at least 80 percent of course lectures.

College senior

A senior with a grade point average of 3.0 or above may request to take a graduate course simultaneously with courses that complete the bachelor's degree requirements if the total does not constitute more than 12 academic units. Registration requires instructor, program director or coordinator, and Graduate School dean approval.

FROM MASTER'S TO Ph.D. DEGREE

Bypassing master's

A graduate student at this University may proceed first to a master's degree. If at the time of application the student wishes to qualify for the Doctor of Philosophy degree, this intention should be declared even if the first objective is a master's degree

If after admission to the master's degree program a student wishes to go on to the doctoral degree, an application form should be submitted, along with letters of reference, to the dean of the Graduate School. If the award of the master's degree is sought, the student will be expected to complete that degree before embarking on doctoral activity for credit. A student who bypasses the master's degree may be permitted, on the recommendation of the guidance committee and with the consent of the dean, to transfer courses and research that have been completed in the appropriate field and are of equivalent quality and scope, to their doctoral program.

Second master's

A student who wishes to qualify for an additional master's degree in a different discipline may apply. The dean of the Graduate School and the faculty of the program the student wishes to enter will consider such a request on its individual merits.

Concurrent admission

Students may not be admitted to a Graduate School program while admitted to another program at this University or elsewhere. The exceptions to this are the combined-degree programs, discussed in the following paragraph.

Combined degrees

The Graduate School provides for concurrent registration for two degrees only in its combined-science/professional degrees programs – M.D./Ph.D., M.D./M.S., D.D.S./Ph.D., D.D.S./M.S., Psy.D./Dr.P.H., Psy.D./M.P.H., and Ph.D./M.P.H. Concurrent application is required in some but not all of these. See page 28 of this BULLETIN; see also "Becoming a Medical Scientist at Loma Linda University," a brochure obtained from the coordinator of the Medical Scientist Program.

Programs and Degrees

The Graduate School offers programs leading to certificates and to the degrees Master of Science, Master of Arts, Master of Social Work, Doctor of Psychology, and Doctor of Philosophy, as listed below. The campus on which registration is conducted is indicated by the designation LL (Loma Linda) or CaUC (Canadian Union College):

Postbaccalaureate Certificates

Biomedical Sciences
Drug and Alcohol Counseling
Family Counseling
Family Life Education
Dentistry
- Endodontics
- Implant Dentistry
- Oral and Maxillofacial Surgery
- Orthodontics
- Pediatric Dentistry
- Periodontics

Master of Social Work

Master of Science

Anatomy
Biochemistry
Biology
Clinical Nutrition
Geology
Marriage and Family Therapy, LL/CaUC
Microbiology
Nursing
Pharmacology
Physiology
Speech-Language Pathology
Dentistry
- Endodontics
- Implant Dentistry
- Oral and Maxillofacial Surgery
- Orthodontics
- Pediatric Dentistry
- Periodontics

Master of Arts

Family Studies
Biomedical and Clinical Ethics

Doctor of Psychology

Doctor of Philosophy

Anatomy
Biochemistry
Biology
Medical Scientist
Microbiology
Pharmacology
Physiology
Psychology

GENERAL INFORMATION

Other graduate degrees are offered in the University by the School of Allied Health Professions (Master of Physical Therapy, Doctor of Physical Therapy) and the School of Public Health (Master of Science in Public Health, Master of Public Health, Master of Health Administration, and Doctor of Public Health).

CERTIFICATE PROGRAMS

The Graduate School offers several post-baccalaureate certificate programs. Students accepted into such programs will be assigned to an adviser who will work with them as they fulfill the program requirements. Students will be required to maintain a B- (2.7) grade point average.

MASTER OF ARTS
MASTER OF SCIENCE
MASTER OF SOCIAL WORK

Adviser and guidance committee

Each student accepted into a degree program is assigned an adviser who helps to arrange the program of studies to meet University requirements; subsequently (no later than when applying for candidacy) the student is put under the supervision of a guidance committee. This committee is responsible to and works with the coordinator of the student's program in arranging courses, screening thesis topics (where applicable), guiding research, administering final written and/or oral examinations, evaluating the thesis and other evidence of the candidate's fitness to receive the degree, and ultimately recommending the student for graduation.

Subject prerequisites and deficiencies

Gaps in an applicant's academic achievement will be identified by subject and classified either as prerequisites or as subject deficiencies. Applicants lacking certain subject or program prerequisites are not admitted to the master's degree program until the prerequisites are completed (at Loma Linda University or elsewhere) and acceptable grades are reported. However, subject deficiencies do not exclude an applicant from admission or enrollment; but they must be removed as specified by the adviser or dean, usually during the first full quarter of study at this University.

Study plan

The student's adviser should develop with the student a written outline of the complete graduate experience, with time and activity specified as fully as possible. This will serve as a guide to both the student and the adviser as well as to members of the guidance committee when it is selected. The study plan is changed only after careful consultation. The student is ultimately responsible for ensuring both timely registration and completion of all required courses.

Time limit

The time allowed from admission to the Graduate School to conferring of the master's degree may not exceed five years. Some consideration may be given to a short extension of time if in the dean's opinion such is merited.

Course credit allowed toward the doctorate is nullified eight years from the date of course completion. Nullified courses may be revalidated, upon successful petition, through reading, conference, written reports, or examination to assure currency in the content.

Residence

Students must meet the residence requirements indicated for their particular program (never less than one academic quarter). The master's degree candidate must complete one quarter of full-time study at the University or perform the thesis research at the University. Although students may register for up to 12 units each quarter, a student is considered in full-time residence if registered for at least 8 units.

Grade achievement

The required minimum grade average is B (3.00) with no course grade below C (2.0) on all work for the master's degree. This average must be maintained in formal courses and in research, computed separately. A student submitting transfer credits must earn a B grade average on all work accepted for transfer and on all work taken at this University, computed separately.

Research competence

Student skills required in languages, investigation, and computation are specified in each program description in this BULLETIN.

Comprehensive and final examinations

The student must take the written and oral examinations prescribed by the program on or before the published dates. Examinations for the master's degree candidate include a final examination not later than a month before the date of program completion.

If a candidate fails to pass the final oral or written examination for a graduate degree, the examining committee files with the dean a written analysis of the candidate's status, with recommendations regarding the student's future relation to the School. The student receives a copy of the committee's recommendation.

Thesis

Students writing a thesis must register for at least one unit of thesis credit. The research and thesis preparation are under the direction of the student's guidance committee. The student is urged to secure the committee's approval of the topic and research design as early as possible. Such approval must be secured before petition is made for candidacy.

The student must register and pay tuition for thesis credit whether the work is done in residence or in absentia. If the student has been advanced to candidacy, has completed all course requirements, and has registered for but not

completed the research and thesis, continuous registration is to be maintained until the manuscript has been accepted. This involves a quarterly fee of $50 (1995-96) paid at the beginning of each quarter. A similar continuing registration fee is assessed for each quarter the student fails to register for new units.

Candidacy

Admission to the Graduate School or designation of regular graduate standing does not constitute admission of the student to candidacy for a graduate degree. After achieving regular status, admission to candidacy is initiated by a written petition from the student to the dean, on recommendation of the program coordinator and department chair.

Students petitioning the Graduate School for candidacy for the master's degree must present a satisfactory grade record, include a statement of the proposed thesis or dissertation topic (where applicable) that has been approved by the student's guidance committee, and note any other qualification prescribed by the program. Students are usually advanced to candidacy during the third quarter after entering their course of study toward a degree in the Graduate School.

Specific program requirements

In addition to the foregoing, the student is subject to the requirements stated in the section of the BULLETIN governing the specific program chosen.

COMBINED-DEGREES PROGRAMS

Two combined-degrees programs are offered, each intended to provide preparation in clinical applications and the biomedical sciences. Both require concurrent admission to the Graduate School and a professional school in the University. These curricula are described in greater detail on page 28 of this BULLETIN.

Religion requirement

All master's degree students are required to take at least one three-unit religion course. Courses (numbered between 500 and 600) in social ethics, bioethics, psychology of religion, and philosophy of religion meet this requirement.

DOCTOR OF PHILOSOPHY

The Doctor of Philosophy degree is awarded for evidence of mature scholarship; productive promise; and active awareness of the history, resources, and demands of a specialized field.

Adviser and guidance committee

Each student, upon acceptance into a degree program, is assigned an adviser who helps arrange the study program. Subsequently (no later than when applying for candidacy), the student is put under the supervision of a guidance committee. The Graduate School requires advisers for Doctor of Philosophy degree candidates to have demonstrated consistent research productivity in their chosen disciplines. Each program maintains a list of qualified doctoral degree mentors. The guidance committee, usually chaired by the adviser, is responsible to and works with the coordinator of the student's program in arranging course sequences, screening dissertation topics, recommending candidacy, guiding research, administering written and oral examinations, evaluating the dissertation/project and other evidence of the candidate's fitness to receive the degree, and recommending the student for graduation.

Subject prerequisites and deficiencies

Gaps in an applicant's academic achievement will be identified by subjects and classified as either prerequisites or as subject deficiencies.

Applicants lacking subject or program prerequisites are not admitted to the Ph.D. degree program until the prerequisites are completed (at Loma Linda University or elsewhere) with acceptable grades.

Subject deficiencies do not exclude an applicant from admission or enrollment; but they must be removed as specified by the adviser or dean, usually at the beginning of the graduate experience at this University.

Study plan

The student's adviser should develop with the student a written outline of the complete graduate experience, with time and activity specified as fully as possible. This serves as a guide to both the student and the adviser as well as to members of the guidance committee when it is selected. The study plan is changed only after careful consultation. The student is ultimately responsible for ensuring both timely registration and completion of required courses.

Time limit

Completion of the graduate experience signals currency and competence in the discipline. The dynamic nature of the biological sciences makes dilatory or even leisurely pursuit of the degree unacceptable. Seven years are allowed for completion after admission to the Ph.D. degree program. Extension of time may be granted on petition if recommended by the guidance committee to the dean of the Graduate School.

Course credit allowed toward the doctorate is nullified eight years from the date of course completion. Nullified courses may be revalidated, upon successful petition, through reading, conference, written reports, or examination to assure currency in the content.

Residence

The Graduate School requires two years of residency for the Psy.D./Ph.D. degree, spent on the campus of the University after enrollment in a doctoral degree program. During residence, students devote full time to graduate activity in courses, research, or a combination of these. A full load of courses is 8 or more units each quarter; 36 or more clock hours per week is full time in research.

Students may be advised to pursue studies for limited periods at special facilities not available at Loma Linda University. Such time may be considered residence if the arrangement is approved in advance by the dean of the Graduate School.

The spirit and demands of doctoral study require full-time devotion to courses, research, reading, and reflection. But neither the passage of time nor preoccupation with study assures success. Evidence of high scholarship and original contribution to the field or professional competence form the basis for determining the awarding of the degree.

Grade achievement

Students must maintain a grade point average of at least a B (3.00) to continue in regular standing toward the doctorate. This average is to be computed separately for courses and research. Courses in which a student earns a grade between C (2.0) and B (3.0) may or may not apply toward the degree, at the discretion of the guidance committee. A student submitting transfer credits must earn a B average on all work accepted for transfer credit and on all work taken at this University, computed separately.

Research competence

Doctoral students demonstrate research competence by their investigative activities. Expectations and standards of achievement with the tools of investigation, natural and synthetic languages and computers, are specified for each program later in this BULLETIN.

Comprehensive examinations

The doctoral candidate is required to take comprehensive written and oral examinations over the principal areas of study to ascertain capacity for independent, productive, scientific work; and to determine whether further courses are required before the final year of preparation for the doctorate is undertaken. The program coordinator is responsible for arranging preparation and administration of the examination, as well as its evaluation and subsequent reports of results. Success in the comprehensive examination is a prerequisite to candidacy (see below).

Students cannot be admitted to the examination until the following requirements have been met: (a) demonstrated reading knowledge of one foreign language, if applicable; (b) completed the majority of units required beyond the master's degree or its equivalent.

The final oral examination

After completion of the dissertation and not later than a month before the date of graduation, the doctoral candidate is required to appear before an examining committee for the final oral examination.

If a candidate fails to pass this final examination for a graduate degree, the examining committee files with the dean a written analysis of the candidate's status, with recommendations about the student's future relation to the School. The student receives a copy of the committee's recommendation.

Project (required for the Doctor of Psychology degree)

All Doctor of Psychology degree students must register for at least one unit of project credit. This should be done in the last quarter of registration prior to completion.

The research and project preparation are under the direction of the student's guidance committee. The student is urged to secure the committee's approval of the topic and research design as early as possible. Such approval must be secured before petition is made for advancement to candidacy.

If the student has been advanced to candidacy, has completed all course requirements, and has registered for but not completed the research and project, continuous registration is maintained until the manuscript is accepted. This involves a quarterly fee of $50 (1995-96) paid during registration each quarter.

Dissertation (required for the Doctor of Philosophy degree)

All doctoral students must register for at least one unit of dissertation credit. This should be done in the last quarter of registration prior to completion.

The research and dissertation preparation are under the direction of the student's guidance committee. The student is urged to secure the committee's approval of the topic and research design as early as possible. Such approval must be secured before petition is made for advancement to candidacy.

Consultation with Graduate School Admissions and Records can prevent the student from commiting embarrassing errors of format that require retyping large sections of manuscript.

Students register and pay tuition for the dissertation whether the work is done in residence or in absentia. If the student has been advanced to candidacy, has completed all course requirements, and has registered for but not completed the research and dissertation, continuous registration is maintained until the manuscript is accepted. This involves a quarterly fee of $50 (1995-96), paid during registration each quarter.

Doctoral dissertations are reported to University Microfilms International and to the National Research Council. The Graduate School office provides appropriate information and forms.

Candidacy

Admission to the Graduate School does not constitute candidacy for a graduate degree. Admission to candidacy is initiated by a written petition (Graduate School Form A) from the

student to the dean, with support from the student's adviser and the program chair.

The student's petition for candidacy for the Doctor of Philosophy degree will include, in addition, confirmation that comprehensive written and oral examinations have been passed.

Students expecting the award of the doctorate at a June graduation should have achieved candidacy no later than the previous November 15. One full quarter must be allowed between the achievement of candidacy and the quarter of completion.

Specific program requirements

Doctoral programs differ from each other. The unique program requirements appear in the program sections of this BULLETIN and in the program guides available from specific departments.

COMBINED-DEGREES PROGRAMS

Three combined-degrees programs are offered, each intended to provide both clinical preparation and preparation in the basic sciences. All require concurrent admission to the Graduate School and a professional school in the University. These curricula are described in greater detail in the section Combined Biomedical Science/Professional Degrees.

Religion requirement

All doctoral students take at least one three-unit religion course. Courses (numbered between 500 and 600) in social ethics, bioethics, psychology of religion, and philosophy of religion meet this requirement.

COMBINED BIOMEDICAL SCIENCE/ PROFESSIONAL DEGREES

The Graduate School collaborates with the Schools of Medicine and Dentistry in offering two curricula that lead to the awarding of a professional degree, either the M.D. or D.D.S. combined with either the M.S. or Ph.D. in a biomedical science. The biomedical sciences available are anatomy, biochemistry, microbiology, pharmacology and physiology.

The two curricula differ in the point at which students enter the Graduate School and in the first year's sequence of courses. They are similar, however, in the general requirements for the degree, in requiring regular status at admission, and in requiring acceptance into both the Graduate School and a professional school.

Both curricula are fully described in a separate brochure, "Becoming a Medical Scientist at Loma Linda University," available from Admissions, the Graduate School, Loma Linda University, Loma Linda, CA 92350.

The two curricula are described in the following sections.

Combined-Degrees Program (CDP)

The Combined-Degrees Program provides opportunity for especially well-qualified and motivated students to pursue professional and graduate education; and to prepare for careers in clinical specialization, teaching, or investigation of problems of health and disease in man.

For admission to the Combined-Degree Program, students must have a baccalaureate degree, must qualify for admission to the Graduate School, and must already be admitted to either the School of Medicine or the School of Dentistry. Application may be made at any point in the student's progress in the professional school, though usually during the sophomore year. Students in this curriculum study toward a degree, either the M.S. or Ph.D., in one of the five biomedical science disciplines previously named.

Students interrupt their professional study for two or more years (as needed) for courses and research for the graduate degree sought. Elective time in the professional school may be spent in meeting Graduate School requirements.

The student's concurrent status is regarded as continuous until the program is completed or until discontinuance is recommended by the Graduate School or the professional school. The usual degree requirements apply.

Medical Scientist Program (MSP)

The Medical Scientist Program has degree and career objectives similar to those of the Combined-Degree Program, but with some differences.

Applicants are admitted who achieve simultaneous regular acceptance in the Graduate School and the School of Medicine prior to enrollment in either school. Study begins in the Graduate School with a one-year sequence in cell and molecular biology, selected courses from the freshman School of Medicine sequence, and clinically related seminars.

During the first years, the MSP coordinator advises the students. Later, when research interest and direction emerge, a program adviser and a thesis or dissertation guidance committee are chosen and recommend advancement to candidacy.

After the first MSP year, students pursue the first two somewhat modified years of their professional curriculum, returning to the Graduate School thereafter to complete and receive the graduate degree. Completion of the professional training follows. Elective time in the professional school may be spent in meeting graduate requirements.

Doctor of Public Health/Doctor of Psychology

The program enables a Dr.P.H. degree student to meet his/her elective and religion requirements with appropriate courses from the Psy.D. degree program, and allows work on the dissertation in an area that is acceptable for the Psy.D. project – thus obtaining the dual degree in less time than is required by the separate programs.

Student Life

Application to and enrollment in the University constitute the student's commitment to honor and abide by the academic and social practices and regulations stated in announcements, bulletins, handbooks, and other published materials; and to maintain a manner that is mature and compatible with the University's function as an institution of higher learning. If students neglect academic or other student duties, if their social conduct is unbecoming, or if their attitudes demonstrate deficiencies such as poor judgment, moral inadequacy, or other forms of immaturity, it is inevitable that they will come under question. The faculty then reviews the case, appraises fitness for a career in the chosen profession, and recommends to the dean appropriate action as to the student's continuance or discontinuance. Prospective students who have questions concerning the University's expectations should seek specific information prior to enrollment.

The University was established to provide education in a distinctive environment. No religious test is applied, but students are expected to respect the Seventh-day Adventist church's standards and the ideals of the University. The prospective student has the freedom to choose or reject these, but that choice must be made before enrollment. The student must then abide by this decision while at Loma Linda University.

FROM UNIVERSITY TO STUDENT

The University regards the student from a cosmopolitan and comprehensive point of view: (a) cosmopolitan, in that historically the University's global mission has promoted bonds and opportunities in education and service without regard to sex, national or racial origin, or geographical line; and (b) comprehensive, in that the University's concern for the welfare of the student traditionally has been an integrated concern for assisting the student in balanced development of the intellectual, emotional, physical, religious, and societal potentialities.

STUDENT WELFARE

Counseling service

The University provides access to an independent Student Assistance Plan (SAP) which will provide confidential evaluation of a client's needs and will refer to appropriate professionals to address those needs. The official counseling agency for the University provides a service to students who desire help from professional counselors. This service, which is free for the first five visits, is designed to deal with a wide range of educational, vocational, premarital, marital, or other personal problems. No referral is necessary. The goal is to assist individuals to make maximum use of their intellectual and personal resources. Counseling is done in the strictest confidence, and no information is released except by the written request of the person counseled.

Teaching-Learning Center

The Teaching-Learning Center provides educational testing to determine reading and comprehension level. The center offers a number of courses at different levels to assist students in increasing their reading speed and comprehension. The center's program is designed to utilize the student's actual course reading in its program.

Physical fitness

Physical fitness is promoted by various recreational interests and by courses in gymnastics, field exercises, body building, and health instruction. An effort is made to interest each student in some recreational and health-building activity that may be carried over to enhance future life. The recently completed Drayson Center offers a number of opportunities for students to develop physical and relational wholeness in a Christian atmosphere.

THE STUDENT HEALTH PLAN

The health, vitality, and welfare of its students and their dependents are of major concern to the University.

The Student Health Plan provides health service to all eligible students, including the following benefits:

1. Professional services are rendered by Student Health Service.

2. Prescriptions at Loma Linda Campus Pharmacy and Loma Linda University Medical Center Pharmacy for $7 generic or $10 brand-name co-payment.

3. Referrals by Student Health Service physicians are no longer mandatory. Students may go directly to other providers without going through health service.

Any medical condition, illness, or injury for which medical treatment was received or which was known to the student or patient during the twelve months before the effective date of coverage will not be covered by this plan for one year from the effective date of coverage. Pre-existing and congenital conditions are covered after one year. However, if the student or dependent remains treatment free (including medication) for the six months ending after the effective date of coverage, then this pre-existing condition exclusion for that condition, illness, or injury will last only until the end of such six-month term.

After a $200 deductible has been satisfied by the student, then the Student Health Plan will pay 80 percent of medical costs through preferred-provider physicians/facilities to an annual limit of $50,000. When the student has reached an out-of-pocket limit of $1,000 in any academic year, the plan will then pay 100 percent to preferred providers for most services. The plan will pay 50 percent of medical costs to nonpreferred providers; out-of-pocket limits do not apply to nonpreferred providers.

Eligible students may purchase benefits for their eligible spouse and/or children, subject to the limitations in the Student Health Plan booklet. Out-of-pocket limits are $2,500 for preferred-provider payments for family coverage. Nonpreferred-provider payments do not apply to out-of-pocket limits. Annual limits per family member are $50,000 after satisfying a $200 deductible per person or $600 per family.

The annual limits apply per academic year, July 1 through June 30.

All full-time students at Loma Linda University in any clinical educational program are covered by the Student Health Plan. This plan provides coverage twenty-four hours per day while enrolled. Effective February 23, 1994, the student health policy was amended to waive the deductible and co-payment for accidental injury for students in the performance of their clinical rotation duties.

The Student Health Plan is an excess plan and only supplements other medical plans which provide benefits to the student. The student first obtains payment or reimbursement from any and all other medical plans which provide benefits for the student and only thereafter submits bills for any remaining portion not covered by the other plans. The student must, therefore, follow all rules of his/her primary insurance in obtaining medical treatment. The student should contact the primary carrier to determine what procedure to follow. Student Health Plan rules are not to be followed if the student's primary carrier requires the student to follow its rules in order to qualify for payment.

All full-time students and all students in clinical programs are automatically covered by the Student Health Plan. Students are covered when enrolled for 7 units or more per quarter, for which Loma Linda University is receiving tuition, excluding "in progress" (IP) units and "employee tuition benefit" units. Students enrolled for field practicum are eligible if registered for at least 240 hours per quarter. Students taking fewer than 7 paid units or students on summer break who desire to purchase coverage should contact the Department of Risk Management within the first two weeks of each quarter.

Coverage for families of students is optional and may be purchased through the Department of Risk Management during the open enrollment period each quarter. Eligible dependents are the spouse (residing with the insured student) and unmarried children under twenty-four years of age who are not self-supporting and who are themselves full-time students.

An eligible student's coverage becomes effective on the day of orientation or the first day of class. Any purchased benefits will become effective on the day the application and payment are received by the Department of Risk Management within the open-enrollment period. The open-enrollment period is the first two weeks of each new calendar quarter.

Benefits for all plans are limited by the terms and conditions as set forth in the Student Health Plan booklet. Students and their dependents are referred to the Student Health Plan document and the Loma Linda University Department of Risk Management for benefit details.

For further information on the health plan, contact the Department of Risk Management at telephone 909/824-4386.

Malpractice insurance

Students are covered by malpractice insurance while acting within the course and scope of any approved clinical assignment.

Policies and General Regulations

Students are responsible for informing themselves of and satisfactorily meeting the policies and regulations pertinent to registration, matriculation, and graduation.

GENERAL REGISTRATION

The student must register on the dates designated in the University calendar in this BULLETIN. Registration procedure includes recording information on forms furnished by the Office of University Records and clearing financial arrangements with Student Finance. The course list filed must have been approved by the graduate adviser and the dean.

Late registration is permissible only when there is a compelling reason; a charge is made if registration is not completed on the designated dates. The student may not attend class without being registered, and in no case may registration take place later than the second week of a term unless the course is offered as an intensive which requires registration before the end of the first day of class. A change in registration after the second week affects the grade record. In the Graduate School a change in registration requires the recommendation of the student's program coordinator/mentor and the approval of the dean.

CONDITIONS OF REGISTRATION, RESIDENCE, ATTENDANCE

Academic residence

A student must meet the residence requirements indicated for a particular degree, never less than one academic quarter. A year of residence is defined as three quarters of academic work. The master's degree candidate must complete one quarter of full-time study or perform the thesis research work at the University or an approved off-campus location. A student is in full-time residence if registered for at least 8 units. A maximum of 12 units may be taken without special petition unless the student is enrolled in an approved block-registration program.

Extramural study

When a student begins a degree program, it is understood that courses taken must be conducted on a campus of the University unless, upon petition for extramural study, the student obtains consent from the program coordinator and the dean. In such instances, the student must arrange with the program coordinator for evaluation of the study and, at its completion, recommendation as to credit and grade.

Leave of absence

A student who wishes to withdraw for a quarter or longer submits a written request for leave of absence, indicating the reason and the length of time needed to be out of the program. One year is the maximum leave time granted. This request requires the approval of the student's department and the dean. Stipulations for reentry are given the student in writing. During the period of leave, students maintain continuous registration by payment of a quarterly fee, currently $50 (1995-96). .

Administrative withdrawal

Students who fail to make arrangements for a leave of absence and continuing registration may be administratively withdrawn from Graduate School after two quarters of inactivity.

Readmission

A student who has been administratively withdrawn from the Graduate School will be required to reapply for admission and is subject to the requirements in effect at the time of readmission.

Continuous registration

A student is required to maintain continuous registration from advancement to candidacy to the awarding of the degree. For quarters during which the student is not paying course tuition, a fee of $50 (1995-96) is charged.

Withdrawal

Formal withdrawal must be arranged at the Graduate School's Office of Records, and at the Office of University Records.

Transfer credits

A transfer student who has done acceptable graduate study in an approved institution may transfer credits up to one-fifth of the units required by the chosen program, to be applied to the degree at Loma Linda University. Such transfer credits will not be used to offset work at this University that is less than a B average. This transfer is limited to credits that have not already been applied to a degree and for which a B (3.00) or better has been recorded.

A candidate for the doctorate who holds a master's degree, or presents its equivalent by transcript, may receive credit up to 54 quarter

units, subject to the consent of the dean and the department chair involved. In such instances the transfer student is not relieved of residence requirements at this University.

Chapel

Weekly devotional services are held as part of the regular program of the University; and full-time students enrolled in classes that meet on Wednesday morning are expected to attend.

Academic probation

Degree students whose overall grade point average falls below a 3.0 will be placed on academic probation. Students who are on academic probation and fail to make a 3.0 for the next quarter, or who fail to have a 3.0 G.P.A. overall after two quarters, may be dismissed from school.

Clinical probation

Programs with a clinical component may recommend that the student be placed on clinical probation. Details are contained in the program guides for the programs concerned.

Academic grievance

The student who feels that s/he has an academic grievance may proceed as follows:

1. The student should first discuss the problem or grievance with his/her instructor. If, following discussion with the instructor, the student is not satisfied and continues to believe that s/he has not been fairly dealt with, s/he may discuss the grievance with the chair of the department involved or with the coordinator of the program in which s/he is enrolled.
2. If the matter is not resolved at this level, the student has recourse to the office of the dean of the Graduate School.
3. As a final appeal the student may request the academic dean of his/her school to appoint a faculty review committee of three members to evaluate the situation and make a recommendation to the dean. This request should be presented in writing and include the pertinent information regarding the situation. The student may request to meet with the review committee for discussion of the case.

Adviser and guidance committee

Each student is assigned an adviser and a guidance committee. These are described fully under each degree description elsewhere in this BULLETIN.

Time limits

Any credit transferred to the School or taken in residence and submitted toward a master's degree is nullified seven years from the date when the course was completed. Similarly, credit submitted toward a doctor's degree is nullified eight years from the date when the course was completed.

The time lapse from first enrollment in a graduate curriculum to the conferring of the master's degree may not exceed five years. For the doctor's degree, seven years are allowed after the date of admission; however, students enrolled in an approved combined-degree program may be permitted nine years. A student desiring reinstatement must reapply to the dean. This procedure implies a reevaluation of the student's total program.

Statistics and research consultation

Several programs in the Graduate School require statistics, either as a prerequisite to entry, as part of the program, or both. The course STAT 509 General Statistics, described in the School of Public Health BULLETIN, fulfills the prerequisite requirement; other requirements are specified by program. The course STAT 698 Research Consultation, described in the School of Public Health BULLETIN, provides professional guidance as the individual student initiates and progresses with the research project, thesis, or dissertation.

GRADUATION ATTENDANCE

The candidate for a graduate degree taken on the Loma Linda campus is expected to attend the graduation events and to receive the diploma in person. Consent for the degree to be conferred in absentia is contingent on the recommendation of the dean to the president and can only be granted by the president. A graduation fee will be placed on the student's account during the quarter following submission of Form C (Request to Graduate). This fee covers the cost of the academic regalia, diploma and case, and picture.

SCHOLASTIC STANDING

The following values are assigned for calculation of the grade point average per unit of enrollment:

A	4.0	C	2.0
A-	3.7	C-	1.7
B+	3.3	D+	1.3
B	3.0	D	1.0
B-	2.7	F	0.0
C+	2.3		

The following designations are used to make clear the student's status but not to indicate credit:

AU	audit
I	incomplete
IP	in progress (for courses which cross term boundaries)
S	satisfactory (used in pass-fail courses; does not affect GPA)
U	unsatisfactory (does not affect GPA)
W	withdraw (given from two weeks after registration until two weeks before final examinations begin)

The graduate student is expected to maintain a consistently high level of performance. The dean receives reports on the quality of work done in order to determine the eligibility of the student for advancement.

PROGRAM PRACTICES

Degree programs specify expectations in this BULLETIN as well as in their own publications. Students should become well acquainted with both sources of guidance.

THESIS AND DISSERTATION

The student's research and thesis or dissertation preparation are under the direction of the student's guidance committee. The student is urged to secure the committee's approval of the topic and research design as early as is feasible. Such approval must be secured before petition is made for advancement to candidacy.

Handbook

Instructions for the preparation and format of the publishable paper, thesis, or dissertation are in the "Handbook for Graduate Students," available at the Graduate School Admissions Office. Consultation with Graduate School Admissions and Records can preserve the student from embarrassing errors of format that require retyping large sections of manuscript. The last day for submitting copies to the Graduate School office in final approved form is published in the Calendar of Events.

Binding

A fee will be assessed to cover the cost of binding copies of thesis or dissertation to be deposited in the University library and the appropriate department or school collection. This same fee will also apply to personal copies bound at the student's request.

BULLETIN

When this BULLETIN and any other Graduate School publication or the publication of any other school or any other Graduate School program conflict, this BULLETIN prevails.

Financial Information

The student is expected to arrange for financial resources to cover all expenses before the beginning of each school year. Accounts with other schools or this University must have been settled.

GENERAL PRACTICES

Advance payment

Tuition and fees are charged and payable in full in advance of each term. If the student withdraws from a course or all courses before 60 percent of the quarter has passed, tuition will be refunded on a pro-rata basis, with refunds of not less than the portion of tuition assessed equal to the remaining portion of the enrollment period as of the last day of attendance (rounded down to the nearest 10 percent of that period).

To withdraw from a course(s), the student must complete a Change of Program form (or a Total Withdrawal form to completely withdraw from School). These forms should be completed and submitted on the last day of class attended. The date the properly completed form is submitted to the Office of University Records, with appropriate signatures, will be the date of withdrawal used in calculating tuition refunds.

Monthly statement

The amount of the monthly statement is due and payable in full within thirty days after presentation. A student unable to meet this requirement must make proper arrangements with Student Finance. An account that is more than thirty days past due is subject to a service charge of .833 percent per month (10 percent per year). Failure to pay scheduled charges or to make proper arrangements, which is reported to the Office of University Records and the Graduate School dean, may be cause for the student to be considered absent, discontinued, or ineligible to take final examinations.

Financial clearance

The student is expected to keep a clear financial status at all times. Financial clearance must be obtained before registration each term; before receiving a certificate or diploma; or before requesting a transcript, statement of completion, or other certification to be issued to any person, organization, or professional board.

Checks

Checks should be made payable to Loma Linda University and should *show the student's ID number* to ensure that the correct account is credited.

Veterans

A student who is eligible to have veteran's benefits under the 1966 enactment should transfer records to the Veterans Administration Regional Office, 11000 Wilshire Boulevard, Los Angeles, California 90024. Veterans must be admitted to a degree program to be eligible to receive benefits. Application should be made well in advance of enrollment. Further information may be requested from the Office of University Records. To receive advance payments, the student must contact the Office of University Records at least forty-five days in advance of enrollment.

SCHEDULE OF CHARGES (1995-96)

TUITION, GRADUATE SCHOOL PROGRAMS IN GENERAL

$325	Per unit, credit.
163	Per unit, audit.

TUITION, GRADUATE DENTISTRY PROGRAMS (package rates)

$2,130	Per quarter, effective Summer Quarter 1995 for Oral and Maxillofacial Surgery Program.
5,050	Per quarter, effective Summer Quarter 1995 for all other programs.

SPECIAL CHARGES

$50	Application fee.
50	Continuous-registration fee each quarter for which no tuition is paid.
25	Application to change program or degree.
91	One-time graduation fee, charged during final year.

Tuition and/or fees will change for 1996-97. Students should plan on an annual increase consistent with inflation in the education sector.

FINANCIAL AID

University fellowships

Some fellowships are awarded annually to students of outstanding promise and performance. In certain programs fellowships may carry stipends and remission of tuition.

Assistantships

A limited number of teaching and research assistantships, with stipends, may be provided by individual programs.

Tuition waiver

Program chairs and coordinators may recommend partial- or full-tuition waivers for students of demonstrated achievement.

Application

An application for a fellowship or an assistantship from a student not already enrolled in a graduate program at the University must be accompanied by an application for admission. All applications for financial aid must have a completed financial aid form, which is available from Student Financial Aid.

Closing date

An application for financial aid of any kind should be made as early as possible, but preferably no later than six weeks before the beginning of the effective quarter. Budgets are established in the Spring for the following Fall.

Loans

Financial assistance is available to the student from University loan funds, government loan funds, and other special trust funds. Inquiries concerning loans and other student financial matters should be made to the Office of Student Financial Aid.

SATISFACTORY PROGRESS

Each degree program has defined "satisfactory progress" as it relates to financial aid. Years in the program and requirements completed are specified. Students should consult their advisers to get copies of the policy.

FACULTY OF RELIGION

GERALD WINSLOW, Ph.D. Graduate Theological Union, University of California, Berkeley 1979
Dean; Professor of Christian Ethics

In the configuration of Loma Linda University as a health-sciences university, the role of religion as integrative in each of the programs of the University is mandated and continuously affirmed by University administration and the Board of Trustees.

To assist in this integration, the Faculty of Religion (formerly the School of Religion) was established in July of 1990.

The Faculty of Religion is committed to the following four tasks, as informed by the teachings and practice of the Seventh-day Adventist tradition and mission:

1. To focus Christian wholeness for faculty and students in their personal and professional lives and witness.

2. To provide a religion curriculum with the following emphases —

   a. Foundational studies (biblical, theological, and mission).

   b. Ethical studies (personal, professional, and social).

   c. Relational studies (personal and professional).

3. To foster and support research in the foundational, ethical, and relational disciplines.

4. To serve the University, the church, and the larger world community by personal involvement in fostering deeper spirituality, theological integrity, and social justice.

FULL-TIME FACULTY

GERALD WINSLOW. 1993. Professor of Christian Ethics
Ph.D. Graduate Theological Union, University of California, Berkeley 1979

IVAN BLAZEN, 1993. Professor of Foundational Studies
M.Div. Andrews University 1962
Ph.D. Princeton Theological Seminary 1979

CARLA GOBER, 1995. Assistant Professor of Clinical Ministry
M.P.H. Loma Linda University 1984
M.S. Loma Linda University GS 1994

DAVID R. LARSON, 1974. Professor of Christian Ethics
D.Min. School of Theology at Claremont 1973
Ph.D. Claremont Graduate School 1982

DAVID LAWSON TAYLOR, 1995. Professor of American Religious History and Theology
D.Min. Vanderbilt University 1977

JOHNNY RAMIREZ, 1994. Associate Professor of Theology, Psychology, and Culture
M.A. Antillian College 1979
M.Ed. Harvard University 1988
Ed.D. Harvard University 1993

RANDALL ROBERTS, 1994. Assistant Professor of Practical Theology
M.Div. Andrews University 1985

JAMES W. WALTERS, 1980. Professor of Christian Ethics
M.Div. Andrews University 1970
Ph.D. Claremont Graduate School 1979

PART-TIME FACULTY

WIL ALEXANDER, 1973. Professor of Relational Studies
Ph.D. Michigan State 1962
M.Th. Edinburgh University 1966

DALTON D. BALDWIN, 1963. Professor of Foundational Studies
M.Th. Princeton Theological Seminary 1963
Ph.D. Claremont Graduate School 1975

ADJUNCT FACULTY

LEIGH AVELING, Relational Studies
M.A. Loma Linda University GS 1988

DELBERT BAKER, Relational Studies
Ph.D. Howard University 1992

MELVIN BURT, Foundational Studies
M.Div. Southwestern Adventist College 1989

LARRY CHRISTOFFEL, Foundational Studies
M.Div. Andrews University 1967

M. JERRY DAVIS, Relational Studies
B.D. Andrews University 1963
Rel.D. School of Theology at Claremont 1967

FRED KASISCHKE, Foundational Studies
M.Div. Andrews University 1970
D.Min. Fuller Theological Seminary 1988

RANDALL SKORETZ, Foundational Studies
M.Div. Andrews University 1983

BERNARD TAYLOR, Foundational Studies
Ph.D. Hebrew Union College 1989

DAVID VANDENBURGH, Foundational Studies
M.Div. Andrews University 1972
D.Min. Fuller Theological Seminary 1992

EMERITUS FACULTY

PAUL HEUBACH, 1942-52, 1963. Emeritus Professor of Applied Theology
LL.D. (Hon.) Walla Walla College 1968

A. GRAHAM MAXWELL, 1961. Emeritus Professor of New Testament
Ph.D. University of Chicago Divinity School 1959

V. NORSKOV OLSEN, 1974-84. Emeritus Professor of Church History
Ph.D. University of London 1966
Th.D. University of Basel 1968

JACK W. PROVONSHA, 1958. Professor of Philosophy of Religion and Christian Ethics
M.D. Loma Linda University SM 1963
Ph.D. Claremont Graduate School 1967

WALTER F. SPECHT, 1945-66, 1976. Emeritus Professor of New Testament
Ph.D. University of Chicago 1955

CHARLES W. TEEL, SR., 1967. Emeritus Professor of Pastoral Care
B.D. California Baptist Theological Seminary 1959

FOUNDATIONAL STUDIES

BIBLICAL

RELF 558 Old Testament Theology (3-4)
Examination of the major theological concepts of the Old Testament and how these relate to Christian faith and understanding.

RELF 559 New Testament Theology (3-4)
Examination of the major theological themes found in the teachings of Jesus, Paul, and John.

RELF 568 Hebrews (3-4)
Chapter-by-chapter interpretation of Hebrews, and an analysis of its teaching on Jesus' atoning death and subsequent ministry in the heavenly sanctuary.

RELF 699 Directed Study (2-6)
Prerequisite: Consent of instructor.

THEOLOGICAL

RELF 604 Seminar in Religion and Science (3-4)
Research seminar in the relation between religion and science.
Prerequisite: Consent of the instructor.

MISSION

RELR 534 Anthropology of Mission (3-4)
Study of mission, applying the findings of anthropology as they relate to cultural change. Processes of religious development, means of diffusion, factors affecting religious acculturation, and analysis of programs intended to effect changes in religion.

ETHICAL STUDIES

RELE 504 Research Methods (4)
Graduate-level examination of the presuppositions and procedures for research in the humanities and sciences pertinent to specialists in ethics; use of libraries and research center; ways and means of preparing and presenting term papers, theses, and scholarly articles.

RELE 522 Bioethical Issues in Social Work (3)
Examination of theoretical and practical dilemmas in contemporary biomedical ethics, with emphasis on the distinctive contributions social workers can make to their identification, clarification, and resolution.

RELE 524 Christian Bioethics (3-4)
Current bioethical issues such as abortion, mind control, procreation and genetic engineering, and life manipulation.

RELE 534 Ethical Issues in Public Health (3-4)
Theoretical and practical appraisals of the ethical issues and alternatives encountered by public health administrators, educators, and investigators.

RELE 548 Christian Social Ethics (3-4)
Implications of Christian belief for selected problems in social ethical theory and practice.

RELE 554 Clinical Intensive in Biomedical Ethics I (4)
Intensive study of the theories and applications of clinical biomedical ethics.

RELE 555 Clinical Intensive in Biomedical Ethics II (4)
Intensive study of the theories and applications of clinical biomedical ethics.
Prerequisite RELE 554.

RELE 577 Theological Ethics (3-4)
Ethical dimensions of theological positions advocated in the twentieth century.

RELE 588 Types of Ethical Theory (3-4)
Critical analysis of the basic theories propounded in Western philosophical ethics. Study of the writings of major ethical theorists, including Plato, Aristotle, I. Kant, and J. S. Mill; and a consideration of philosophical ethics as compared with Christian faith.

RELE 624 Seminar in Scripture and Ethics (3-4)
Prerequisite: Consent of the instructor.

RELE 625 Seminar in Christian Ethics (3-4)
Prerequisite: Consent of the instructor.

RELE 674 Reading Tutorial in Christian Ethics (3-4)
Reading course for graduate students in ethics. Topics will vary, depending on interests of the students and the instructor.
Prerequisite: Consent of the instructor.

RELE 698 Thesis in Christian Ethics (4)

RELE 699 Directed Study (2-4)
Prerequisite: Consent of the instructor.

RELATIONAL STUDIES

APPLIED THEOLOGY

RELR 564 Religion, Marriage, and the Family (3-4)
The family in theological, historical, and ethical perspectives; Christian assessments of contemporary theories regarding the family; religious and secular resources for preventing and resolving family crises.

RELR 599 Directed Study (3-4)

CLINICAL MINISTRY

RELR 524 Clinical Pastoral Education (6-12)
A twelve-week course for church pastors and seminary students, including supervised experience with patients, lectures by hospital staff, seminars, conferences, and hospital rounds with physicians. Five eight-hour days per week. Limited enrollment. Credit earned in this course is recognized by the Association for Clinical Pastoral Education, Incorporated.

PSYCHOLOGY OF RELIGION

RELR 584 Culture, Psychology, and Religion (3-4)
Introduction to the major contours of Western culture as they relate to various schools of psychological thought and the influence of religious beliefs in their inception. A theological critique of various world views that have guided psychological schools of thought. Topics to be examined include liberalism and modernism, pietism and evangelicalism, Enlightenment and Romantic movements.

RELR 585 Psychological Study of Religion (3-4)
Psychological research of religion from an eclectic approach. The course covers faith development, ethnographic approaches to religious experiences, narrative analysis, and crosscultural religious experiences. By the conclusion of the course the student will have produced a research proposal and will have conducted a pilot study for such research.

RELR 586 Psychology of Moral and Faith Development (3)
Study of faith, moral, and logical reasoning from a cognitive-developmental perspective. Attention given to the ways people think about actual choices and conflicts in their lives, to the ways cultural and religious norms affect moral thinking, and to the ways that people develop moral and religious thinking as informed by life crises and human experiences.

RELR 604 Seminar in Psychology of Religion (3-4)
Prerequisite: A previous course in the psychology of religion area, or consent of the instructor. Examination of any of the various areas of the psychological study of religion, with a focus on research and/or practice.

III

THE PROGRAMS

Anatomy
Biochemistry
Biology
Biomedical and Clinical Ethics
Biomedical Sciences
Clinical Nutrition
Dentistry
Drug and Alcohol Counseling
Family Counseling
Family Studies
Geology
Marriage and Family Therapy
Medical Scientist
Microbiology
Nursing
Pharmacology
Physiology
Psychology
Social Work
Speech-Language Pathology

The Programs

At this point in the BULLETIN, the student should look in both directions before proceeding: look ahead to the specific area requirements of the chosen program, and look back to the general requirements applicable to all programs in the Graduate School.

COURSE LISTINGS

Numbering

Courses numbered from 301 to 499 are advanced undergraduate courses. Those from 501 to 689 are graduate courses; and from 690 to 699, graduate seminar, research, and thesis or dissertation courses. Courses numbered from 700 to 799 are clinical practicums.

Graduate credit

Certain courses at the advanced undergraduate level and basic science courses in the first and second professional years are acceptable for graduate credit, provided (a) the student qualifies for graduate study and has credit for the specific prerequisites of any desired course, and (b) the grade achievement is of graduate quality as required by the instructor or the Graduate School.

The advanced undergraduate courses listed in the following sections may be acceptable for graduate credit or in some cases may be offered to enable the student to make up undergraduate subject deficiencies.

Subject code letters

Code letters preceding course numbers identify the department or subject as follows:

ANAT	Anatomy
ANTH	Anthropology
BCHM	Biochemistry
BIOL	Biology
CMBL	Cell and Molecular Biology
EDCI	Curriculum and Instruction
EDFO	Educational Foundations
ENDN	Endodontics
FMST	Family Studies
GEOL	Geology
GRDN	Graduate Dentistry
HPRO	Health Promotion
MDCJ	Medicine Conjoint
MFAM	Marriage and Family
MICR	Microbiology
NRSG	Nursing
NUTR	Nutrition and Dietetics
ORBI	Oral Biology
ORDN	Orthodontics
ORIM	Implant Dentistry
ORMD	Oral Medicine
ORPA	Oral Pathology
ORSR	Oral Surgery
PATH	Pathology
PEDN	Pediatric Dentistry
PERI	Periodontics
PHRM	Pharmacology
PHYS	Physiology and Biophysics
PROS	Prosthodontics
PSYC	Psychology
RELB	Religion, Biblical Studies
RELE	Religion, Ethical Studies
RELH	Religion, Historical Studies
RELM	Religion, Mission Studies
RELP	Religion, Professional Studies
RELR	Religion, Relational Studies
RELT	Religion, Theological Studies
RLGN	Religion, General
SOCI	Sociology
SOWK	Social Work
SPPA	Speech-Language Pathology
STAT	Biostatistics

ANATOMY

PEDRO B. NAVA, JR., Ph.D. Loma Linda University GS 1974
Division Director; Associate Professor of Anatomy
Gross anatomy, effects of age and diabetes on PNS, taste receptors

PAUL J. McMILLAN. Ph.D. Loma Linda University GS 1960
Program Coordinator; Professor of Anatomy
Bone cell biology, quantitative morphology, image analysis

The Division of Human Anatomy (Department of Pathology and Human Anatomy), in cooperation with other departments of the University, offers programs leading to the Master of Science and the Doctor of Philosophy degrees in the field of anatomy. The department is an active participant in the systems biology curricula, which consist of interdisciplinary courses and seminars coordinated by the faculties of the Departments of Anatomy and of Physiology and Pharmacology. The degree programs provide opportunities for qualified students to prepare for careers in teaching and research.

The student admitted to the anatomy graduate program will have an undergraduate degree with a strong component of biological sciences, including zoology and comparative vertebrate embryology. Genetics, comparative vertebrate anatomy, and histotechnique may be necessary to complete the program, although these are not required for admission.

Other prerequisites include physics, general chemistry, and organic chemistry. A foreign language and courses in statistics and computer science are encouraged. Applicants with diverse backgrounds are encouraged to apply, since each applicant is considered on an individual basis.

The Department of Anatomy encourages the student to build a career in biomedicine on a solid foundation of basic medical sciences. Three specialty areas are then available for the M.S.-degree thesis or Ph.D.-degree dissertation research:

1. NEUROBIOLOGY is an integrated program with advanced courses in neuroanatomy and neurophysiology. Research emphases include neural systems in the regulation of biorhythms; neurocytology; and electron microscopy and sensory systems in development, aging, and diabetes.

2. CELL BIOLOGY includes advanced study in cellular and molecular biology, electron microscopy, histochemistry, tissue culture, and quantitative image analysis. Research emphases are cell-cell communication, regulation and modeling of bone cell activities, receptor biology in development, *in vitro* fertilization, and elucidation of the molecular and cellular bases of developmental anomalies.

3. RADIATION BIOLOGY builds on advanced courses in quantitative morphology and cell, molecular, and radiation biology. The proton accelerator at Loma Linda University Medical Center provides a unique opportunity to study functional responses of normal and cancerous tissue to proton and other radiations.

FACULTY

PAUL C. ENGEN, D.D.S. University of Southern California 1949
Professor of Anatomy
Histology, histological techniques, comparative anatomy

WILLIAM H. FLETCHER, Ph.D. University of California, Berkeley 1972
Professor of Anatomy and Physiology/Pharmacology
Microanatomy, neuroanatomy, cellular/molecular endocrinology

ROBERT L. SCHULTZ, Ph.D. University of California, Los Angeles 1957
Professor of Anatomy
Electron microscopy, histology, nervous system

MICHAEL A. KIRBY, Ph.D. University of California, Riverside 1984
Associate Professor of Pediatrics and Anatomy
Neurophysiology, neuroanatomy, developmental neurobiology, radiation neurobiology

ASSOCIATE FACULTY

GUY M. HUNT, M.D. Loma Linda University SM 1942, M.S./M.Ed. GS 1959
Emeritus Professor of Anatomy and Neurology
Neuroanatomy

WALTER H. B. ROBERTS, M.D. Loma Linda University SM 1939
Emeritus Professor of Anatomy
Gross anatomy, applied anatomy

BOLESLAW H. LIWNICZ, M.D., Ph.D. Warsaw Academy of Medicine 1964, 1967
Professor of Pathology and Laboratory Medicine and Anatomy
Neuropathology

DANIEL A. MITCHELL, JR., M.D. Loma Linda University SM 1947
Professor of Anatomy
Gross anatomy, applied anatomy

JOHN O. ROBERTS, M.D. Stanford University 1955
Professor of Radiation Biology and Anatomy
Radiation oncology, radiation biology

SUBRATA SAHA, Ph.D. Stanford University 1973
Professor of Orthopaedic Surgery
Biomechanics of hard tissue

HERBERT W. HENKEN, M.D. Loma Linda University SM 1945
Emeritus Associate Professor of Anatomy and Gynecology and Obstetrics
Gross anatomy, applied anatomy

KEITH D. HOFFMAN, D.D.S. Loma Linda University 1983; Ph.D. Louisiana State University 1990
Associate Professor of Oral and Maxillofacial Surgery and Anatomy
Nerve injury, wound healing, inflammatory response

WILLIAM M. HOOKER, Ph.D. Loma Linda University GS 1969
Associate Professor of Anatomy
Neuroanatomy

STEVEN M. YELLON, Ph.D. University of Michigan 1984
Associate Professor of Physiology, Pediatrics, and Anatomy
Neuroendocrinology, reproductive physiology

JOHANNAH CORSELLI, Ph.D. University of California, Riverside 1986
Assistant Professor of Obstetrics and Gynecology and Anatomy
Embryology, developmental biology

MARINO DE LEÓN, Ph.D. University of California, Davis 1987
Assistant Professor of Physiology and Anatomy
Molecular regulation, nerve regeneration, neuronal injury

WILLIAM WAGNER, M.D. Loma Linda University SM 1946
Clinical Assistant Professor of Anatomy
Gross anatomy, applied anatomy

MASTER OF SCIENCE

Details of the program in the Division of Human Anatomy are found in the "Anatomy Program Guide." The following is a summary of these requirements.

This curriculum provides opportunities for qualified students to gain experience in research methods (library and laboratory) while working on a significant problem. The student acquires experience in scientific communication by participating in seminars, writing critical reviews, and reporting the results of research experience either in thesis form or as a publishable paper.

Courses

To qualify for this degree, the student must complete the following courses in anatomy: ANAT 537, 541, 542, 544; 8 units in anatomy research and 1 in thesis; 8 units in other basic science courses; and pass a comprehensive examination in these areas. For each year in residence, the student will complete 1 unit of Integrative Biology Graduate Seminar (ANAT 605).

DOCTOR OF PHILOSOPHY

The purpose of the program leading to the Doctor of Philosophy degree is to give individuals the preparation needed and the opportunity to pursue an in-depth, independent investigation under conditions favorable for the maturation of scholarly attitudes and habits. Admission to this program is based upon a demonstration of superior qualifications, either in undergraduate or graduate studies.

Courses

Courses required for this degree are ANAT 537, 541, 542, 544; 1 unit of Integrative Biology Graduate Seminar (ANAT 605) for each year in residence; and 35 quarter units in advanced anatomy courses, cell biology, biochemistry, physiology, and other graduate courses appropriate to the student's goals. The specific course requirements will vary with the student's research emphasis. Final approval of the student's total program will be made by the student's committee in consultation with the anatomy faculty. Approximately 100 units beyond the bachelor's degree are usually completed by the time the Ph.D. is awarded. Teaching experience is required.

Language requirement

The written and oral comprehensive examinations are designed to establish that the student has a broad understanding of biological structure and function. The student's ability to use that knowledge to identify and design experiments to resolve problems is also tested. Familiarity with the scientific literature and the ability to use that literature to defend the dissertation research proposal are important components of the oral examination.

Advancement to candidacy

The student may apply for admission to doctoral candidacy after (a) passing the comprehensive examination; (b) passing any other examinations, such as demonstrated proficiency in the use of computers and statistics, required by the department; and (c) securing the support of his/her advisory committee.

Dissertation

The candidate's capacity for independent investigation and scholarly achievement must be demonstrated by the presentation and oral defense of an acceptable dissertation, usually resulting in one-to-three publications.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

COMBINED DEGREES PROGRAM

Combined programs allow qualified students to work on combined M.D./Ph.D. or D.D.S./Ph.D. degrees. Details are provided in the section Programs and Degrees.

COURSES

ANAT 504 Oral Histology and Development (2)
Study of development, eruption, and microanatomy of the odontogenic apparatus. Fall.
Engen.

ANAT 526 Head and Neck Anatomy (surgical) (2)
Detailed dissection of the head and neck. Demonstration and lecture. Offered on demand.
Prerequisite: ANAT 541 or equivalent.
Staff.

ANAT 534 Histological Techniques (3)
Theory and practice in the preparation of tissue sections for microscope study using routine and specialized stains. Spring odd years or by independent study.
Staff.

ANAT 537 Neuroscience (8)
Integrated approach to the fundamentals of neuroanatomy and neurophysiology, with applications to clinical neurology. Winter.
Staff.

ANAT 541 Gross Anatomy (10)
Anatomy of the head, neck, locomotor system, thorax, abdomen, pelvis, and perineum. Correlated with radiology, applied features, and embryological development. Summer, 4 units; Fall, 6 units.
Staff.

ANAT 542 Cell, Tissue, and Organ Biology (5)
Microscopic structure of cells, tissues, and organs of the human body. Summer, 2 units; Fall, 3 units.
Schultz.

ANAT 544 Human Embryology (2); ANAT 544L (1)
The plan of development as it pertains to the human. Consideration of principles. Laboratory (544L) work involves the use of both human and comparative materials. Fall.
Prerequisite: A course in vertebrate embryology.
Staff.

ANAT 545 Advanced Neuroanatomy (3)
Detailed study and dissection of the human nervous system. Spring even years.
Prerequisite: ANAT 537.
Kirby.

ANAT 546 Electron Microscopy (3)
Designed to train the student to use the electron microscope. Basic theory, operational techniques, and tissue preparation. As needed.
Prerequisite: Histotechnique or equivalent.
Staff.

ANAT 547 Histochemistry (3)
Theoretical and practical aspects of histochemical methods as applied to tissue sections. One lecture and two three-hour laboratories/conferences weekly. Summer, even years.

Prerequisite: A course in biochemistry; ANAT 542 or equivalent.

McMillan.

ANAT 548 Advanced and Molecular Cytology (3)
Study of the ultrastructural and cytochemical analysis of a variety of differentiated cells. Spring, odd years.

Staff.

ANAT 549 Seminar: Topographical Chemistry (2)
Qualitative and quantitative distribution of enzymes and other chemically defined components of organs. Students responsible for one oral and one written report. On demand.

McMillan.

ANAT 554 Techniques in Experimental Morphology (2)
Introduction to selected methods used in the morphological analysis of organ and cellular function. Spring, odd years.

Nava.

ANAT 555 Advanced Gross Anatomy-Articulation/Joints
A detailed study of the anatomical design of joints, linking function through clinical correlations. Spring odd years.

Prerequisite: ANAT 541.

Nava.

ANAT 594 Special Topics in Anatomy (arranged)
Intensive study of a selected topic approved by the chair of the department. Individual guidance by a staff member.

Staff.

ANAT 605 Integrative Biology Graduate Seminar (1)
Seminar, coordinated by the Departments of Anatomy, Pharmacology, and Physiology, consists of reports from current literature and the presentation of student and faculty research on various aspects of regulatory and integrative biology as applied to cells, tissues, organs, and systems. Students and faculty expected to participate in a discussion and critical evaluation of the presentation.

Faculties of Anatomy, Pharmacology, and Physiology.

ANAT 697 Research (1-25)

ANAT 698 Thesis (2)

ANAT 699 Dissertation (3)

BIOCHEMISTRY

CHARLES W. SLATTERY, Ph.D. University of Nebraska 1965
Chair and Program Coordinator; Professor of Biochemistry and Pediatrics
Physical chemistry of macromolecules

The Department of Biochemistry offers study programs leading to the Master of Science and the Doctor of Philosophy degrees. Tailored to individual interest, the programs provide a broad biochemical background yet allow the student to develop fully a special area of interest. The Master of Science degree provides content appropriate for persons preparing to teach at the secondary level or in related professional school areas, or for persons intending to pursue careers as research technicians. The Doctor of Philosophy degree program is designed to prepare the graduate for a career in independent research and teaching. In addition to these options, additional combined-degree programs — Medical Scientist Program, M.D./M.S., D.D.S./M.S., M.D./Ph.D., and D.D.S./Ph.D. — are offered in conjunction with the School of Medicine and the School of Dentistry. The combined M.S./professional degree is designed to provide additional content or research experience as background for postgraduate medical or dental education. The combined Ph.D./professional degree prepares the student for a future in academic medicine or dentistry, combining research, teaching, and clinical practice.

FACULTY

RICHARD E. BELTZ, Ph.D. University of Southern California 1955
Professor of Biochemistry
Experimental oncology, mechanisms in the chemotherapy of cancer

GEORGE T. JAVOR, Ph.D. Columbia University 1967
Professor of Biochemistry and Microbiology
Cellular responses to reductive stress, control of porphyrin synthesis, mechanism of prokaryotic cell division

GEORGE M. LESSARD, Ph.D. University of California, Riverside 1973
Professor of Biochemistry
Oral biochemistry

W. BARTON RIPPON, Ph.D. Newcastle University 1969
Professor of Biochemistry (on leave; Dean, Graduate School)
Physical biochemistry of macromolecular structure and function

R. BRUCE WILCOX, Ph.D. University of Utah 1962
Professor of Biochemistry
Biochemistry of the endocrine system, hormone-dependent carcinogenesis

E. CLIFFORD HERRMANN, Ph.D. Virginia Polytechnic Institute 1970
Associate Professor of Biochemistry
Enzymes of blood coagulation and casein phosphorylation

JOHN H. SANDS, Ph.D., University of California, Davis 1986
Assistant Professor of Biochemistry
Molecular biology, immunology

ASSOCIATE FACULTY

DAVID J. BAYLINK, M.D. Loma Linda University 1957
Distinguished Professor of Biochemistry and Medicine
Basic and clinical mineral metabolism, biochemistry of regulatory mitogens from bone matrix

U. D. REGISTER, Ph.D. University of Wisconsin 1950
Emeritus Professor of Nutrition and Biochemistry
Biochemistry of nutrition

ROLAND C. ALOIA, Ph.D. University of California, Riverside 1970
Professor of Biochemistry and Anesthesiology
AIDS virus membrane, hibernation, and membrane anesthetic effects

DAVID A. HESSINGER, Ph.D. University of Miami 1970
Professor of Physiology, Pharmacology, and Biochemistry
Structure and function of cell membranes, marine toxicology

KIN-HING WILLIAM LAU, Ph.D. Iowa State University 1982
Research Professor of Biochemistry and Medicine
Enzymology of bone metabolism

JOHN J. ROSSI, Ph.D. University of Connecticut 1976
Professor of Microbiology and Biochemistry
Use of synthetic oligonucleotides in studies of gene expression

LAWRENCE B. SANDBERG, M.D., Ph.D. University of Oregon 1957, 1966
Research Professor of Biochemistry and Pathology
Connective tissue proteins

BARRY L. TAYLOR, Ph.D. Case Western Reserve University 1973
Professor of Biochemistry and Microbiology
Mechanism of oxygen chemoreceptors, bacterial chemotaxis

CONRAD M. VAN GENT, Ph.D. University of Leiden, Leiden, the Netherlands 1954
Research Professor of Medicine and Biochemistry
Lipids, lipoproteins, connective tissue of arteries

ANTHONY ZUCCARELLI, Ph.D. California Institute of Technology 1974
Professor of Microbiology and Biochemistry
Molecular genetics, bacterial plasmids, bacteriophage biology

JOHN R. FARLEY, Ph.D. University of California, Davis 1977
Associate Research Professor of Biochemistry and Medicine
Biochemical mechanisms of bone-volume regulation and enzyme kinetics of mineral metabolism

KELVIN A. W. HILL, Ph.D. University of Notre Dame 1986
Associate Professor of Biochemistry
Protein design/engineering, tRNA binding domains, gamma carboxy-glutamic acid domains of protein C, recombinant DNA techniques

RICHARD W. HUBBARD, Ph.D. Purdue University 1961
Associate Research Professor of Pathology
Clinical chemistry, amino acid metabolism

THOMAS A. LINKHART, Ph.D. University of California, Davis 1975
Associate Professor of Biochemistry and Associate Research Professor of Pediatrics
Cellular and molecular mechanisms of bone growth, resorption, and repletion

DONNA D. STRONG, Ph.D. University of California, Los Angeles 1977
Associate Research Professor of Biochemistry and Medicine
Cloning and expression of bone-related growth factors and matrix proteins

SUBBURAMAN MOHAN, Ph.D. Bangalore University, India 1978
Associate Research Professor of Biochemistry, Medicine, and Physiology
Bone matrix proteins and growth factors

JON E. WERGEDAL, Ph.D. University of Wisconsin 1963
Associate Research Professor of Biochemistry and Medicine
Bone metabolism

SATISH M. SOOD, Ph.D. Punjabi University, Patida, India 1978
Assistant Research Professor of Biochemistry
Structure and functions of milk proteins, soya proteins

GENERAL REQUIREMENTS

A common core of courses constitutes partial fulfillment of requirements for all degrees offered by the biochemistry program:

BCHM	505	Seminar in Biochemistry (2)
BCHM	506	Seminar Presentation in Biochemistry (1)
BCHM	516	*Principles of Medical Biochemistry (7)
BCHM	523	Introduction to Physical Biochemistry (3)
BCHM	525	Metabolic Interrelationships and Control (5)
BCHM	534	Techniques of Biochemistry (5)
BCHM	539	Molecular Biology of Prokaryotes and Recombinant DNA (4)
____	___	Religion (3)

Additionally the student is required to register for a seminar each quarter after the core component is fulfilled, but these units are not counted toward fulfillment of total units.

*To satisfy this requirement, an upper-division biochemistry course taken prior to entering the program may serve as the basis for transfer credit, subject to passing the American Chemical Society (ACS) Standardized Examination in Biochemistry.

MASTER OF SCIENCE

To be awarded an M.S. degree, a student must complete a minimum of 48 units, including those listed in the general requirements, in the context of one of the two options described below.

Research emphasis

Under this plan a student takes 5 units of cognate courses and carries out research (BCHM 697 [10]) to be presented as a thesis or a publishable paper (BCHM 698 [3]). A combination of fewer research units and additional course units in biochemistry or in related fields is also an alternative. The student will be given an oral examination by her/his graduate guidance committee after the thesis or publishable paper has been completed.

Course work emphasis

Under this plan a student fulfills the unit requirements by substituting courses for laboratory research and thesis as described in A above. The student takes a comprehensive written examination over the graduate course work in lieu of preparing a thesis or publishable paper. Students in this option may elect to do directed research (BCHM 697) for up to a maximum of 8 units of academic credit in place of course work units.

DOCTOR OF PHILOSOPHY

For the Ph.D. degree, a student must complete a minimum of 75 units, including those listed in the general requirements, within the framework of the description below. Students will take at least 10 units of advanced biochemistry course work: three courses of Advanced Topics in Biochemistry (BCHM 544 [6]) and the course Molecular Biology of Eukaryotes and Gene Regulation (BCHM 545 [4]). No grade below B (3.0) in the units of required biochemistry courses is acceptable. At least 10 additional units of course work in fields related to biochemistry, as in a minor, must also be completed with a minimum grade point average of 3.0. The student will carry out research (BCHM 697 [20]) as the foundation for preparing an acceptable dissertation (BCHM 699 [5]).

Details of the graduate program are given in the "Student Guide" published by the Department of Biochemistry.

Applications for admission requesting financial support should be completed by February 1.

COMBINED–DEGREES PROGRAM

The student may pursue two degrees simultaneously. The academic/professional degrees of combined-degrees programs are described on page 28 of this BULLETIN.

Program requirements

In the list below, the first four courses are program prerequisites. Lack of one or both of the other two courses would be considered a deficiency. The time required for completion of the program would be extended by the time necessary to make up the deficiency.

Prerequisite:

- Differential and integral calculus (8)
- General physics (12)
- Organic chemistry (12)
- General biology (12)

Required:

- Physical chemistry (8)
- Upper-division biology (4)

Standardized ACS examinations in organic chemistry, physical chemistry, and biochemistry are administered to students as placement examinations upon students' arrival. Evidence of adequate performance on these examinations during the course of undergraduate education is an acceptable alternative. In addition, students are encouraged to take the GRE subject test if it is available for their major.

The department reserves the right to decide on the equivalence of courses presented by the applicant. Applicants who have deficiencies may be provisionally accepted. Deficiencies must be completed before the applicant is accepted into regular status and before the student registers for advanced didactic biochemistry courses numbered above 540.

GENERAL INFORMATION

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

COURSES

BCHM 504 Introduction to Biochemistry (5)
Chemistry and metabolism of proteins, carbohydrates, lipids, and nucleic acids. Enzymes, vitamins and minerals, bioenergetics. Replication, transcription, translation, and regulation of cell function. Special topics in biochemistry related to nutrition. Lecture and demonstration primarily for dental students.

BCHM 505 Seminar in Biochemistry (1)

BCHM 506 Seminar Presentation in Biochemistry (1)

BCHM 515 Principles of Medical Biochemistry (7)
Chemistry of amino acids and proteins. Enzyme properties and mechanisms. Bioenergetics. Chemistry and metabolism of carbohydrates, lipids, amino acids, and nucleic acids. Protein biosynthesis and the control of gene expression. Special topics in physiological chemistry: connective tissue components, acid-base balance, hormones, vitamins, and minerals.

BCHM 523 Introduction to Physical Biochemistry (3)
Introduction to biochemical thermodynamics, proteins and protein physical chemistry, enzyme kinetics and mechanisms, and bioenergetics.
Prerequisite: BCHM 516 or equivalent.

BCHM 525 Metabolic Interrelationships and Control (5)
Structure, function, and control of enzymes. Control of energy metabolism. Cellular mechanisms of hormone action.
Prerequisite: BCHM 516 or equivalent.

BCHM 534 Techniques of Biochemistry (5)
Intensive integrated laboratory experience in protein chemistry, and the physical characterization of macromolecules. Writing scientific papers.

BCHM 539 Molecular Biology of Prokaryotes and Recombinant DNA (4)
Bacterial viruses, transposable genetic elements, plasmids, modes of DNA transfer, recombination, mutation and repair, molecular cloning, DNA sequencing, and directed mutagenesis. Crosslistings: CMBL 538, BIOL 546, MICR 535.
Prerequisite: BCHM 516 or equivalent.

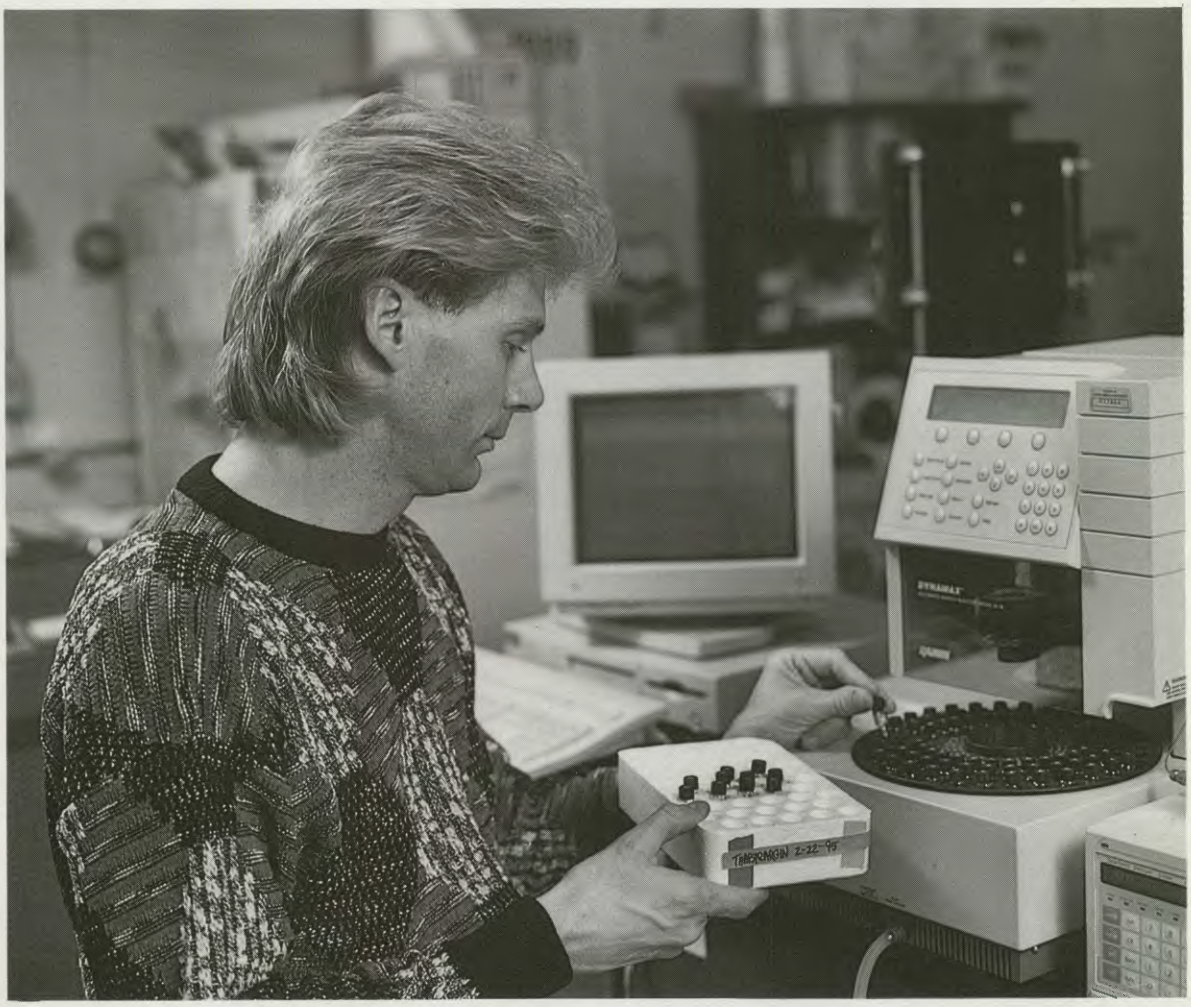
BCHM 544 Advanced Topics in Biochemistry (2-4)
Recommended for the Ph.D. (2+2+2).
Examples: membrane biochemistry, transport and bioenergetics, physical methods in biochemistry, metabolic regulation, protein structure, hormonal regulation of metabolism. Crosslistings: CMBL 538, BIOL 546, MICR 538.

BCHM 545 Molecular Biology of Eukaryotes and Gene Regulation (4)
Characteristics of promoters, operons, infectious agents, eukaryotic gene structure, RNA splicing, chromosome structure, transcriptional and posttranscriptional regulation of gene expression, cell proliferation, oncogenes. Crosslistings: CMBL 539, MICR 538.
Prerequisite: BCHM 539.

BCHM 697 Research (arranged)

BCHM 698 Thesis (arranged)

BCHM 699 Dissertation (arranged)



BIOLOGY

LEONARD R. BRAND, Ph.D. Cornell University 1970
Chair; Professor of Biology and Paleontology
Animal behavior, mammalogy, paleontology

DAVID L. COWLES, Ph.D. University of California, Santa Barbara 1987
Program Coordinator; Assistant Professor of Biology
Physiological ecology, marine biology

The Department of Natural Sciences offers programs leading to the Master of Science and Doctor of Philosophy degrees in biology. These programs of study provide a broad and unified approach to the life sciences; and also specialization, as evidenced by the conduct of significant, original research and in the selection of courses related to the area of research interest. Study in various areas, ranging from molecular biology to natural history, is available to the student seeking preparation for teaching or for research in modern biology. Some areas of specialization are: animal behavior, animal physiology, biosystematics, cell and molecular biology, physiological ecology, genetics, mammalogy, marine biology, microbiology, paleontology.

FACULTY

H. PAUL BUCHHEIM, Ph.D. University of Wyoming 1978
Professor of Geology
Sedimentology, paleolimnology, paleoecology

RONALD L. CARTER, Ph.D. Loma Linda University 1977
Professor of Biology
Genetics, systematics

ROBERT A. CUSHMAN, Ph.D. Colorado School of Mines 1994
Assistant Professor of Geology
Invertebrate paleontology, palynology, stratigraphy

ASSOCIATE FACULTY

ROLAND C. ALOIA, Ph.D. University of California, Riverside 1970
Professor of Biochemistry and Anesthesiology
Effects of anesthetic agents on biological membrane function

LEONARD R. BULLAS, Ph.D. Montana State University 1963
Professor of Microbiology
Bacterial genetics

DAVID A. HESSINGER, Ph.D. University of Miami 1970
Professor of Physiology and Pharmacology
Marine toxins, cellular and molecular biology

BENJAMIN H. S. LAU, Ph.D. University of Kentucky 1966; M.D. Loma Linda University SM 1980
Professor of Microbiology
Immunology, medical bacteriology, mycology

SANDRA L. NEHLSON-CANNARELLA, Ph.D. National Institute for Medical Research, London 1971
Professor of Microbiology and Surgery; Research Professor of Pathology
Transplantation immunology, reproductive immunology, autoimmunity

MARVIN A. PETERS, Ph.D. University of Iowa 1969
Professor of Physiology and Pharmacology
Drug metabolism

ARIEL A. ROTH, Ph.D. University of Michigan 1955
Professor of Biology
Invertebrate zoology

ROBERT W. TEEL, Ph.D. Loma Linda University GS 1972
Professor of Physiology
Cell physiology, differentiated cells in vitro

R. BRUCE WILCOX, Ph.D. University of Utah 1962
Professor of Biochemistry
Biochemistry of the endocrine system, hormone-dependent carcinogenesis

ANTHONY J. ZUCCARELLI, Ph.D. California Institute of Technology 1974
Professor of Microbiology
Molecular genetics, microbiology

ELWOOD S. MCCLUSKEY, Ph.D. Stanford University 1959
Associate Professor of Physiology
Comparative physiology, entomology

JUN-ICHI RYU, Ph.D. Tokyo Metropolitan University 1978
Associate Professor of Microbiology
Molecular genetics

ADJUNCT FACULTY

JOHN F. STOUT, Ph.D. University of Maryland 1963
Professor of Biology, Andrews University
Behavioral physiology

ERNEST R. SCHWAB, Ph.D. Loma Linda University 1989
Associate Professor of Biology, La Sierra University
Entomology, behavioral physiology

H. THOMAS GOODWIN, Ph.D. University of Kansas 1990
Assistant Professor of Biology, Andrews University
Vertebrate paleontology, biogeography

L. LEE GRISMER, Ph.D. Loma Linda University 1994
Assistant Professor of Biology, La Sierra University
Herpetology, paleobiogeography

BRADFORD D. MARTIN, Ph.D. Loma Linda University GS 1984
Assistant Professor of Biology, La Sierra University
Plant ecology

MASTER OF SCIENCE

Admission

Applicants must meet the general admission requirements of the Graduate School (as outlined in the current Graduate School BULLETIN). Expected undergraduate preparation includes a bachelor's degree from an accredited college or university, with a biology major or equivalent; two quarters of college mathematics (calculus recommended), and one year of general chemistry; at least 20 quarter units from two or more of the following: organic chemistry, biochemistry, general physics, geology; and proficiency in using a computer operating system.

Student aid

Research and teaching assistantships are available from the department on a competitive basis. Further information can be obtained from the chair of the department. Qualified students are also encouraged to seek fellowships from federal and private agencies such as the National Science Foundation and the National Institutes of Health.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

CURRICULUM

The following constitutes the curriculum for the Master of Science degree in biology.

A minimum of 48 quarter units of academic credit is required. Of the 48 units, 30 must be in biology and cognate science subjects (as approved by the guidance committee), with 15 at or above the 500 level (exclusive of research), including:

BIOL	545	Genetics and Speciation
BIOL	558	Philosophy of Science
BIOL	605	Seminar Presentation in Biology (1)
BIOL	607	Seminar in Biology (2)
BIOL	616	Research Methods I (1)
BIOL	617	Research Methods II (2)

and

During the graduate program, two of the following three:

1 - Organismal biology or paleontology
2- Ecology or environmental science
3 - Cell or molecular biology

The remaining 18+ units must include:

Additional courses as may be required by the student's guidance committee

Research, 4 units minimum

Thesis, 1-2 units, including final oral examination and defense

Religion, 3 units

Special attendance requirements

Attendance at all departmental seminars is required while the student is in residence at Loma Linda University.

Recommendations

A reading knowledge of one foreign language is recommended for students planning to enter a Doctor of Philosophy degree program.

DOCTOR OF PHILOSOPHY

Admission

The successful applicant must meet the general admissions requirements of the Graduate School as outlined in the current Graduate School BULLETIN. Undergraduate preparation should include general biology (or the equivalent) and at least one course each in animal physiology, cell and molecular biology (or one year of biochemistry), and genetics. Required cognate courses are two quarters of college mathematics (calculus recommended); one year each of general physics, general chemistry, organic chemistry, and a foreign language; and proficiency in the use of a computer operating system.

CURRICULUM

The following constitutes the curriculum for the Doctor of Philosophy degree in biology.

A minimum of 72 quarter units of academic credit for courses, seminars, and research beyond the master's degree is required; that is, a minimum of 120 units beyond the baccalaureate degree, including the following required courses:

BIOL	545	Genetics and Speciation
BIOL	558	Philosophy of Science (or GEOL 558)
BIOL	605	Seminar Presentation in Biology (2)
BIOL	607	Seminar in Biology (3)
BIOL	616	Research Methods I (1)
BIOL	617	Research Methods II (2)

A course at this University in one of the following:

Paleontology
Biogeography (BIOL 515)
Field Seminar in Historical Geology (GEOL 548)

At least two additional courses in the Department of Natural Sciences.

Sometime during the undergraduate or graduate program:

Biology of at least one animal taxon (of at least the **class** level)
Botany
Developmental biology
Ecology or environmental science
Advanced genetics
Biochemistry
Biostatistics

The required 72+ units must also include:

Additional courses as may be required by the student's guidance committee
Research
Dissertation, 2 units
Religion, 3-unit course beyond master's degree level

Special attendance requirements

Attendance at all departmental seminars is required while the student is in residence at Loma Linda University.

Recommended

Teaching is recommended during at least one quarter. This experience may be obtained in the laboratory or it may involve presenting part of the lectures for a course.

Comprehensive examination

A written and oral comprehensive examination is given following completion of the formal course work to measure the student's knowledge of the various fields of biology, philosophy of biology, and preparation for research. These examinations should be completed by the beginning of the third year of study.

Advancement to candidacy

The student may apply for advancement to doctoral candidacy after (1) completing all deficiencies and prerequisites, (2) passing the comprehensive examination, (3) selecting a research committee and having an approved research proposal, and (4) being recommended by the department faculty.

Dissertation

The written dissertation must demonstrate the completion of significant, original research.

Defense of dissertation

An oral presentation and defense of the dissertation is required.

DOCTOR OF PHILOSOPHY

The Department of Natural Sciences offers graduate study in paleontology through both the program in geology and the program in biology. The Master of Science degree in geology emphasizes the study of fossils and the sedimentary rocks in which they are found (see description in the Geology section of this BULLETIN). The Ph.D. degree in biology with a formal emphasis in paleontology focuses on biological aspects of paleontology such as systematics, morphology, speciation, biogeography, and ecology of ancient organisms.

Admission

Expected undergraduate preparation in biology includes general biology (or the equivalent), genetics, botany, physiology, cell and molecular biology (or equivalent), and general ecology. Expected undergraduate preparation in cognate subjects and geology includes two quarters of college mathematics (calculus recommended); one year each of foreign language study, general physics, and general chemistry; at least one quarter of organic chemistry (additional organic chemistry recommended) and physical geology; and proficiency in use of a computer operating system.

CURRICULUM

The following constitutes the curriculum for the Doctor of Philosophy degree in biology with an emphasis in paleontology.

A minimum of 72 quarter units of academic credit for courses, seminars, and research beyond the master's degree is required; that is, a minimum of 120 units beyond the baccalaureate degree, including the following required courses:

BIOL	545	Genetics and Speciation
BIOL	558	Philosophy of Science (or GEOL 558)
BIOL	605	Seminar Presentation in Biology (2)
BIOL	607	Seminar in Biology (3)
BIOL	616	Research Methods I (1)
BIOL	617	Research Methods II (2)

One of the following at this University:

BIOL 515 Biogeography
OR
GEOL 548 Field Seminar in Historical Geology

Sometime during the undergraduate or graduate program:

- Biology of at least two taxa (of at least the **class** level)
- Historical geology (GEOL 405 or 547)
- Sedimentology (GEOL 427 or 566)
- Stratigraphy (GEOL 429 or 567)
- Three advanced paleontology courses (at least two at this University)
- Cell physiology or cell and molecular biology or one year of biochemistry
- Biostatistics

The required 72+ units must also include:

- Additional courses as required by the student's guidance committee
- Research
- Dissertation, 2 units
- Religion, 3-unit course beyond master's degree level

Special attendance requirements

Attendance at all departmental seminars is required while in residence at Loma Linda University.

Recommended

Teaching is recommended during at least one quarter. This experience may be obtained in the laboratory or it may involve presenting part of the lectures for a course.

Advancement to candidacy

The student may apply for advancement to doctoral candidacy after (1) completing all deficiencies and prerequisites, (2) passing the comprehensive examination, (3) selecting a research committee and having an approved research proposal, and (4) being recommended by the department faculty.

Dissertation

The written dissertation must demonstrate the completion of significant, original research.

Defense of dissertation

An oral presentation and defense of the dissertation is required.

COMBINED DEGREES

For students selecting a combined-degrees program with the Master of Science degree earned in biology or paleontology, up to 12 units of credit for basic science courses and up to 6 units of research and/or graduate courses done as part of the electives of the professional curriculum may be applied to the master's degree program.

COMBINED DEGREES

For students selecting a combined-degrees program leading to the Doctor of Medicine and Doctor of Philosophy degrees or to the Doctor of Dental Surgery and Doctor of Philosophy degrees, with the Ph.D. degree earned in biology, the following modifications of requirements may apply: as many as 30 units of credit for basic science courses and up to 30 units of research and/or graduate courses, but not more than 36 units done as part of the electives of the professional curriculum, may be applied to the Ph.D. degree program.

The animal physiology and the biostatistics requirements would be met by the professional curriculum.

Biology minor

At times, students in other University departments will seek a biology minor. A biology minor for students majoring in other departments may include any courses listed under the Department of Natural Sciences except those also listed from the department in which the major is taken. At least one course in the minor must be from among the following primary offerings of the Department of Natural Sciences: BIOL 504 to 589.

In addition to the primary offerings of the department, the student may take courses in other departments as part of the graduate work, according to special interests and needs. Some of these courses of special interest to biology students are listed below. See the Departments of Microbiology, Physiology, Anatomy, and Biochemistry for additional courses.

COURSES

BIOL 495 Undergraduate Research (1-4)
Original investigation and/or literature study pursued under the direction of a faculty member. May be repeated for additional credit.

Prerequisite: Consent of the instructor.

BIOL 504 Biology of Marine Invertebrates (4)
Behavior, physiology, ecology, morphology, and systematics of marine invertebrates, with emphasis on morphology and systematics. Three class hours per week, one-day field trip alternate weeks, or the equivalent.

BIOL 509 Mammalogy (4)
Study of the mammals of the world, with emphasis on North America. Includes classroom and field study of systematics, distribution, behavior, and ecology. Three class hours, one three-hour laboratory per week.

BIOL 515 Biogeography (3)
Present and past distribution and migrations of the natural populations of organisms. Offered alternate years.

Prerequisite: Biology or systematics of at least two plant or animal taxa desirable.

BIOL 517 Ecological Physiology (4)
Study of the interface between the individual and the environment, with emphasis on unusual environments, to explore the limits of physiological systems. Three class hours and one three-hour laboratory per week. Offered alternate years.

BIOL 518 Readings in Ecology (2)
Study, analysis, and discussion of current and classic papers.
Prerequisite: A course in ecology or consent of the instructor.

BIOL 526 Principles and Methods of Systematics (3)
Study of the principles and methods of modern systematic biology, with focus on the assumptions, concepts, and computerized methods of phylogeny reconstruction.

BIOL 535 Animal Behavior (4)
Behavioral mechanisms of animals and their role in survival. Lectures and projects.

BIOL 536 Readings in Animal Behavior (2)
Critical analysis of the research literature on selected topics in animal behavior.
Prerequisite: A course in animal behavior or consent of the instructor.

BIOL 537 Advances in Sociobiology (3)
Study of current concepts and ideas relating to the origin and structure of social behavior of animals. Special attention focused on the adaptive significance of species-specific behavior in a wide variety of environments.

BIOL 538 Behavior Genetics (4)
Study of the interaction of genotype and phenotype as it relates to animal behavior. Primary focus of the course is at the molecular and physiological levels of behavior. Modern understanding of the nature/nurture debate extended to topics which include biological determinism and ethics.

BIOL 545 Genetics and Speciation (4)
Comparative analysis of species concepts, mechanisms of speciation, and analysis of micro- and macroevolution. Offered alternate years.
Prerequisite: A course in genetics and philosophy of science.

BIOL 546 Molecular Biology of Prokaryotes and Recombinant DNA (4)
Bacterial viruses, transposable genetic elements, plasmids, modes of DNA transfer, recombination, mutation and repair, molecular cloning, DNA sequencing, and directed mutagenesis. Cross-listings: CMBL 538, BCHM 539, MICR 535.
Prerequisite: BCHM 516 or equivalent.

BIOL 547 Molecular Biosystematics (4)
Analysis of genetic events at the molecular level that underlie speciation. Laboratory work integrated with lecture, demonstrating basic molecular genetic research tools applicable to molecular biosystematics studies.
Prerequisite: Genetics and speciation or molecular genetics, and philosophy of science.

BIOL 558 Philosophy of Science (4)
Study of selected topics in the history and philosophy of science, and the application of these principles in analyzing contemporary scientific trends. Offered alternate years.

BIOL 588 Current Topics in Biology (1-5)
Reviews of current interest in specific areas of biological science, offered at the discretion of the department. Different sections of the course may be repeated for additional credit.
Prerequisite: Consent of the instructor.

BIOL 589 Readings in Biology (1-4)

BIOL 605 Seminar Presentation in Biology (1)
Selected topics dealing with recent developments, particularly reports of current research. Student presents one seminar during the quarter.

BIOL 607 Seminar in Biology (0.5)
Selected topics dealing with recent developments. Student attends seminar; no presentation required.

BIOL 616 Research Methods in Biology I (1)
Concepts and methods used in biological research, including scientific writing and literature. Offered each Fall Quarter.

BIOL 617 Research Methods in Biology II (2)
Techniques and technology for the analysis and presentation of data. Offered alternate Winter Quarters.

BIOL 695 Special Projects in Biology (1-4)
Responsibility for a special research project in the field, laboratory, museum, or library. May be repeated for additional credit.

BIOL 697 Research (1-8)
See department checklist for recommended number of units.

BIOL 698 Thesis (1-2)
Credit for the writing of the master's thesis.

BIOL 699 Dissertation (1-2)
Credit for the writing of the doctoral dissertation.

ROSARIO BEACH SUMMER COURSES

In cooperation with the Walla Walla College Marine Station in Anacortes, Washington, facilities are available for marine courses and research by graduate students of this department. Some of the available courses are listed below.

BIOL 459 Marine Invertebrates
Study of the biology of selected groups of marine invertebrates.

BIOL 455 Comparative Physiology
Comparative study of the physiology and life process of animals, with emphasis on invertebrates.
Prerequisite: Cell biology.

BIOL 460 Marine Ecology
Study of interspecific, intraspecific, and community relationships demonstrated by marine organisms.

BIOL 462 Ichthyology
Systematic study of fishes found in Puget Sound, with a survey of fishes of other waters.

BIOL 463 Marine Botany
Systematic study of plants found in Puget Sound, with a survey of marine plants from other areas.

BIOL 508 Physiology of Algae
Comparative study of the physiology of representative members of the major algal groups. Collection and growth of cultures of single-celled forms; related metabolic processes, nutritional factors, light requirements, synchronization, and growth emphasized. Offered every three to five years.

BIOL 516 Behavior of Marine Organisms
Study of inter- and intraspecific behaviors of marine animals and their behavioral responses to the physical environment. The course involves laboratory experiences, field observations, and a research project.
Prerequisite: A background in organismal biology and permission of the instructor. Offered every three to five years.

GEOLOGY COURSES

Course descriptions for the following courses can be found in the Geology section of this BULLETIN.

GEOL 405 Historical Geology (4)

GEOL 424 Structural Geology (3)

GEOL 425 Field Methods of Geologic Mapping (4)

GEOL 427 Sedimentology (4)

GEOL 429 Stratigraphy (4)

GEOL 524 Paleobotany (4)

GEOL 525 Paleopalynology (4)

GEOL 534 Invertebrate Paleontology (4)

GEOL 544 Vertebrate Paleontology (4)

GEOL 545 Taphonomy (3)

GEOL 546 Ichnology (2)

GEOL 547 Advanced Historical Geology (4)

GEOL 548 Field Seminar In Historical Geology (4)

GEOL 554 Paleolimnology (4)

GEOL 556 Paleoenvironments (4)

GEOL 566 Advanced Sedimentology (4)

GEOL 567 Stratigraphy and Basin Analysis (4)

BASIC MEDICAL SCIENCE COURSES

Numerous courses offered by the basic medical science departments are available to graduate students. Some are listed here, and their course descriptions may be found elsewhere in this BULLETIN.

ANAT 546 Electron Microscopy (3)

ANAT 548 Advanced and Molecular Cytology (3)

ANAT 554 Techniques in Experimental Morphology (3)

BCHM 301, 302 Basics of Biochemistry (3, 2)

BCHM 515, 516 Principles of Medical Biochemistry (4, 6)

BCHM 523 Introduction to Physical Biochemistry (3)

BCHM 525 Metabolic Interrelationships and Control (5)

BCHM 534 Techniques in Biochemistry (5)

ENVH 566 Air Quality and Human Health (2-4)

ENVH 568 Water Quality Assurance (3)

ENVH 569 Environmental Sampling and Analysis (4)

ENVH 586 Environmental Health Administration (3)

MICR 521 Medical Microbiology (8)

MICR 535 Molecular Biology of Prokaryotes and Recombinant DNA (4)

MICR 538 Molecular Biology of Eukaryotes and Gene Regulation (4)

MICR 555 Microbial Genetics (3)

MICR 565 Virology (3)

MICR 566 Cell Culture (3)

MICR 568 Laboratory Techniques in Virology (3)

MICR 594 Medical Mycology (3)

PHSL 535 Comparative Physiology (5)

PHSL 541 Cell and Molecular Biology (4)

PHSL 596 Readings in Comparative Physiology (1)

STAT 521 Biostatistics I (4)

STAT 522 Biostatistics II (4)

STAT 523 Biostatistics III (4)

STAT 549 Analytical Application of SPSS/PC (2)

STAT 568 Data Analysis (2-3)

BIOMEDICAL AND CLINICAL ETHICS

GERALD WINSLOW, Ph.D. Graduate Theological Union 1981
Dean; Professor of Christian Ethics
Christian ethics

The purpose of the course of graduate study leading to a Master of Arts degree in biomedical and clinical ethics is to prepare qualified persons to engage in education, research, and service pertinent to the moral challenges posed by and experienced within the various forms of medical inquiry and therapy.

Upon completion of this degree, many students will turn or return to one of the medical professions. Some will pursue doctoral degrees in biomedical and clinical ethics. Some will seek advanced degrees in law, social work, ministry, psychology, or related fields. A few may find part-time or full-time employment as ethics consultants and educators in healthcare institutions or agencies. All will proceed to their next academic or professional assignments with a thorough understanding of Christian ethical points of view and their pertinence to medical care, research, and education.

The Biomedical and Clinical Ethics Program is administered by the Faculty of Religion through the Graduate School. It thereby draws upon resources from many sectors of the campus. In addition to the five professional schools within Loma Linda University, and a number of departments within Loma Linda University Medical Center and Loma Linda University Children's Hospital, these resources include the Center for Health Promotion, the Center for Christian Bioethics, and the Behavioral Medicine Center.

The Biomedical and Clinical Ethics Program is supported by the Center for Christian Bioethics in a variety of ways. The Center's Thompson Library, a constantly growing collection with approximately 1,000 volumes to date, aims to become one of the most comprehensive libraries of materials in biomedical and clinical ethics on the Pacific Slope. These materials, which are an especially valuable resource for graduate students, supplement the related holdings in the primary libraries of Loma Linda University and nearby institutions.

FACULTY

JACK W. PROVONSHA, M.D. Loma Linda University 1953; Ph.D. Claremont Graduate School 1967
Emeritus Professor of Philosophy of Religion and Christian Ethics
Philosophy of religion, theology, biomedical ethics, clinical ethics

IVAN BLAZEN, Ph.D. Princeton Theological Seminary 1979
Professor of Biblical Interpretation and Theology

DAVID R. LARSON, D.Min. School of Theology at Claremont 1973; Ph.D. Claremont Graduate School 1982
Professor of Christian Ethics; Co-director, Center for Christian Bioethics
Theological and philosophical ethics, biomedical ethics, sexual ethics

JAMES W. WALTERS, Ph.D. Claremont Graduate School 1979
Professor of Christian Ethics
Theological and philosophical ethics, biomedical ethics, ethics and aging populations

ROBERT D. ORR, M.D. McGill University 1966
Associate Professor of Family Medicine
Director of Clinical Ethics, Loma Linda University Medical Center; Co-director, Center for Christian Bioethics
Clinical ethics

ASSOCIATE FACULTY

ROY BRANSON, Ph.D. Harvard University 1968
Adjunct Professor of Christian Ethics
Theological and philosophical ethics, biomedical ethics, religion and society

CHARLES W. TEEL, Jr., Ph.D. Boston University 1972
Adjunct Professor of Christian Ethics
Sociology of religion, social ethics, international service and advocacy

LOIS VAN CLEVE, Ph.D. Claremont Graduate School 1985
Professor of Nursing
Ethics in nursing

GERALD R. WINSLOW, Ph.D. Graduate Theological Union 1979
Adjunct Professor of Christian Ethics
Theological and philosophical ethics, biomedical ethics, distributive justice

CLINICAL FACULTY

DENNIS DELEON, M.D. University of Tennessee, Memphis 1985
Assistant Professor of Family Medicine
Clinical ethicist, Loma Linda University Medical Center
Clinical ethics

STEVEN B. HARDIN, M.D. Loma Linda University 1985
Assistant Professor of Medicine
Clinical ethics

MASTER OF ARTS

Admission

In addition to meeting admission requirements for the Graduate School, the applicant to the Biomedical and Clinical Ethics Program must:

1. Propose clear personal and professional goals and ways in which the Biomedical and Clinical Ethics Program may facilitate their realization.

2. Persuade the admissions committee by previous accomplishments that s/he is able and willing to reach these goals and to make a distinguished contribution to the field.

Course requirements

In order to receive the Master of Arts degree in biomedical and clinical ethics from Loma Linda University, each student will complete a minimum of 48 units of course work as herein specified, with an overall grade point average of B or better, with no grade lower than a C and with no grade in a required course lower than a B-. At least 32 units must be in approved courses numbered 500-699 or their equivalent. The required curriculum will be as follows:

Curriculum

RELE	504	Research Methods (4)
RELE	524	Christian Bioethics (4)
RELE	548	Christian Social Ethics (4)
RELE	554	Clinical Intensive in Biomedical Ethics I (4)
RELE	555	Clinical Intensive in Biomedical Ethics III (4)
RELE	577	Theological Ethics (4)
RELE	588	Types of Ethical Theory (4)
RELE	697	Independent Research (8)
		plus
RELE	698	Thesis (4)
		or plus
____	___	Approved electives (12)

TOTAL UNITS REQUIRED: 48

Students are able to transfer up to 8 units of approved courses from other institutions into this University's Biomedical and Clinical Ethics Program. Such opportunities are available at nearby institutions such as La Sierra University, Redlands University, University of California at Riverside, School of Theology at Claremont, and Fuller Theological Seminary. In addition, prior or current students in LLU's other postbaccalaureate degree programs will be able to petition for credit in this curriculum for up to 12 units for courses completed in their professional studies that are directly related to biomedical and clinical ethics. An illustrative list of such courses will be made available upon request.

Comprehensive examination

Each student must pass five comprehensive written examinations within a single week. These examinations will test the student's ability

to integrate and apply knowledge from the following areas: (1) philosophical ethics, (2) theological ethics, (3) social ethics, (4) biomedical ethics, and (5) clinical ethics. These examinations must be successfully completed before the student defends a thesis or its approved substitutes.

Thesis or Project

Each student must either prepare a thesis while registered for RELE 697 and RELE 698 or prepare three major papers of publishable quality in courses approved as substitutes by the guidance committee. The student must provide an oral defense of a thesis or three major papers that analyze specific issues, cases, dilemmas, or themes in biomedical and clinical ethics. Students must declare whether they intend to write a thesis by the time they complete 12 quarter units in the program.

COURSES

RELP 504 Research Methods (4)
Presuppositions and procedures for research in the humanities and sciences pertinent to specialists in ethics; the use of libraries as research centers; advanced methods of expository and persuasive writing; ways and means of preparing and presenting term papers, theses, and scholarly articles.

RELE 524 Christian Bioethics (3-4)
Discussion of current bioethical controversies such as abortion, euthanasia, allocating scarce medical resources, mind and behavior control, and artificial methods of human procreation. Analysis of a variety of Christian and non-Christian interpretations of these and related issues. Alternative understandings of Christianity's distinctive contributions to bioethical inquiry.

RELE 534 Ethical Issues in Public Health (3-4)
Theoretical and practical appraisals of the ethical alternatives encountered by public health administrators, educators, and researchers.

RELE 548 Christian Social Ethics (3-4)
In-depth opportunity for the graduate student to discover the implications of Christian belief for selected problems in social ethical theory and practice.

RELE 554 Clinical Intensive in Biomedical Ethics I (4)
Intensive study of the theories and applications of clinical biomedical ethics. Discussion of classic and current case studies in the field. Supervised participation in ethics consultation in acute-care medical centers.

RELE 555 Clinical Intensive in Biomedical Ethics II (4)
Continuation of RELE 554.

RELE 577 Theological Ethics (3-4)
Ethical dimensions of theological positions advocated in the twentieth century.

RELE 588 Types of Ethical Theory (3-4)
Critical analysis of basic theories propounded in philosophical ethics and their relevance to bioethical decision making. A study of the writings of major ethical theorists, including Plato, Aristotle, Immanuel Kant, and J. S. Mill. Consideration of philosophical ethics as compared with the Christian faith.

RELE 624 Seminar in Christian Ethics (3-4)

RELE 674 Reading Tutorial (3-4)

RELE 697 Independent Research (1-8)

RELE 698 Thesis (4)

RELE 699 Directed Study (2-6)

BIOMEDICAL SCIENCES

RAMON R. GONZALEZ, Jr., Ph.D. Wake Forrest University 1973
Program Coordinator; Associate Professor of Physiology
Cardiovascular physiology, control of circulation

The Biomedical Sciences Certificate Program provides an opportunity for qualified students to register for selected graduate-level courses in the biomedical sciences.

These courses are identical to those taken by students in our master's and doctoral degree programs; however, the certificate program enables students to complete their studies with one academic year of full-time commitment. The program is intended to provide postbaccalaureate experience in the rapidly changing area of biomedical sciences. As such, it will either augment other career choices such as high school teaching, patent law, biotechnology management; or improve the preparation for professional training in medicine or dentistry.

Faculty for the program will be drawn from the graduate faculty associated with basic science departments of the School of Medicine and the Department of Natural Sciences in the Graduate School.

POSTBACCALAUREATE CERTIFICATE

Admission

Students entering the program will have completed a baccalaureate degree (or its equivalent) meeting the criteria outlined under the Admission Information section of this BULLETIN. Students who have not taken the Graduate Record Examination may be considered if they have a Medical College Acceptance Test with no score less than 6 and an aggregate score greater than 20. A Dental Aptitude Test score greater than 15 would also be acceptable.

Course of study

Students will be required to complete 28 units selected from courses offered through the Graduate School. These courses will include three units of religion, with the remaining 25 units selected, in consultation with the program coordinator, from offerings in the biological sciences. The program may include 1 unit of appropriate seminar and up to 6 units of research. Since many of the courses offered in the basic medical sciences are sequenced or anticipate specific undergraduate experiences, students will be required to meet all course prerequisites.

Students may choose to select course sequences that could be applied to one of the Master of Science degree programs that the Graduate School offers in the biological sciences. Course work at the B (3.00) or better level would be transferred to such a Master of Science degree program upon presentation of a petition for academic variance to the dean of the Graduate School.

Although several of the courses may share lecture experience and tests with the School of Medicine doctoral degree program, such courses will not be transferred to the School of Medicine; and a student subsequently admitted to the M.D. degree program should expect to take, and pay for, the normal medical school curriculum.

CLINICAL NUTRITION

PATRICIA K. JOHNSTON, Dr.P.H. University of California, Los Angeles 1987
Chair; Program Coordinator, Associate Professor of Nutrition
Public health nutrition, maternal and child nutrition, nutrition and aging, minerals

The curriculum leading to the Master of Science degree in clinical nutrition is offered by the School of Public Health's Department of Nutrition through the Graduate School. This program prepares qualified persons to practice as managers of free-standing out-patient clinics, treatment centers, or wellness centers; as chief clinical dietitians in acute-care facilities; and as research dietitians. It provides specialized training in medical nutrition therapy for advanced-level practice. It also provides advanced educational opportunities in clinical nutrition for physicians. The program gives particular emphasis to the relationship of vegetarian diets as they impact disease states. The program is interdisciplinary in its support and requires a research project and thesis.

FACULTY

U. D. REGISTER, Ph.D. University of Wisconsin 1950
Emeritus Professor of Nutrition
Public health nutrition, vitamins

ELLA HADDAD, Dr.P.H. Loma Linda University SPH 1979
Associate Professor of Nutrition
Advanced nutrition, public health nutrition, nutrition assessment

JOAN SABATÉ, M.D. Universidad Autonoma de Barcelona, Spain 1977; Dr.P.H. Loma Linda University SPH 1989
Associate Professor of Nutrition and Epidemiology and Biostatistics
Nutritional epidemiology, methods of nutrition research, nutritional assessment

SUJATHA RAJARAM, Ph.D. Purdue University 1993
Assistant Professor of Nutrition
Advanced nutrition, nutritional biochemistry, sports and exercise nutrition

ASSOCIATE FACULTY

KATHLEEN K. ZOLBER, Ph.D. University of Wisconsin 1968
Emeritus Professor of Nutrition
Food systems administration

KENNETH I. BURKE, Ph.D. Florida State University 1973
Professor of Nutrition and Dietetics
Food science

BERTRUM C. CONNELL, Ph.D. University of Missouri, Columbia 1981
Professor of Nutrition and Dietetics
Food systems management

JONI PAGGENKAMPER, M.S. Texas Woman's University 1988
Assistant Professor of Nutrition and Dietetics
Renal disease

CRYSTAL WHITTEN, M.S. Loma Linda University GS 1985
Instructor in Nutrition and Dietetics
Hyperlipidemias

CLINICAL FACULTY

ZAIDA CORDERO-MACINTYRE, M.S. Loma Linda University GS 1974
Assistant Professor of Nutrition
Drug-nutrient interactions, clinical nutrition

ELAINE FLEMING, M.P.H. Loma Linda University SPH 1975
Assistant Professor of Nutrition
Community nutrition, nutrition and aging, ethnic food practices

GEORGIA HODGKIN, Ed.D. Loma Linda University SE 1991
Assistant Professor of Nutrition
Nutrition-care management, nutrition and aging

CINDY KOSCH, M.S. Loma Linda University GS 1986
Clinical Assistant Professor of Nutrition
Metabolic nutrition care

MASTER OF SCIENCE

Admission

Applicants must meet the general Graduate School admission requirements as well as those specific to the program in clinical nutrition as stated below.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

Prerequisites

Applicants must hold a baccalaureate degree and be a registered dietitian, a physician, or be AP4 eligible. Others may be considered individually on the basis of appropriate course work and experience but must meet the Didactic Program in Dietetics (DPD) requirements during their program, in addition to the M.S. degree requirements. Specific courses required as prerequisites are microbiology, anatomy, physiology, and chemistry through organic. Applicants must have an overall G.P.A. of 3.0 or better in their undergraduate course work and must provide acceptable scores on the general test of the Graduate Record Examination, as well as a clear statement of personal and professional goals. Evidence of computer literacy must be provided; however, computer requirements may be taken concurrently and in addition to the required courses.

Curriculum

NUTR	504	Nutritional Metabolism (5)
PHSL	533	Physiology I (4)
PHSL	534	Physiology II (3)
NUTR	517	Advanced Nutrition I (4)
NUTR	518	Advanced Nutrition II (4)
NUTR	554	Critical Care Nutrition I (4)
NUTR	555	Critical Care Nutrition II (4)
NUTR	597	Special Topics in Clinical Nutrition (1, 1)
NUTR	577	Nutrition Care Management (3)
NUTR	694	Research (7)
NUTR	695	Thesis (2)
SHCJ	534	Research Methods (3)
STAT	521	Biostatistics I (4)
REL	___	Religion (3)
____	___	Approved electives (6)

TOTAL UNITS REQUIRED: 57

In addition to the course work, students are required to attend grand rounds and nutritional services conferences, and pass a comprehensive examination and an oral defense of their thesis.

Other programs in nutrition

Professional programs leading to the Master of Public Health and the Doctor of Public Health degrees are offered through the School of Public Health and are described in the BULLETIN of that school.

COURSES

NUTR 504 Nutritional Metabolism (5)
Study of the static and dynamic aspects of the metabolism of carbohydrates, lipids, amino acids, proteins, nucleic acids, cations, anions, enzyme kinetics, hormones, vitamins, and minerals in the normal healthy human.

NUTR 509 Public Health Nutrition (3)
Introduction to the concepts of nutrition as related to public health. Includes life-cycle issues as well as discussion of major nutrition-related diseases and their prevention. Not applicable toward a major in nutrition.

NUTR 510 Advanced Public Health Nutrition (3)
Study of the applied and preventive aspects of nutrition as related to public health.
Prerequisite: NUTR 504.

NUTR 517 Advanced Nutrition I: Carbohydrates and Lipids (4)
Advanced study of the nutrition, metabolism, and function of carbohydrates and lipids as related to health and disease.
Prerequisite: NUTR 504.

NUTR 518 Advanced Nutrition II: Proteins, Vitamins, and Minerals (4)
Advanced study of the nutrition, metabolism, and function of proteins, vitamins, and minerals as related to health and disease.
Prerequisite: NUTR 504.

NUTR 525 Nutrition Policy, Programs, and Services (3)
Development of professional skills in management of nutrition programs. Includes legislative advocacy and analysis of current nutrition programs at local, state, and federal levels. Laboratory included.

NUTR 527 Assessment of Nutritional Status (2)
Techniques of individual nutrition assessment: dietary intake and evaluation, use of computer software (1 unit); anthropometric, clinical, and biochemical methodologies (1 unit); principles and practice in nutrition counseling in a supervised community setting (1 unit). Laboratory or practicum included in each unit.
Prerequisite: Basic nutrition or consent of instructor.

NUTR 528 Symposium: Adventist Philosophy of Nutrition (1)
The science of nutrition as related to the Seventh-day Adventist philosophy of health.

NUTR 534 Maternal and Child Nutrition (3)
Role of nutrition in human growth and development during the prenatal period, lactation, infancy, and childhood.

NUTR 536 Nutrition and Aging (2)
Effect of nutrition on aging and chronic degenerative diseases, and their effects on nutritional status. Geriatric nutrition screening and assessment. Anorexia of aging. Nutrition support, supplement use, and services for older Americans.
Prerequisite: Basic nutrition or consent of instructor.

NUTR 537 Community Programs Laboratory (1)
Supervised nutrition intervention in the community. Design, implementation, and evaluation of nutrition programs. May be repeated for a total of three units.
Prerequisite: HPRO 509.
Prerequisite or concurrent: HPRO 536, NUTR 578.

NUTR 543 Concepts in Nutritional Epidemiology (3)
Designed to prepare students for conducting research relating diet to health/disease outcomes. Review of methodological issues related to dietary assessment for clinical/metabolic and epidemiological research. Topics include: variation in diet, measurement error and correction for its effects, advantages and limitations of different diet assessment techniques, design and development of a food-frequency instrument, total energy intake in analyses.
Prerequisite: STAT 521, EPDM 509, NUTR 527 or consent of instructor.

NUTR 545 Clinical Nutrition (4)
Medical nutrition therapy and care for a variety of clinical disorders with nutritional implications. Laboratory included.
Prerequisite: Basic nutrition, physiology or equivalent.

NUTR 554 Critical Care Nutrition I (3)
Current issues related to the nutritional needs of patients with diabetes, heart disease, and renal disease. Drug-nutrient interactions, laboratory values, treatment modalities, and their effect on nutrition in the critical care of these patients. Counseling strategies for each.
Prerequisite: RD, RD eligible with appropriate experience, M.D., or consent of instructors.

NUTR 555 Critical Care Nutrition II (3)
Current issues related to the nutritional needs of the preterm neonate, transplant, oncology, AIDS, and COPD patients. In-depth study of enteral/parenteral feeding products and their administration. Counseling strategies for the client and/or caregiver in each instance.
Prerequisite: RD, RD eligible with appropriate experience, M.D., or consent of instructor.

NUTR 564 Contemporary Issues of Vegetarian Diets (1-2)
Introduction to contemporary issues and controversies related to vegetarian diets. Background information on the history and rationale of vegetarian diets; ecologic and environmental issues; health benefits as well as risks of the vegetarian lifestyle.

NUTR 565 Ethnic Food Practices (2)
Introduction to major ethnic and religious food practices in the United States. Focuses on cultural background and reported data for the purpose of preparing health professionals to serve their clients in a culturally sensitive manner.

NUTR 575 Food Systems Management (3)
Development of administrative skills in effective management of food systems. Qualitative and quantitative standards, budget development and analysis, labor-management relations, computer-assisted information system.
Prerequisite: HADM 509 or equivalent.

NUTR 577 Nutrition Care Management (3)
Translation of institutional mission into goals, objectives, and standards of care. Application of operations analysis, financial management, quantitative decision making, and productivity-management techniques to enhance the delivery of nutrition care. Ethical and legal behavior. Staff recruitment, selection, development, and retention. Development of quality-assurance indicators. Skills in managing the human and technological resources available to the registered dietitian.
Prerequisite: RD, RD eligible with appropriate experience, M.D., or consent of instructor.

NUTR 578 Exercise Nutrition (2-3)
Nutritional needs of professional and recreational athletes. The role of macro- and micronutrients as ergogenic aids. Overview of current research in the ares of exercise nutrition. Third unit requires a term paper on current research topic in exercise nutrition.
Prerequisite: NUTR 504 or HPRO 573.

NUTR 597 Special Topics in Clinical Nutrition (1)
Investigation and discussion of current topics in clinical nutrition; may be repeated for credit.
Prerequisite: NUTR 554, NUTR 555.

NUTR 605 Seminar in Public Health Nutrition (1)
Designed to explore current major issues in public health nutrition. Students choose and research a topic or problem and discuss their findings in class. Written report required. May be repeated for additional credit.
Prerequisite: Five graduate units in nutrition or consent of instructor.

NUTR 694 Research (1-12)
Independent research for doctoral-degree candidates and qualified master's-degree students on problems currently receiving study in the department. Research program arranged with faculty member(s) involved. Minimum of thirty hours required for each unit of credit. Written report required. Limited to doctoral-degree candidates and qualified master's-degree students.
Prerequisite: Consent of instructor responsible for supervision and the program adviser.

NUTR 695 Thesis (2)
Individual guided experimental research study in nutrition under direct faculty supervision. Limited to graduate students whose thesis project has been approved by their research committee.

NUTR 696 Directed Study/Special Project (1-4)
Individual arrangements for advanced students to study under the guidance of a program faculty member. May include readings, literature reviews, or other special projects. Minimum of thirty hours required for each unit of credit. A maximum of 4 units applicable to any master's degree program.

DENTISTRY

CHARLES GOODACRE, D.D.S. Loma Linda University SD 1971; M.S.D. Indiana University 1974
Dean; Professor of Prosthetic Dentistry
Prosthetics

LEIF K. BAKLAND, D.D.S. Loma Linda University SD 1962
Coordinator, graduate programs in dentistry Professor of Endodontics
Endodontics

Graduate study leading to the Master of Science degree or a specialty certificate in dentistry is offered in the following areas: endodontics, implant dentistry, oral and maxillofacial surgery, orthodontics, pediatric dentistry, and periodontics. The basic science approach to research and clinical practice is emphasized. The programs are organized in line with the standards of the Council on Dental Education of the American Dental Association; and in objectives and content, where applicable, meet the requirements of the respective specialty boards.

FACULTY

PHILIP J. BOYNE, D.M.D. Tufts University 1947; M.S. Georgetown University 1961
Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

BERNARD C. BYRD, D.D.S. Emory University 1953; M.S. University of Southern California 1964
Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

JOHN E. PETERSON, JR., D.D.S. Loma Linda University SD 1970, M.S. GS 1978
Professor of Orthodontics and Pediatric Dentistry
Orthodontics and pediatric dentistry

JAMES H. SIMON, D.D.S. Temple University 1961
Professor of Endodontics
Endodontics

MAHMOUD TORABINEJAD, D.M.D. University of Tehran 1971; M.S.D. University of Washington 1976
Professor of Endodontics
Endodontics

ROLAND D. WALTERS, D.D.S. Loma Linda University SD 1957, M.S. GS 1967
Professor of Orthodontics
Orthodontics

ULF M. E. WIKESJO, D.D.S. Lund University (Sweden) 1973, Certificate in Periodontics 1980; Certificate in Periodontics, Loma Linda University SD 1987; Ph.D. Lund University (Sweden) 1991
Professor of Periodontics
Periodontics

JOHN WHITTAKER, D.D.S. Otago University (New Zealand) 1967
Professor of Restorative Dentistry
Implant dentistry

DAVID ANDERSON, D.D.S. Loma Linda University SD 1970
Associate Professor of Dental Anesthesiology
Dental anesthesiology

LOGAN W. BARNARD, Ph.D. University of Utah 1971
Associate Professor of Orthodontics
Orthodontics

LLOYD E. GAUNT, D.D.S. Loma Linda University SD 1963, M.S. GS 1965
Associate Professor of Orthodontics
Orthodontics

JAIME L. LOZADA, D.D.S. University of Puebla (Mexico) 1983
Associate Professor of Restorative Dentistry
Implant dentistry, periodontics

DOUGLAS J. MCKENDRY, D.D.S. University of Alberta 1983; M.S.D. University of Washington 1986
Associate Professor of Endodontics
Endodontics

ARTHUR J. MORGAN, D.D.S. Loma Linda University SD 1960, M.S. GS 1963
Associate Professor of Orthodontics
Orthodontics

STEVEN G. MORROW, D.D.S. Loma Linda University SD 1960, M.S. GS 1987
Associate Professor of Endodontics
Endodontics

WILFRED NATION, D.D.S. Loma Linda University SD 1976; Certificate in Pediatric Dentistry, University of California, Los Angeles 1979
Associate Professor of Pediatric Dentistry
Pediatric dentistry

GORDON M. RICK, D.D.S. Loma Linda University SD 1968, M.S. GS 1972
Associate Professor of Oral Pathology
Oral pathology

DIMITRIS N. TATAKIS, D.D.S. University of Athens (Greece) 1982; Certificate in Periodontics, State University of New York at Buffalo 1988; Ph.D. State University of New York at Buffalo 1990
Associate Professor of Periodontics
Periodontics

THORARINN J. SIGURDSSON, D.D.S. University of Iceland (Iceland) 1974; Certificate in Periodontics, Lund University (Sweden) 1979; Certificate in Periodontics, Loma Linda University SD 1994
Associate Professor of Periodontics
Periodontics

SHAHNAZ BONYANPOOR, D.M.D. Shiraz University School of Dental Medicine 1978; Certificate in Pediatric Dentistry, Boston University 1980
Assistant Professor of Pediatric Dentistry
Pediatric dentistry

JOSEPH M. CARUSO, D.D.S. Loma Linda University SD 1973, M.S. GS 1975, M.P.H. SPH 1976
Assistant Professor of Orthodontics
Orthodontics

ROBERT J. FRANK, D.D.S. Ohio State University 1972
Assistant Professor of Endodontics
Endodontics

M. TOUFIC JEIROUDI, D.D.S. University of Damascus 1978; M.S. Loma Linda University GS 1982
Assistant Professor of Orthodontics
Orthodontics

R. DAVID RYNEARSON, D.D.S. Loma Linda University SD 1971, M.S. GS 1987
Assistant Professor of Orthodontics
Orthodontics

WILLIS L. SCHLENKER, D.D.S. Loma Linda University SD 1957
Assistant Professor of Orthodontics
Orthodontics

MELVA S. WYATT, D.D.S. University of San Carlos of Guatemala School of Dentistry (Guatemala) 1985; Certificate in Pediatric Dentistry, Louisiana State University 1989
Assistant Professor of Pediatric Dentistry
Pediatric Dentistry

ASSOCIATE FACULTY

ROBERT M. RICKETTS, D.D.S. Indiana University 1945; M.S. University of Illinois 1950
Professor of Orthodontics
Orthodontics

GARLAND E. SCOTT, Ph.D. North Carolina State University 1972
Professor of Orthodontics
Orthodontics

KNUT A. SELVIG, D.D.S. University of Oslo (Norway) 1955; Certificate in Periodontics, Eastman Dental Center 1961; M.S. University of Rochester 1962; Ph.D. University of Bergen (Norway) 1967
Professor of Periodontics
Periodontics

RICHARD A. SIMMS, D.D.S. Howard University 1953; M.S. Loma Linda University GS 1963
Professor of Orthodontics
Orthodontics

JOHN L. TOMLINSON, Ph.D. University of Wisconsin 1967
Professor of Orthodontics
Materials engineering

W. HOWARD DAVIS, D.D.S. University of Southern California 1948
Associate Professor of Oral Surgery
Oral and maxillofacial surgery

JOHN P. DEVINCENZO, D.D.S. Loma Linda University SD 1964, M.S. GS 1967
Associate Professor of Orthodontics
Orthodontics

KEITH D. HOFFMAN, D.D.S. Loma Linda University SD 1983; Ph.D. Louisiana State University 1990
Associate Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

JOHN K. PEARSON, D.D.S. Loma Linda University SD 1969, M.S. GS 1971
Associate Professor of Orthodontics
Orthodontics

JAMES R. WISE, D.D.S. Loma Linda University SD 1967, M.S. GS 1971
Associate Professor of Orthodontics
Orthodontics

PETER S. WOHRLE, D.M.D. Harvard School of Dental Medicine 1988; M.Med.Sc. Harvard University 1991; Certificate in Prosthodontics, Harvard School of Dental Medicine 1989; Certificate in Implant Dentistry, Harvard School of Dental Medicine 1991
Associate Professor of Restorative Dentistry
Implant dentistry

NORMAN S. CARTER, D.D.S. Loma Linda University SD 1973, M.S. GS 1975
Assistant Professor of Orthodontics
Orthodontics

EARL R. CRANE, D.D.S. Northwestern University 1938; M.S. University of Michigan 1942
Assistant Professor of Orthodontics
Orthodontics

CLELAN G. EHRLER, D.D.S. Loma Linda University SD 1968, M.S. GS 1971
Assistant Professor of Orthodontics
Orthodontics

RONALD M. KAMINISHI, D.D.S. Northwestern University 1968
Assistant Professor of Oral Surgery
Oral and maxillofacial surgery

EDWARD I. KIM, D.D.S. University of Southern California 1983; M.S. Loma Linda University GS 1993
Assistant Professor of Restorative Dentistry
Implant dentistry

ANTHONY B. LIER, D.D.S. Loma Linda University SD 1975, M.S. GS 1981
Assistant Professor of Orthodontics
Orthodontics

LAWRENCE E. McEWEN, D.D.S. Loma Linda University SD 1963
Assistant Professor of Orthodontics
Orthodontics

ROBERT D. MITCHELL, D.D.S. Loma Linda University SD 1978, M.S. GS 1985
Assistant Professor of Orthodontics
Orthodontics

THOMAS L. ROBERTSON, D.D.S. Marquette University 1959, M.S. Loma Linda University GS 1968
Assistant Professor of Orthodontics
Orthodontics

JEFFREY I. ROSENBERG, D.D.S. Baltimore College of Dental Surgery 1978; Certificate in Prosthodontics, Veterans Administration Hospital, Los Angeles 1982
Assistant Professor of Restorative Dentistry
Implant dentistry

RAYMOND M. SUGIYAMA, D.D.S. Western Reserve University 1964; M.S. Loma Linda University GS 1968
Assistant Professor of Orthodontics
Orthodontics

GUY D. TAYLOR, D.D.S. West Virginia University 1967, M.S. 1971
Assistant Professor of Orthodontics
Orthodontics

CLINICAL FACULTY

ALFRED L. FRANK, D.D.S. University of Southern California 1945
Professor of Endodontics
Endodontics

DONALD S. CLEM III, D.D.S. Loyola University 1980; Certificate in Periodontics, University of Texas Health Science Center 1984
Associate Professor of Periodontics
Periodontics

ROBERT L. BASS, D.D.S. University of Nebraska 1982
Assistant Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

MICHAEL E. FOX, D.D.S., Loma Linda University SD 1983
Assistant Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

PAUL J. FUENTES, D.D.S. University of California, Los Angeles 1981; Certificate in Periodontics, Loma Linda University SD 1988
Assistant Professor of Periodontics
Periodontics

DANIEL KUNIHIRA, D.D.S., Loma Linda University SD 1974; Certificate in Periodontics, Virginia Commonwealth University 1982
Assistant Professor of Periodontics
Periodontics

MICHAEL B. LEE, D.D.S. Loma Linda University SD 1983, M.S. GS 1995
Assistant Professor of Periodontics
Periodontics

WILLIAM L. MIHRAM, D.D.S. Baylor College of Dentistry 1970; Certificate in Periodontics, Baylor University 1972, M.S.D. 1972
Assistant Professor of Periodontics
Periodontics

W. PETER NORDLAND, D.M.D. Temple University School of Dentistry 1979; Certificate in Periodontics, Loma Linda University GS 1982
Assistant Professor of Periodontics
Periodontics

MARC P. SALOMONE, D.D.S. University of California, Los Angeles 1982
Assistant Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

MILOS BOSKOVIC, D.D.S. University of Southern California 1984
Assistant Professor of Restorative Dentistry
Oral implantology

HARVEY ZALSMAN, JR., D.D.S. Loma Linda University SD 1983, M.D. SM 1990
Assistant Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

WILSON B. BAUGH, D.D.S. University of Southern California 1981
Instructor in Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

GUNTHER BLASEIO, D.D.S. Erlangen University 1977; M.S. Loma Linda University GS 1986
Instructor in Orthodontics
Orthodontics

Admission

An appropriate degree from an accredited college, or the equivalent, and other specifics and personal qualifications are required for admission for graduate study. A doctoral degree in dentistry (Doctor of Dental Surgery or Doctor of Dental Medicine, or the equivalent) is required for admission to all programs. Application for admission should be made before or by October 1 for the program in orthodontics; and October 15 for the programs in endodontics, implant dentistry, pediatric dentistry, periodontics, and oral and maxillofacial surgery.

Residence

The required time in residence varies with the program. For length of program, refer to information under program description.

Grades

The student must achieve a general grade point average of not less than 3.00, with no subject below 2.0. In addition to earning acceptable scholastic marks, evidence of personal and professional fitness for growth in the science and art of the specialty must be submitted.

Advancement to candidacy

The student desiring to qualify for a master's degree should petition the Graduate Council for advancement to candidacy not later than the close of the first academic year. At the same time, the proposed thesis topic, an outline, and a comprehensive bibliography, as approved by the major professor, must be submitted. If all credentials and proposals are acceptable, the student is advanced to candidacy; and a guidance and examining committee of not fewer than three members is named.

Thesis

The student is required to pursue a problem in basic or clinical research, the results of which are presented in thesis form according to standards set by the Graduate Council. Oral defense of the thesis will be required.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN. In addition, students should consult the booklet "Graduate, Advanced and Postgraduate Dental Education Programs," published by the School of Dentistry, along with syllabi that are published by the various programs.

ENDODONTICS

The goal of the advanced education program in endodontics is to prepare students for the practice of this dental specialty. The program is designed to: 1) provide a comprehensive study of the biomedical sciences, with emphasis on their relationship to endodontics; 2) prepare dentists for the competent treatment of both uncomplicated and complicated cases; and 3) provide experience in research and teaching to encourage continued professional growth and development after graduation.

A minimum of two years of general practice experience is required before applying. Two programs are available:

1. The certificate program begins in July and is a two-year program.

2. The master's degree program begins in July and may require additional time beyond the two years, depending on the major interest area.

Required courses

ENDN	534	Endodontic Treatment Conference
ENDN	601	Principles of Endodontics
ENDN	604	Literature Seminar in Endodontics
ENDN	625	Clinical Practice in Endodontics
ENDN	654	Practice Teaching in Endodontics
ENDN	697	Research
ENDN	698	Thesis (required for Master of Science degree)
GRDN	509	Research and Statistics I
GRDN	531	Applied Surgical Anatomy
GRDN	601	Practice Management
GRDN	604	Topics in Medicine and Hospital Protocol
GRDN	607	Research and Statistics II
GRDN	609	Professional Ethics
GRDN	622	Biomedical Science I
GRDN	623	Biomedical Science II
ORPA	531	Clinical Oral Pathology
ORPA	533	Radiology
RLGN	___	Religion (3)

IMPLANT DENTISTRY

The graduate program in implant dentistry leads to a certificate or a Master of Science degree. It is designed to prepare the student for the practice of implant dentistry and to provide the foundation for the continued acquisition of knowledge and clinical skills in this demanding area.

It is recognized that the demands of this area of endeavor are multidisciplinary and that the student works in this field only by advanced training in recognized dental specialty programs. Specifically, implant dentistry broadly interfaces with the dental specialties of oral and maxillofacial surgery, prosthodontics, and periodontology; the implant dentistry student will be expected to achieve advanced knowledge and skills in certain aspects of all of these dental specialties. The content of the program is designed to prepare the student for certification by the American Board of Implant Dentistry.

A minimum of three calendar years is required for the certificate. The Master of Science degree additionally requires the completion of at least one research project and the completion and publication of a thesis for defense. The beginning date is April, and the first three months are spent in a dental anesthesiology rotation.

Required courses

ANES	521	Principles of Medicine, Physical Diagnosis, and Hospital Protocol
ANES	546	General Anesthesia, Section II
ANES	547	Anesthesia Grand Rounds
ANES	604	Anesthesia Literature Review
GRDN	509	Research and Statistics I
GRDN	531	Applied Surgical Anatomy
GRDN	545	Clinical Nutrition in Dentistry
GRDN	607	Research and Statistics II
GRDN	622	Biomedical Science I

GRDN	623	Biomedical Science II
ORIM	561	Dental Bioengineering
ORIM	601	Literature Review in Oral Implantology
ORIM	604	Current Literature Review in Oral Implantology
ORIM	611	Introduction to Oral Implantology
ORIM	625	Clinical Practice in Oral Implantology
ORIM	631	Oral Implant Surgery
ORIM	637	Peri-Implant Histopathology
ORIM	654	Practice Teaching in Oral Implantology
ORIM	697	Research
ORIM	698	Thesis (required for Master of Science degree)
ORSR	532	Oral and Maxillofacial Surgery II
ORSR	604	Literature Review in Oral and Maxillofacial Surgery
PERI	601	Periodontal Therapy
PERI	604	Current Periodontal Literature
PERI	625	Clinical Practice in Periodontics
PROS	500	Current Prosthodontic Literature Review
PROS	501	Removable Partial Prosthodontics Literature Review
PROS	502	Complete Denture Prosthodontics Literature Review
PROS	503	Fixed Partial Prosthodontics Literature Review
PROS	505	Combined Conference: Pros/ Perio/OI
PROS	510	Clinical Practice of Prosthodontics
PROS	536	Special Topics in Prosthodontics
PROS	537	Esthetic Dentistry
PROS	546	Gnathology and Occlusion
PROS	547	Temporomandibular Disorders and Myofacial Pain
PROS	548	Applied Cephalometrics for Prosthodontics
PROS	555	Removable Partial Prosthodontics
PROS	555L	Removable Partial Prosthodontics Laboratory
PROS	565	Complete Denture Prosthodontics
PROS	565L	Complete Denture Prosthodontics Laboratory
PROS	575	Fixed Partial Prosthodontics
PROS	575L	Fixed Partial Prosthodontics Laboratory
PROS	585	Implant Prosthodontics
PROS	585L	Implant Prosthodontics Laboratory
RELE	457	Christian Ethics/Healthcare

ORAL AND MAXILLOFACIAL SURGERY

The graduate resident program in oral and maxillofacial surgery is designed to prepare the student for the practice of this surgical specialty and to provide the foundation for the continued acquisition of knowledge and skills. Clinical surgical healthcare delivery is emphasized. The student is introduced to problems of research and teaching to develop an increased awareness of the profession. The content of the program is designed to conform to the standards outlined by the oral and maxillofacial surgery specialty board. A license to practice in California is required.

A minimum of four calendar years in residence is required, with the beginning date of July 1.

Required courses

ANES	521	Principles of Medicine, Physical Diagnosis, and Hospital Protocol
ANES	547	Anesthesia Grand Rounds
GRDN	531	Applied Surgical Anatomy
GRDN	601	Practice Management
GRDN	622	Biomedical Sciences I
GRDN	623	Biomedical Sciences II
ORSR	331	Oral and Maxillofacial Surgery I
ORSR	524	Applied Cephalometrics for Oral Surgeons
ORSR	532	Oral and Maxillofacial Surgery II
ORSR	533	Oral and Maxillofacial Surgery III
ORSR	534	Oral and Maxillofacial Surgery IV
ORSR	604	Literature Review in Oral and Maxillofacial Surgery
ORSR	641	Applied Orthognathic Surgery
ORSR	654	Practice Teaching in Oral and Maxillofacial Surgery
ORSR	697	Research
ORSR	698	Thesis (required for Master of Science degree)
RLGN	___	Religion (3)

ORTHODONTICS

The graduate program in orthodontics is organized to do the following: (1) develop technical competence in the skills of orthodontics, (2) deepen understanding of the basic natural sciences and their correlation with orthodontic practices, (3) develop analytical thinking, (4) develop skills in clinical research, (5) increase the sense of responsibility toward the patient and the community, and (6) develop increased awareness of obligation to make contributions to the growth and stature of the profession and to coordinate with those of allied professional disciplines. All of the foregoing are designed to prepare the student for a specialty practice in orthodontics or to pursue a teaching career. The content of the program conforms to the standards outlined by the specialty board. Two programs are available:

1. The certificate program requires a minimum of twenty-four months in residence, beginning in June.

2. Master's degree programs require a minimum of twenty-four months in residence, beginning in June. Specific programs may require additional time, depending on the research selected.

Required courses

GRDN	509	Research and Statistics I
GRDN	525	Applied Anatomy
GRDN	601	Practice Management
GRDN	607	Research and Statistics II
GRDN	609	Professional Ethics
GRDN	623	Biomedical Science II
ORDN	524	Introduction to Graduate Orthodontics
ORDN	524L	Introduction to Graduate Orthodontics, Laboratory
ORDN	525	Materials Science and Mechanics
ORDN	527	Clinical Photography
ORDN	531	Clinical Oral Pathology
ORDN	535	Advanced Cephalometrics
ORDN	536	Concepts of Physical Anthropology
ORDN	545	Growth and Development
ORDN	546	Fundamentals of Occlusion
ORDN	554	Physiology and Pathology of Speech
ORDN	571	Diagnosis and Treatment Planning I
ORDN	574	Diagnosis and Treatment Planning II
ORDN	584	Current Orthodontic Literature I
ORDN	591	Current Orthodontic Literature II
ORDN	597	Orthognathic Surgery Theory and Literature Review
ORDN	604	Seminar in Orthodontics
ORDN	605	Advanced Seminar in Orthodontics
ORDN	606	Craniofacial Genetics
ORDN	607	Advanced Physiology and Pathology of Speech
ORDN	609	Temporomandibular Joint Diagnosis and Treatment
ORDN	625	Clinical Practice in Orthodontics
ORDN	634	Orthodontics Clinical Conference
ORDN	635	Finishing Mechanics I
ORDN	636	Finishing Mechanics II
ORDN	654	Practice Teaching in Orthodontics
ORDN	655	Temporomandibular Function and Dysfunction
ORDN	657	Orthodontics Board Preparation
ORDN	697	Research
ORDN	698	Thesis (required for Master of Science degree)
ORSR	641	Applied Orthognathic Surgery
RLGN	___	Religion

PEDIATRIC DENTISTRY

The graduate program in pediatric dentistry is designed to prepare the student as a specialist in this area of dentistry. The curriculum leads to a certificate or a master's degree in pediatric dentistry. Clinical pediatric dentistry is emphasized. However, this clinical experience is balanced with a didactic curriculum of core courses and seminars. There is also a research component designed to expose the student to problem solving using the scientific method. The program requires a minimum of twenty-four months in residence beginning July 1. The program fulfills the requirements for beginning the process of certification by the American Board of Pediatric Dentistry.

Required courses

GRDN	509	Research and Statistics I
GRDN	531	Applied Surgical Anatomy
GRDN	607	Research and Statistics II
GRDN	609	Professional Ethics
GRDN	622	Biomedical Science I
GRDN	623	Biomedical Science II
ORPA	531	Clinical Oral Pathology
ORPA	533	Radiology
ORDN	545	Growth and Development
ORDN	554	Physiology and Pathology of Speech
ORDN	606	Craniofacial Genetics
PEDN	503	Pediatric Dental Seminar I
PEDN	504	Pediatric Dental Seminar II
PEDN	505	Pediatric Dental Seminar III
PEDN	506	Pediatric Dental Seminar IV
PEDN	508	Pediatric Hospital Dentistry Seminar
PEDN	521	Principles of Medicine, Physical Diagnosis
PEDN	524	Introduction to Orthodontics
PEDN	524L	Introduction to Orthodontics (Laboratory)
PEDN	546	General Anesthesia Clinic
PEDN	601	Pediatric Dental Practice Management
PEDN	604	Pediatric Dental Literature
PEDN	625	Pediatric Dental Clinic
PEDN	654	Pediatric Dental Teaching
PEDN	680	Elective Study for Advanced Education Students of Pediatric Dentistry
PEDN	697	Research
PEDN	698	Thesis (required for Master of Science degree)
RLGN		A course in religion

PERIODONTICS

The advanced education program in periodontics leads to a certificate in periodontics with an optional Master of Science degree.

The three-year certificate program prepares the student for a specialty practice in periodontics, and provides the basis for continuing professional development after completion of the program. The program includes didactic, clinical, and research components.

The Master of Science degree additionally requires the student to complete one or more research projects and to be involved in predoctoral clinical and didactic teaching activities. The Master of Science degree prepares residents for academic careers in periodontal research and teaching.

The program fulfills the requirements for eligibility for certification by the American Board of Periodontology.

A minimum of thirty-six months in residence is required, beginning with the Summer session.

Required courses

ANES	546	General Anesthesia Clinic, Section II
ANES	548	Anesthesia Residents Seminar
ANES	604	Anesthesia Literature Review
ANES	622	Conscious Sedation Techniques
GRDN	509	Research and Statistics I
GRDN	531	Applied Surgical Anatomy
GRDN	545	Clinical Nutrition in Dentistry
GRDN	555	Temporomandibular Function and Dysfunction
GRDN	604	Topics in Medicine and Hospital Protocol
GRDN	607	Research and Statistics II
GRDN	609	Professional Ethics
GRDN	622	Biomedical Science I
GRDN	623	Biomedical Science II
ORIM	561	Dental Bioengineering
ORIM	601	Literature Review in Oral Implantology
ORIM	611	Introduction to Oral Implantology
ORIM	625	Clinical Practice in Oral Implantology
ORIM	637	Peri-Implant Histopathology
ORPA	531	Clinical Oral Pathology
ORPA	533	Radiology
PERI	524	The Periodontium
PERI	531	Periodontal Pathology
PERI	601	Periodontal Therapy
PERI	604	Current Periodontal Literature
PERI	611	Introduction to Periodontics
PERI	625	Clinical Practice in Periodontics
PERI	634	Clinical Conference
PERI	654	Practice Teaching in Periodontics
PERI	697	Research
PERI	698	Thesis (required for Master of Science degree)
RLGN	___	A course in religion

CORE COURSES

GRDN 509 Research and Statistics I (3)
Introduction to research methods, including identification of variables, statement of research questions and hypotheses, research design. Fundamental procedures for collecting, summarizing, presenting, analyzing, and interpreting data. Measures of central tendency and variation, probability, binomial distribution, normal distribution, sampling distributions and standard error, confidence intervals, hypothesis testing, t-test, chi-square, correlation and regression. Sample size and power analysis for the t-test. Introduction to computer analysis for solution of statistical problems.

GRDN 526 Applied Anatomy (1-2)
Fundamentals of anatomy as they apply to a special region or application.

GRDN 531 Applied Surgical Anatomy (2)
Surgical approach to anatomy as it relates to special anatomic regions.

GRDN 545 Clinical Nutrition in Dentistry (1-2)
Review of basic nutrition, application of nutritional principles to the processes of mastication and deglutition, surgical wound healing, skeletal development and maintenance, tooth development and disease resistance, perinatal oral development, and oral health in aging. Videotaped review, seminar and conference.

GRDN 555 Temporomandibular Joint Function and Dysfunction (1)
Designed to provide students with information about the function and dysfunction of the temporomandibular joint and associated structures. Will prepare students to obtain history, perform clinical examination, recognize disorders, and prescribe treatment.

GRDN 601 Practice Management (2)
Designed to prepare the student for specialty practice, concepts of employment, records, incorporation, insurance, and practice planning.

GRDN 604 Topics in Medicine and Hospital Protocol
Topics presented in internal medicine and physical evaluation, with emphasis on diseases and physical conditions relating to dental treatment. Overview given on hospital utilization and local anesthesia; inhalation and intravenous sedation techniques reviewed.

GRDN 607 Research and Statistics II (3)
Research designs for ANOVA, ANCOV, and multiple regression, including repeated measures and blocking. One-way ANOVA, factorial ANOVA, repeated-measures ANOVA, and analysis of covariance using the computer, with emphasis on interpretation of data. Multiple correlation and regression models using the computer, with emphasis on interpretation of data. Introduction to nonparametric statistics. Evaluation of the research literature.

GRDN 609 Professional Ethics (2)
Designed to provide students with a theological and philosophical framework for professional ethics. Topics include individual rights, autonomy, informed consent, and responsibilities of the professional person in the dental field, as well as in society as a whole.

GRDN 622 Biomedical Science I (2, 2)
A two-quarter course offered every year during the Fall and Winter Quarters. Oral bacteriology, immunology, topics in oral medicine and applied pharmacology. Course participants are expected to have basic knowledge in the various topic areas since this course is constructed on an advanced level of understanding.

GRDN 623 Biomedical Science II (2, 2-3)
A two-quarter course offered every year during the Fall and Winter Quarters. Cell biology, biology of hard tissues, physiology, and biochemistry. Course participants are expected to have basic knowledge in the various topic areas since this course is constructed on an advanced level of understanding.

ORPA 531 Clinical Oral Pathology
Emphasis on oral manifestation of disease. Diagnosis, prognosis, and treatment of various oral neoplasms.

ORPA 533 Radiology (2)
Utilization of the physical nature of x-rays to better understand image production, biological effects of x-rays, radiation safety, application of principles of radiographic techniques. Risk estimation and radiographic interpretation.

DEPARTMENTAL COURSES

ENDODONTICS

ENDN 534 Endodontic Treatment Conference (12)
Designed to evaluate and discuss diagnosis, treatment plans, prognosis, and outcome of endodontic treatment cases.

ENDN 601 Principles of Endodontics (12)
Comprehensive study of all aspects of clinical endodontics.

ENDN 604 Literature Seminar in Endodontics (12)
Review of the literature pertaining to the philosophy, teaching, and practice of endodontics.

ENDN 625 Clinical Practice in Endodontics (1000-1200 clock hours)
Clinical endodontics practice, which includes all aspects of the scope of endodontics. Emphasis placed on providing experience in treating endodontic cases which are considered of complex nature.

ENDN 654 Practice Teaching in Endodontics (2)
Supervised teaching in the endodontic preclinical laboratory and predoctoral clinic.

ENDN 697 Research (arranged)

ENDN 698 Thesis (arranged)

IMPLANT DENTISTRY

ORIM 533 Applied Radiology in Implant Dentistry (1)
Designed to give the postdoctoral student fundamental aspects of radiology imaging as part of the diagnosis and treatment.

ORIM 561 Dental Bioengineering (2)
Study of structures and properties of dental implant materials.

ORIM 601 Literature Review in Oral Implantology (22)
Review and discussion of oral implant literature.

ORIM 604 Current Literature Review in Oral Implantology (20)
Designed to give the postdoctoral student in oral implantology a deeper understanding of the research and literature currently available.

ORIM 611 Introduction to Oral Implantology (2)
Overview of the clinical science of oral implantology, including etiology, therapy, clinical methods, and record keeping.

ORIM 625 Clinical Practice in Oral Implantology (2200 clock hours)
Experience in the clinical diagnosis and treatment of patients who may benefit from oral implant therapy.

ORIM 631 Oral Implant Surgery (10)
Designed to give the postdoctoral student in implant dentistry the necessary skills in clinical oral implant surgery and the advanced surgical procedures related to implant dentistry.

ORIM 637 Peri-Implant Histopathology (2)
Designed to give the postdoctoral student in oral implantology a better understanding of the changes which take place in the tissues surrounding dental implants following their placement.

ORIM 654 Practice Teaching in Oral Implantology (1)

ORIM 697 Research (arranged)

ORIM 698 Thesis (arranged)

ORAL AND MAXILLOFACIAL SURGERY

ORSR 524 Applied Cephalometrics for Oral Surgeons
Lecture and laboratory presentations emphasizing the use of cephalometric analyses for the purpose of diagnosis and treatment planning of patients with dentoskeletal deformities. Prediction tracing techniques presented to allow assessment both of skeletal and soft-tissue changes expected as a result of orthodontic and surgical treatments.

ORSR 531 Oral and Maxillofacial Surgery I (first year of residence) (arranged)
The principles of exodontics and the evaluation of oral disease. Minor oral surgery procedures studied, outlined, and performed under local anesthesia and intravenous sedation. Introduction to ambulatory general anesthesia. Treatment of emergencies in oral surgery practice. Introduction to hospital procedures; assisting on staff hospital cases; and attendance at specified seminars, conferences, and special lectures in the Medical Center.

ORSR 532 Oral and Maxillofacial Surgery II (second year of residence) (arranged)
Participation as assistant in major oral surgery procedure. Practice of hospital procedures, treatment of the hospitalized patient, diagnosis and treatment of fractures of the facial bones, continuation of the training in ambulatory general anesthesia for oral surgery. Rotation to other medical and surgical services in Loma Linda University Medical Center. Attendance at specified seminars, conferences, and special lectures in the Medical Center.

ORSR 533 Oral and Maxillofacial Surgery III (third year of residence) (arranged)
Treatment of complicated fractures of the facial bones, reconstructive maxillofacial surgery, surgical orthognathic correction, and treatment of developmental or acquired deformities of the jaws. Preprosthetic surgery, osseous grafting of postresection and posttraumatic maxillofacial defects. Study of the application of general anesthesia to ambulatory

outpatient oral surgery patients. Training in assuming full responsibility for all aspects of oral surgery practice.

ORSR 534 Oral and Maxillofacial Surgery IV (fourth year of residence) (arranged)
Opportunity afforded for research and advanced clinical training in subspecialty areas of oral and maxillofacial surgery, as well as training through off-service rotations with plastic and reconstructive surgery.

ORSR 604 Literature Review in Oral and Maxillofacial Surgery (12)
Critical review of present and past literature dealing with pertinent oral and maxillofacial surgical problems.

ORSR 641 Applied Orthognathic Surgery (6)
A seminar course emphasizing preoperative diagnosis, planning, intraoperative procedures, and postoperative care of orthognathic patients. Descriptions of congenital and developmental deformities and emphasis on all aspects of patient management.

ORSR 654 Practice Teaching in Oral and Maxillofacial Surgery (2)
Experience in teaching the undergraduate dentistry student.

ORSR 697 Research (arranged)

ORSR 698 Thesis (arranged)

ORTHODONTICS

ORDN 524 Introduction to Graduate Orthodontics (12)
Outline of the principles of appliance design, the application of forces to produce tooth movement, and the tissue response to such forces. Lecture-laboratory. Overview of orthodontics to prepare the student for clinical practice of orthodontics. Diagnosis and treatment planning, including cephalometrics. Growth forecasting and preparation of visual treatment objectives.

ORDN 524L Introduction to Graduate Orthodontics, Laboratory (6)
Selected laboratory projects to enhance the didactic portion of the course.

ORDN 525 Materials Science and Mechanics (2)
Structure and properties of materials used in orthodontics. Analysis of the effects of mechanical and heat treatments. Survey of strength and mechanics in force delivery.

ORDN 527 Clinical Photography (1)
Clinical proficiency in intraoral and extraoral photography. Discussion and use of photographic equipment and techniques on orthodontic patients. Camera, lens, and flash required.

ORDN 535 Advanced Cephalometrics (2)
Construction of progress cephalometric tracings and use of superimposition to evaluate and revise treatment plan; students' presentations, and evaluations of the progress of their clinical patients.

ORDN 536 Concepts of Physical Anthropology (2)
Basic and classic concepts of physical anthropology as they relate to orthodontics.

ORDN 545 Growth and Development (2)
Principles of growth and development from the subcellular to the tissue level. Emphasis on myogenesis and osteogenesis. Prenatal and postnatal development of the face and jaws, including the classic concepts of facial growth. Consideration of general growth, with the goal of developing ability to recognize abnormal signs, observe variations, diagnose pathological conditions, know the normal, predict height, and use various standards to assess growth and development.

ORDN 546 Fundamentals of Occlusion (2)
Development of the human face and dentition. A concept of dynamic functioning occlusion.

ORDN 554 Physiology and Pathology of Speech (2)
Seminar course in which the literature pertaining to tongue thrust, swallowing, and related problems is considered. Problems and treatment discussed by speech therapists.

ORDN 571 Diagnosis and Treatment Planning I (2)
Diagnosis and treatment of assigned patients; minimum of four patients with major dentofacial handicaps.

ORDN 574 Diagnosis and Treatment Planning II (2)
Fundamental aspects of diagnosis and treatment planning of conventional and bizarre malocclusions.

ORDN 584 Current Orthodontics Literature I (2)
Presentation of current papers in various disciplines of orthodontics.

ORDN 591 Current Orthodontics Literature II (2)
Presentation of current papers in various disciplines of orthodontics.

ORDN 597 Orthognathic Surgery Theory and Literature Review (2)
Presentation of current papers in various disciplines of orthodontics, with primary emphasis on surgical orthodontics.

ORDN 604 Seminar in Orthodontics (3)
Critical review of suggested etiological factors of malocclusion. Problems of diagnosis and the rationale of various treatment philosophies. Liberal use of current literature. Discussions by guest lecturers with demonstrated competence in the field.

ORDN 605 Advanced Seminar in Orthodontics (4)
Second-year seminar: design of clinical diagnosis, practice management.

ORDN 606 Craniofacial Genetics (2)
Basic genetics; introduction to craniofacial clinic.

ORDN 607 Advanced Physiology and Pathology of Speech (1)
Concentration and in-depth study of specific areas of oral myofunctional disorders which influence the occlusion.

ORDN 609 Temporomandibular Joint Diagnosis and Treatment (1)
Temporomandibular joint diagnosis and treatment planning, and fabrication of treatment appliances.

ORDN 625 Clinical Practice in Orthodontics (1400 clock hours)
Diagnosis and treatment of twenty-five assigned patients; minimum of four patients with major dental-facial handicaps.

ORDN 634 Orthodontics Clinical Conference (2)
Preparation and presentation of the diagnosis, case analysis, and treatment plans for patients under care.

ORDN 635 Finishing Mechanics I (2)
Orthodontics treatment modalities, with emphasis on finishing mechanics for the patient.

ORDN 636 Finishing Mechanics II (1)
Seminar course created for first-year graduate orthodontics students to expose them to alternate treatment philosophies and modalities. Guest orthodontists present the main portion of the course and demonstrate their treatment concepts in finishing orthodontics cases.

ORDN 654 Practice Teaching in Orthodontics (4)
Experience in teaching the undergraduate dentistry student.

ORDN 657 Orthodontics Board Preparation (5)
Presentation of finished orthodontics cases to faculty and residents. Preparation for the American Board of Orthodontics.

ORDN 697 Research (arranged)

ORDN 698 Thesis (arranged)

PEDIATRIC DENTISTRY

PEDN 503 Pediatric Dental Seminar I (4)
Selected clinical topics in pediatric dentistry.

PEDN 504 Pediatric Dental Seminar II (2)
Selected clinical topics in pediatric dentistry.

PEDN 505 Pediatric Dental Seminar III (4)
Selected clinical topics in pediatric dentistry.

PEDN 506 Pediatric Dental Seminar IV (4)
Selected clinical topics in pediatric dentistry.

PEDN 508 Pediatric Hospital Dentistry Seminar (4)
Hospital protocol and the care of patients in a hospital environment.

PEDN 521 Principles of Medicine, Physical Diagnosis (2)

PEDN 524 Introduction to Orthodontics (2)
Diagnosis and treatment planning for clinical orthodontics.

PEDN 524L Introduction to Orthodontics (Laboratory) (2)
Fabrication of various orthodontic appliances.

PEDN 546 General Anesthesia Clinic (5)
Experience in general anesthesia in a hospital setting.

PEDN 601 Pediatric Dental Practice Management (2)
Principles of establishing a pediatric dental practice. Information regarding establishment and operation of a pediatric dental practice.

PEDN 604 Pediatric Dental Literature (12)
Pediatric dental literature study, including literature found on the reading list of the American Board of Pediatric Dentistry.

PEDN 625 Pediatric Dental Clinic (40)
Clinical pediatric dental experience in both the outpatient and inpatient settings for patients with a variety of clinical needs and problems.

PEDN 654 Pediatric Dental Teaching (5)
Experience in the teaching of pediatric dentistry in a clinical and laboratory setting.

PEDN 680 Elective Study for Advanced Education Students of Pediatric Dentistry (12)
Elective study in area selected by students in the advanced education program in pediatric dentistry and by department faculty.

PEDN 697 Research in Pediatric Dentistry (9)
Two areas of research required: first a review paper based upon library research; and second, an original laboratory or clinical research project which is acceptable as a thesis and/or for publication in a refereed journal.

PEDN 697 Research (arranged)

PEDN 698 Thesis (arranged)

PERIODONTICS

PERI 524 The Periodontium (2)
Review of the literature concerning the anatomy (macro-, micro-, and ultrastructural) and the physiology of the periodontal tissues.

PERI 531 Periodontal Pathology (8)
Study of the specific scientific literature which forms the basis for current concepts on histopathology of periodontal diseases and periodontal wound healing.

PERI 601 Periodontal Therapy (12)
Study of the literature which forms the basis for current concepts of the treatment of periodontal diseases.

PERI 604 Current Periodontal Literature (24)
Review of papers in the most recent issues of periodontal scientific journals.

PERI 611 Introduction to Periodontics (2)
Overview of the clinical science of periodontics, including epidemiology, etiology, therapy, clinical methods, and record keeping.

PERI 625 Clinical Practice in Periodontics (2640 clock hours)
Clinical experience in the diagnosis and treatment of periodontal diseases.

PERI 634 Clinical Conference (9)
Case-management conferences with interdisciplinary faculty input to assist the student in diagnosis, treatment planning, and the management of patients.

PERI 654 Practice Teaching in Periodontics (4)
Experience in teaching the undergraduate dentistry student.

PERI 697 Research (arranged)

PERI 698 Thesis (arranged)

DRUG AND ALCOHOL COUNSELING

GUNTER REISS, Dr.P.H., M.S., CHES Loma Linda University 1975
Program Coordinator; Associate Faculty, Graduate School; Assistant Professor of Health Promotion and Education, School of Public Health
Family therapy and chemical abuse

RONALD G. HUSTON, Ph.D. United States International University 1981
Chair; Department of Counseling and Family Sciences; Associate Professor of Marriage and Family Therapy; AAMFT-approved supervisor
Family sciences, chemical abuse, child and adolescent therapy

The Drug and Alcohol Counseling Certificate Program is designed to give students specialized training in the area of drug and alcohol counseling theory and techniques. The Drug and Alcohol Counseling Certificate Program is accredited by the California Alcohol and Drug Counselors Education Program (CADCEP). This Drug and Alcohol Counseling Certificate Program is a family systems, interdisciplinary program offered jointly by the Graduate School Marriage and Family Therapy Program (MFAM) and the School of Public Health Department of Health Promotion and Education (HPRO). The Drug and Alcohol Counseling Certificate Program is designed for students who want to work in medical and mental health agencies and clinics doing drug and alcohol counseling. The required education for the drug and alcohol counseling certificate is a minimum of 36 quarter units and 330 clock hours of clinical training.

FACULTY

IAN P. CHAND, Ph.D. Pennsylvania State University 1980
Director of Clinical Training; Professor of Marriage and Family Therapy
Marriage and family therapy, biofeedback, family sciences, sociology

BARBARA FRY, Dr.P.H., M.S., CHES Loma Linda University 1989
Associate Professor and Coordinator of Maternal, Child, Family Health Program in the School of Public Health and the School of Medicine

KEN AUSTIN, Ph.D. California Western University 1975
Associate Faculty Counseling and Family Sciences, Licensed Marriage and Family Therapist

CERTIFICATE

Admission

Applicants must meet the Graduate School admission requirements outlined in this BULLETIN and give evidence of academic ability, emotional stability, and maturity. The drug and alcohol counseling certificate is designed to be a track in the M.S. degree program in marriage and family therapy or the M.P.H. degree program in health promotion. Two faculty interviews are also required. Students with a B.A. degree from an accredited university who also have a 3.0 G.P.A. and GRE scores in the range of 1200-1500 or above with good recommendations can be accepted for the certificate program.

A. Certificate track (in M.S. degree program with MFAM emphasis)

Course requirements

HPRO	542	Health and Dependency Counsel ing (3)
HPRO	554	Alcohol and Drug Dependency (3)
HPRO	563	Stress and Coping Mechanisms (3)
HPRO	564	Mental Health and Society (3)
MFAM	515	Crisis-Intervention Counseling (3)
MFAM	534	Clinical Training (300 hours)
MFAM	536	Case Presentation Seminar
MFAM	537	Case Presentation Seminar (2)
MFAM	568	Group Process Theories and Procedures (3)
MFAM	614	Law and Ethics (3)
MFAM	638	Family Therapy and Chemical Abuse (2-3)
FMST	514	Crosscultural Counseling Family Values (3)
FMST	614	Family Communication (3)
ELECTIVE		One course (2-3 units)*

B. Certificate track (in M.P.H. degree with HPRO emphasis)

Course requirements

HPRO	542	Health and Dependency Counseling (3)
HPRO	554	Alcohol and Drug Dependency (3)
HPRO	563	Stress and Coping Mechanisms (3)
HPRO	564	Mental Health and Society (3)
HPRO	607	Alcohol and Drug Seminar (50 hours) (5)
HPRO	696	Directed Study/Special Project in Chemical Dependency (1)
HPRO	798	Field Practicum (400 hours) (2)
INTH	505	Dynamics of Sociocultural Change (3)
MFAM	515	Crisis-Intervention Counseling (3)
MFAM	568	Group Process Theories and Procedures (3)
MFAM	614	Law and Ethics (3)
MFAM	638	Family Therapy and Chemical Abuse (2-3)
ELECTIVE		One course (2-3 units)*

C. Certificate (in nonmaster's degree program)

Core courses (28 units minimum)

HPRO	542	Health and Dependency Counseling (3)
HPRO	554	Alcohol and Drug Dependency (3)
HPRO	563	Stress and Coping Mechanisms (3)
HPRO	564	Mental Health and Society (3)
HPRO	696	Directed Study/Special Project in Chemical Dependency (1)
MFAM	515	Crisis-Intervention Counseling (3)
MFAM	568	Group Process Theories and Procedures (3)
MFAM	614	Law and Ethics (3)
MFAM	568	Group Process Theories and Procedures (3)
MFAM	638	Family Therapy and Chemical Abuse (2-3)

Crosscultural requirement (1 course from three listed below)

INTH	517	Methods of Crosscultural Communication (3)
INTH	505	Dynamics of Sociocultural Change (2)
FMST	514	Crosscultural Counseling Family Values (3)

Field studies courses (5 units practicum classes — 300 clinical hours)

MFAM	535	Case Presentation (3)
MFAM	536	Case Presentation (2)
MFAM	534	Clinical Traning (300 hours) OR
HPRO	798	Field Practicum (300 hours)
HPRO	607	Alcohol and Drug Seminar (50 hours)
ELECTIVE		One course (2-3 units)*

*ELECTIVES

Electives for A, B, or C are to be chosen in consultation with the program coordinator from among the following:

MFAM	658	Reality Family Therapy (2)
HPRO	526	Lifestyle Diseases and Risk Reduction (3)
STAT	515	Grant and Contract Proposal Writing (2)

TOTAL UNITS 37-38

COURSES

HPRO course descriptions appear in the BULLETIN of the School of Public Health.

FAMILY COUNSELING

ANTONIUS D. BRANDON, Ph.D. United States International University 1980
Coordinator; Professor of Marriage and Family Therapy; AAMFT-approved supervisor
Family studies, marriage and family therapy, sex therapy

POSTBACCALAUREATE CERTIFICATE

Admission

Applicants to the certificate program must meet the Graduate School admission requirements outlined in the BULLETIN and give evidence of completion of B.A. or B.S. degree with a 3.0 G.P.A. or equivalent. Evidence of emotional stability and maturity is required along with qualifications appropriate for one of the helping professions as listed below.

Description

The Certificate in Family Counseling is designed for individuals who find a significant part of their work directed toward dealing with the relationship problems of individuals, families and children. It is designed for those professionals who would like to gain family counseling skills but do not desire to complete another degree or earn a clinical license.

The program will help participants acquire theoretical and systemic knowledge about relationships, families, and children; as well as develop practical skills applicable both to their professional and personal lives. It is designed for people who have a wide range of experiences, backgrounds, and goals. Physicians, ministers, nurses, teachers, chaplains, EAP counselors, social workers, school counselors, child-care workers, drug counselors, lawyers, and others in the helping professions can enhance their effectiveness through this program. Paid paraprofessionals, such as group-home workers and volunteers for counseling organizations, can also benefit from a knowledge of family counseling techniques. People involved in the business world, such as supervisors, managers, and personnel department employees, can also benefit from the improvement of interpersonal and family skills offered through the program.

FACULTY – See Marriage and Family Therapy Program

Certificate requirements

To earn the certificate, participants must successfully complete 28-29 quarter units. This includes 26 core units and 2-3 units of electives. It is possible to complete the certificate in three academic quarters. No clinical experience is required, but students may use their electives to become exposed to clinical modalities.

Required courses (26)

MFAM	639	Interdisciplinary Professional Seminar (1)
MFAM	515	Crisis-Intervention Counseling (3)
MFAM	551	Family Therapy: Theory and Practice (3)
FMST	514	Crosscultural Counseling Family Values (3)
MFAM	553	Family Systems Theory (3)
MFAM	638	Family Therapy and Chemical Abuse (2)
MFAM	644	Family Therapy and Child Abuse (2-3)
MFAM	669	Human Sexual Behavior (3)
MFAM	614	Law and Ethics (3)
RELR	564	Religion, Marriage, and Family (3)

Electives (2-3)

MFAM	658	Reality Family Therapy (2)
MFAM	663	Brief Family Therapy (2)
MFAM	665	Structural Family Therapy (2)
FMST	614	Family Communication (3)

FAMILY STUDIES

RONALD G. HUSTON, Ph.D. United States International University 1981
Chair; Associate Professor of Marriage and Family Therapy; AAMFT-approved supervisor
Family studies, marriage and family therapy, child and adolescent therapy

LUCILLE CHILSON, M.S. Loma Linda University 1990
Program Coordinator; Assistant Professor of Counseling and Family Science;
Family studies, qualitative research, gender perspectives

The Family Studies Program leads to a Master of Arts degree or a certificate in family studies. The 50-unit Master of Arts degree provides the student with an understanding of the structure and functioning of the family as a social institution from a systems and theological perspective.

The program is designed to train individuals at the postbaccalaureate level to develop, implement, and evaluate family life programs for school, community, and church populations. In addition to providing church- and school-related job opportunities, this training prepares students for employment as community family-agency administrators, Headstart administrators, extension specialists, family service and life researchers, family specialists, human development specialists, administrative assistants for community relations, community services representatives, probation advisers, social service workers, mental health workers, vocational counselors, and volunteer services coordinators.

The certificate program in family studies is designed for those who wish to acquire the basic requirements for the family studies certification of the National Council on Family Relations but who do not desire the Master of Arts degree. Ministers, teachers, school counselors, social services workers, and others who wish to become family studies educators are attracted to the certificate program.

Both the Master of Arts degree program in family studies and the certificate program in family studies meet the requirements of the National Council on Family Relations for certification as a family studies educator.

FACULTY

ANTONIUS D. BRANDON, Ph.D. United States International University 1980
Professor of Marriage and Family Therapy; AAMFT-approved supervisor
Family studies, marriage and family therapy, brief therapy, sex therapy

IAN P. CHAND, Ph.D. Pennsylvania State University 1980
Professor of Marriage and Family Therapy
Family studies, marriage and family therapy, biofeedback, sociology

CHERYL J. SIMPSON, Ph.D. University of Oregon 1980
Professor of Counseling and Family Sciences; Credentialed School Counselor/Psychologist; Licensed Education Psychologist
Counseling psychology and educational psychology

DELBERT W. BAKER, Ph.D. Howard University 1992
Associate Professor of Counseling and Family Sciences

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Requirements section of the Graduate School BULLETIN.

POSTBACCALAUREATE CERTIFICATE

Certificate requirements

1. Completion of at least an undergraduate degree or its equivalent for admission.

2. A minimum of 29 units of graduate credit in family studies as outlined in this BULLETIN. Students may transfer toward the certificate up to 9 units of graduate credit earned at an approved institution.

Specialization requirements (24 units)

Completion of specialization (1-10) meets the requirements for the certificate in family studies issued by the Graduate School.

1 – FAMILIES IN SOCIETY
FMST 514 Crosscultural Counseling Family Values (3)

2 – FAMILY DYNAMICS
MFAM 553 Family Systems Theory (3)

3 – THE INDIVIDUAL AND FAMILY OVER THE LIFE SPAN
MFAM 558 Advanced Human Growth and Development (3)

4 – HUMAN SEXUALITY
MFAM 669 Human Sexual Behavior (3)

5 – INTERPERSONAL RELATIONSHIPS
FMST 614 Family Communication (3)

6 – FAMILY RESOURCE MANAGEMENT
SOCI 444 Family Resource Management (4)

7 – PARENTING OVER THE LIFE SPAN
FMST 528 Parenting (2)

8 – LAW AND PUBLIC POLICY
MFAM 614 Law and Ethics (3)

9 – RELIGION
RELR 564 Religion, Marriage, and the Family (3)

10 – FAMILY LIFE PROGRAMS AND IMPLEMENTATION
FMST 529 Family Studies (2)

MASTER OF ARTS

Deficiencies

An introductory statistics course is required for a master's degree but not for the certificate program. This course may either be part of the baccalaureate program or be considered a deficiency that must be taken after admission to the program.

Degree requirements

Essential to fulfilling the requirements for the Master of Arts degree are:

1. A minimum of 50 units of graduate credit in family studies, as outlined in the BULLETIN.

2. Satisfactory performance on a written comprehensive examination, or the completion of a thesis.

Both the certificate candidate and the M.A. degree candidate must meet the certificate requirements and the specialization requirements.

Additional requirements for M.A. degree

Candidates for the M.A. degree must also meet the following requirements:

Core requirements (6 units)
MFAM 515 Crisis Intervention Counseling (3)
MFAM 568 Group Process Theory and Procedures: Theories in MFAM Therapy (3)

Research requirements (9 units)
FMST 505 Social Research Methods I (3)
FMST 506 Social Research Methods II (3)
FMST 697 Project (3)
or
FMST 698 Thesis (3)

Practicum requirements (3 units)
FMST 695 Internship in Family Life Education (1-4)

Electives (3 units selected from the following)
MFAM 545 Gender Perspectives (2)
MFAM 644 Family Therapy and Child Abuse (2)
FMST 635 Single Adult in Family and Society (3)
MFAM 638 Family Therapy and Chemical Abuse (2)
FMST 694 Directed Study: Family Studies (1-3)
RELE 455 Christian Understanding of Sexuality (2-3)
SOCI 414 Sociology of the Family (2)

GRADUATE COURSES

FMST 505 Social Research Methods I (3)
Analysis of current social research methods. Practice in the use of techniques. Scientific method.
Prerequisite: An introductory course in statistics.

FMST 506 Social Research Methods II (3)
Use of computer. Statistical analysis. Writing research report.
Prerequisite: FMST 505.

FMST 514 Crosscultural Counseling Family Values (3)
Structure and function, changing patterns, future in urban society. Relationship of changes in society to

widespread family problems. Familiarity with a wide range of social and ethnic backgrounds including but not limited to people of color, Asians, Native Americans, and Hispanics.

FMST 528 Parenting (2)
Principles and practices relating to parent-child relationships. Emphasis on family roles, communication, conflict resolution, values development, and parenting skill development.

FMST 529 Family Life Education (2)
Systematic comparative analysis of the historical development, theoretical perspectives, types of programs, and research in family life studies.

FMST 614 Family Communication (3)
Theoretical foundations of human communication; therapeutic techniques of major communication theorists in marital and family therapy.

FMST 635 Single Adult in Family and Society (3)
Perceptions, needs, challenges, and opportunities during the periods of adult singleness in the life cycle.

FMST 694 Directed Study: Family Studies (1-3)

FMST 695 Internship in Family Studies (1-4)

FMST 697 Project (3)

FMST 698 Thesis (3)

GEOLOGY

H. PAUL BUCHHEIM, Ph.D. University of Wyoming 1978
Program Coordinator; Professor of Geology
Sedimentology, paleolimnology, paleoecology

The Department of Natural Sciences offers a program leading to the Master of Science degree in geology. The program provides the student with a field-oriented emphasis. Faculty research in this program focuses on sedimentology, paleontology, paleoenvironmental reconstruction, paleoecology, paleobotany, and taphonomy. Areas of curriculum emphasis include sedimentary geology, paleontology, and environmental geology. Students will be given broad training in sedimentary geology as well as in paleontology. Research in paleontology may also be pursued through the M.S. and Ph.D. degree programs in biology.

LEONARD R. BRAND, Ph.D. Cornell University 1970
Professor of Biology and Paleontology
Vertebrate zoology and paleontology

RONALD L. CARTER, Ph.D. Loma Linda University GS 1977
Professor of Biology
Molecular ecology and systematics

ROBERT A. CUSHMAN, Jr., Ph.D. Colorado School of Mines 1994
Assistant Professor of Geology
Invertebrate paleontology, paleopalynology, stratigraphy

ASSOCIATE FACULTY

ARIEL A. ROTH, Ph.D. University of Michigan 1955
Professor of Biology
Paleoecology, earth history modeling

CLYDE L. WEBSTER, Ph.D. Colorado State University 1972
Professor of Chemistry
Geochemistry, mass spectroscopy, trace element modeling

BEN CLAUSEN, Ph.D. University of Colorado 1987
Assistant Professor of Geophysics
Nuclear physics, geophysics

ADJUNCT FACULTY

H. THOMAS GOODWIN, Ph.D. University of Kansas 1990
Adjunct Assistant Professor of Paleontology
Vertebrate paleontology and biogeography

MASTER OF SCIENCE

Admission

Applicants must meet the general Graduate School admission requirements. Acceptable undergraduate preparation includes a bachelor's degree and must include: physical geology, petrology, and structural geology. (Students with an undergraduate degree other than in geology may remove geology deficiencies while in residence in the graduate program.) Cognate prerequisites include mathematics and one-year courses in biology, chemistry, and physics.

Curriculum

A minimum of 48 quarter units, including 28 at or above the 500 level, constitutes the curriculum for the Master of Science degree in geology.

In addition to the general Graduate School requirements, the following courses are required:

Research Methods I, II (GEOL 616, 617)
Field Methods of Geologic Mapping (GEOL 425)
Advanced Sedimentology (GEOL 566)
Stratigraphy and Basin Analysis (GEOL 567)
Advanced Historical Geology (GEOL 547)
Philosophy of Science (GEOL 558)
Seminar in Geology (GEOL 605, 1 unit; GEOL 607, 2 units)
Field Seminar in Historical Geology (GEOL 548)
Geochemistry (GEOL 431)

Two of the following:
Invertebrate Paleontology (GEOL 534)
Paleobotany (GEOL 524) OR Paleopalynology (GEOL 526)
Vertebrate Paleontology (GEOL 544)

Research (at least 2 units, GEOL 697)
Thesis (1-2 units, GEOL 698)

The remainder of the student's program will be planned in consultation with the major professor and graduate advisory committee. In addition to course work, students are expected to attend all program seminars, fulfill research and thesis expectations, and successfully pass a final oral examination.

EMPHASES

The graduate Geology Program's primary research and curriculum strength is paleontology and sedimentary geology. Environmental geology is available as a curriculum emphasis. In addition to the basic requirements listed above, students wishing to concentrate in one of these three emphases should take the following courses as electives:

PALEONTOLOGY

BIOL	526	Principles and Methods of Systematics
BIOL	545	Genetics and Speciation
GEOL	534	Invertebrate Paleontology
GEOL	544	Vertebrate Paleontology
GEOL	524	Paleobotany
GEOL	525	Paleopalynology

Graduate paleontology and biology courses related to area of specialty also recommended

SEDIMENTARY GEOLOGY

GEOL	454	Sedimentary Petrology
GEOL	556	Paleoenvironments
GEOL	554	Paleolimnology

Additional readings and special-topic courses in sedimentology also recommended

ENVIRONMENTAL GEOLOGY

GEOL	574	Environmental Geology
GEOL	575	Hydrogeology
GEOL	437	Geophysics
GEOL	556	Paleoenvironments
ENVH	568	Water Quality Assurance
ENVH	567	Hazardous Materials and Solid-Waste Management (recommended)

COURSES

UPPER-DIVISION COURSES

GEOL 304 Physical Geology (4)
Introductory geology course providing the student with a broad picture of geological processes operating on and within the earth. Introduction to minerals, sedimentary and igneous rocks, and fossils. Weathering, earthquakes, volcanism, erosion and sedimentation, and plate tectonics presented. Three class hours, one three-hour laboratory or field trip per week.

GEOL 315 Mineralogy and Petrology (4)
Basic principles of mineralogy and petrology (rocks and their origin) presented. Intended to cover critical material presented in more complete courses in mineralogy and petrology. Three class hours, one three-hour laboratory or field trip per week.

GEOL 405 Historical Geology (4)
History of the earth, with an in-depth look at vertical paleontologic and lithologic changes of the geologic column. Emphasis on concepts of interpretation, particularly the causes of mass extinctions within the context of their accompanying sedimentologic variations. Three class hours, one three-hour laboratory or field trip per week.
Prerequisite: GEOL 304.

GEOL 424 Structural Geology (3)
Rock deformation (folds, faults, etc.) in a framework of plate tectonics. Includes problems and applications. Three class hours per week, with required full-day and half-day field trips. Three class hours, one three-hour laboratory or field trip per week.
Prerequisite: GEOL 304, 429.

GEOL 425 Field Methods of Geologic Mapping (4)
Advanced geologic mapping of complex areas, with interpretation of their history; includes mapping of igneous, metamorphic, and sedimentary rocks. Experience in preparation of geologic reports of each mapped locality.
Prerequisite: GEOL 424, 429.

GEOL 427 Sedimentology (4)
Sediments, sedimentary rocks, and the stratigraphic context of those rocks. Emphasis on sedimentary processes, primary sedimentary structures, and environments of deposition. Includes description, classification, origin, and interpretation of sediments and sedimentary rocks. Lithofacies analysis and other stratigraphic techniques studied. Three class hours, one three-hour laboratory or field trip per week. Includes several weekend field trips.
Prerequisite: GEOL 304, 315 recommended.

GEOL 429 Stratigraphy (4)
Principles of litho-, bio-, and chronostratigraphy; methods of correlation of sedimentary rocks. Three class hours, one laboratory or field trip per week.
Prerequisite: GEOL 427.

GEOL 431 Geochemistry (4)
Chemical concepts and their geochemical applications in areas of interest in elementary geology.
Prerequisite: College chemistry; GEOL 304 or consent of instructor.

GEOL 437 Geophysics (4)
Application of classical physics to the study of the earth. The earth's gravitational, geomagnetic, geothermal, and seismic characteristics studied, as well as the dynamics of the earth's crust, plate tectonics, and radioactive dating.
Prerequisite: Physical geology, physics, and college mathematics.

GEOL 454 Sedimentary Petrology (4)
Origin, diagenesis, and classification of sedimentary rocks. Includes use of the petrographic microscope in the study of sedimentary rock-forming minerals, cements, textures, and fabrics. Three class hours, one three-hour laboratory or field trip per week.
Prerequisite: GEOL 315, 427. Normal Grade mode

GEOL 496 Workshops in the Earth Sciences (1-4)
Concentrated participation-oriented study sessions for professional geologists, teachers, and students. Topics emphasize current subjects relevant to professional geology or teaching earth science.

GEOL 497 Undergraduate Research (1-4)
Original investigation and/or literature study pursued under the direction of a faculty member. May be repeated for additional credit.
Prerequisite: Consent of instructor.

GEOL 499 Directed Study (1-4)
Experimental, field, or library study of a problem of restricted scope, under the direction of a staff member. May be repeated for additional credit.
Prerequisite: Consent of a staff member to direct the project.

BIOL 400⁺-level courses
(as approved by guidance committee)

GRADUATE COURSES

GEOL 524 Paleobotany (4)
Fossil plants; their morphology, paleoecology, taphonomy, classification, and stratigraphic distribution. Analysis of floral trends in the fossil record. Three class hours, one three-hour laboratory or field trip per week.
Prerequisite: Consent of instructor.

GEOL 525 Paleopalynology (4)
The morphology, paleoecology, classification, and stratigraphic distribution of plant microfossils. Includes an introduction to biostratigraphic and paleoecologic analytical methods. Three class hours and one three-hour laboratory or field trip per week.
Prerequisite: GEOL 405 or consent of instructor.

GEOL 534 Invertebrate Paleontology (4)
Structure, classification, ecology, and distribution of selected fossil invertebrate groups. Principles and methods involved in the study and analysis of invertebrate fossils considered. Three class hours and one three-hour laboratory per week.
Prerequisite: Consent of instructor.

GEOL 544 Vertebrate Paleontology (4)
Fossil vertebrates, with an emphasis on the origins of major groups. Systematics, biology, and biogeography of ancient vertebrates. Three class hours, one three-hour laboratory per week.
Prerequisite: BIOL 106 or consent of the instructor.

GEOL 545 Taphonomy (3)
Processes that affect an organism from death until its final burial and fossilization, and the utilization of this information in reconstructing ancient assemblages of organisms. Three class hours per week.

GEOL 546 Ichnology (2)
Fossilized traces produced by animal activity, such as tracks, burrows, feeding traces, etc. Two class hours per week.

GEOL 547 Advanced Historical Geology (4)
History of the earth, with an in-depth look at vertical paleontologic and lithologic changes of the geologic column. Emphasis on concepts of interpretation, particularly the causes of mass extinctions within the context of their accompanying sedimentologic variations. A term paper or research project report is required.
Prerequisite: GEOL 304, 427, 429.

GEOL 548 Field Seminar in Historical Geology (4)
Field analysis of the stratigraphic and fossil record, with emphasis on interpretation and discussion of models of deposition. Includes one week of lecture and a two-week field trip to specific sites in the western United States. Summer only.
Prerequisite: GEOL 547, 566, 567; or consent of instructor.

GEOL 554 Paleolimnology (4)
Ancient lake deposits, including their sedimentologic, paleontologic, mineralogic, geochemical, and stratigraphic characteristics. The depositional processes occurring in modern lakes investigated as analogs. Laboratory and several extended field trips included.
Prerequisite: GEOL 427, 429; or consent of the instructor.

GEOL 556 Paleoenvironments (4)
Application of paleontologic, sedimentologic, and geochemical data and methods to the interpretation of past sedimentary environments, with emphasis on organism-sediment relationships. Processes, sediments, and organisms in modern depositional environments investigated as analogs.
Prerequisite: GEOL 427, 429; or consent of the instructor.

GEOL 558 Philosophy of Science (4)
Selected topics in the history and philosophy of science, and the application of these principles in analyzing contemporary scientific trends.
Prerequisite: GEOL 405 or consent of instructor.

GEOL 564 Field Geology Studies (1-6)
Special field study trips lasting one or more weeks. Student involvement required, including field presentations and field work assignments such as the measurement and analysis of sedimentary sections, facies profiling, paleontologic excavation, mapping, or other geological or paleontology field activity. One unit of credit per week. May be repeated for additional credit.

GEOL 566 Advanced Sedimentology (4)
Advanced methods and principles of sedimentology, with emphasis on the analysis and interpretation of sedimentary structures and the processes that produced them. Sedimentary facies, depositional environments, chemogenic and biogenic sedimentation, and postdepositional diagenetic processes discussed in detail. Research or project paper required. Three class hours, one three-hour

laboratory or field trip per week, and several extended field trips.

Prerequisite: GEOL 304, 315 recommended.

GEOL 567 Stratigraphy and Basin Analysis (4)
Advanced methods of stratigraphy and basin analysis, including facies analysis, depositional systems, sequence stratigraphy, paleogeography, and basin modeling. Research or project paper required. Three class hours, one laboratory or field trip per week, and two extended field trips.

Prerequisite: GEOL 304, 427, 429.

GEOL 574 Environmental Geology (3)
Geological and hydrogeological principles that apply to subsurface waste and contaminant characterization; review of remediation techniques and hazardous-waste disposal alternatives. Three class hours per week.

Prerequisite: Physical geology; GEOL 427, 429 recommended.

GEOL 575 Hydrogeology (4)
Theory and geology of groundwater occurrence and flow, the relation of groundwater to surface water, and the potential distribution of groundwater by graphical and analytical methods. Three class hours, one three-hour laboratory per week.

Prerequisite: GEOL 427, 429; or consent of instructor.

GEOL 588 Topics in Geology (1-4)
Review of current knowledge in specified areas of the earth sciences. Registration should indicate the specific topic to be studied. May be repeated for additional credit. Offered on demand.

Prerequisite: Consent of instructor.

GEOL 589 Readings in Paleontology (1-4)
Review of the literature in a specific area of paleontology. Students make presentations from the literature and submit current papers dealing with the assigned topic.

GEOL 594 Readings in Geology (1-4)
Review of the literature in a specific area of geology. Students make presentations from the literature and submit current papers dealing with the assigned topic.

GEOL 595 Lacustrine Readings (1)
Readings and analyses of current and classic scientific literature dealing with modern and ancient lake environments, including geochemistry, sedimentology, biology and paleontology, and related subjects. Activities include student presentations of papers, discussion, and research proposals and reports. One extended, multiday field trip required.

GEOL 605 Seminar Presentation in Geology (1)
Selected topics dealing with recent developments, particularly reports of current research. Student presents one seminar during the quarter.

GEOL 607 Seminar in Geology (1)
Selected topics dealing with recent developments. Student attends seminar; no presentation required.

GEOL 616 Research Methods I (1)
Concepts and methods used in research, including computer applications, scientific literature, research design, and proposal writing.

GEOL 617 Research Methods II (2)
Techniques and technology for the analysis and presentation of data.

GEOL 695 Special Projects in Geology (1-4)
A special project in the field, laboratory, museum, or library under the direction of a faculty member. Registration indicates the specific field of the project.

Prerequisite: Consent of instructor.

GEOL 697 Research (1-4)

GEOL 698 Thesis (1-2)

OTHER COURSES APPLICABLE TO GEOLOGY PROGRAM

Additional courses not listed here may be approved by the student's advisory committee.

ENVH	567	Hazardous Materials and Solid-Waste Management (3)
ENVH	568	Water Quality Assurance (3)
BIOL	459	Marine Invertebrates (5)*
BIOL	460	Marine Ecology (5)*
BIOL	462	Ichthyology (5)*
BIOL	504	Biology of Marine Invertebrates (4)
BIOL	509	Mammalogy (4)
BIOL	515	Biogeography (3)
BIOL	518	Readings in Ecology (2)
BIOL	526	Principles and Methods of Systematics
BIOL	545	Genetics and Speciation (4)
BIOL	547	Molecular Biosystematics (4)
BIOL	588	Marine Biology

Course descriptions for BIOL courses can be found in the Program in Biology section of this BULLETIN. Summer Rosario Beach courses indicated by an asterisk. See School of Public Health BULLETIN for description of ENVH courses.

MARRIAGE AND FAMILY THERAPY

RONALD G. HUSTON, Ph.D. United States International University 1981
Chair, Program Coordinator; Associate Professor of Marriage and Family Therapy; AAMFT-approved supervisor
Family studies, child and adolescent therapy

DIANNA LYNNE CONNORS, M.A. Western Michigan University 1978
Program Coordinator; Canadian Union College campus; Clinical Instructor in Marriage and
Family therapy

The Marriage and Family Therapy program leads to the Master of Science degree and is designed to give the student a broad academic background for understanding individuals, couples, or families. The program has a Christian emphasis.

Marriage, family, and child counseling is established in California by law as a profession requiring state licensure. Persons who desire to enter the profession must have the proper academic and clinical preparation and must pass the written and oral licensing examinations. The master's degree program at Loma Linda University meets California licensing standards according to Business and Professions Code 4980.38 and has the following objectives:

1. Develop skilled professionals in marriage and family therapy.
2. Expose students to available content material in the field.
3. Provide supervised clinical training toward the development of clinical skills and competence.
4. Provide specialized training in one of the family therapy modalities that will qualify graduates for licensure as marriage and family therapists.
5. Prepare students to be familiar with sociocultural issues.
6. Prepare marriage and family therapy students for professional practice, with specialized training in the delivery of services in private-practice and institutional settings.

The American Association for Marriage and Family Therapy (AAMFT), with headquarters in Washington, D.C., functions on a national basis to ensure that academic and clinical training programs adhere to the standards of the profession. The program offered by Loma Linda University is a fully accredited program.

FACULTY

ANTONIUS D. BRANDON, Ph.D. United States International University 1980
Professor of Marriage and Family Therapy; AAMFT-approved supervisor
Marriage and family therapy, family studies, brief therapy, sex therapy

IAN P. CHAND, Ph.D. Pennsylvania State University 1980
Director of Clinical Training; Professor of Marriage and Family Therapy; AAMFT-approved supervisor
Marriage and family therapy, biofeedback, family studies, sociology

LUCILLE CHILSON, M.S. Loma Linda University 1990
Assistant Professor of Counseling and Family Sciences; AAMFT-approved supervisor-in-training
Family studies, marriage and family therapy, structural therapy, qualitative research, gender perspectives

ASSOCIATE FACULTY

KENNETH M. AUSTIN, Ph.D. California Western University 1975
Adjunct Professor of Marriage and Family Therapy
Clinical psychology, law, and ethics

MARSHALL JUNG, D.S.W. University of Pennsylvania 1974
Adjunct Professor of Marriage and Family Therapy
Licensed Clinical Social Worker

M. JERRY DAVIS, Rel.D. School of Theology at Claremont 1967
Associate Professor of Religion and Pastoral Counseling; AAMFT-approved supervisor
Religion and pastoral counseling

CLINICAL FACULTY

DORIS HUBBARD, M.S. Loma Linda University 1992
Director of Clinical Training, Canadian Union College campus; Clinical Instructor in Marriage and Family Therapy; AAMFT-approved supervisor

MAC BARRETT, Ph.D. Columbia Pacific University 1986
Licensed Clinical Social Worker, Licensed Marriage and Family Therapist
Spouse and sexual abuse

DANIEL FERGUSON, M.S. Loma Linda University 1981
Licensed Marriage and Family Therapist
Child and adolescent therapy

LINDA GILBERT, Ph.D. United States International University 1984
Clinical Psychologist
Cognitive behavioral family therapy

CRAIG LAMBDEN, M.S. University of Redlands 1980
Licensed Marriage and Family Therapist; AAMFT-approved supervisor-in-training

ANTOINETTE WONG, M.S. Loma Linda University 1985
Licensed Marriage and Family Therapist; AAMFT-approved supervisor

MASTER OF SCIENCE

Admission

Applicants to both the Loma Linda University and the Canadian Union College programs must meet the Graduate School admission requirements outlined in this BULLETIN; and give evidence of academic ability, emotional stability, and maturity.

In addition to completing the required application forms, providing character and academic references, and submitting Graduate Record Examination (GRE) scores, the prospective student should also arrange for a personal interview with two of the program faculty.

Although no particular undergraduate major is specified as preparation for the marriage and family therapy program, undergraduate courses in each of the following are required and considered deficiencies until completed: abnormal psychology, personality theories, and introductory statistics. A course in interviewing and counseling is preferred for nonbehavioral science majors. In addition, the student is required to take an MMPI II (Multi-Minnesota Personality Inventory II) and have the results sent to the program.

This program offers options for full-time and part-time studies.

Degree requirements

Requirements for the Master of Science degree for both the Loma Linda University and the Canadian Union College campuses include the following:

1. Residence of at least two academic years.
2. A minimum of 78 quarter units of graduate work, which includes credit received for core courses, electives, and a three-unit religion course.
3. Practicum in marriage and family counseling. A minimum of 500 direct client-contact hours and 100 direct-supervision hours is required. Of the direct client-contact hours, at least 250 hours must be with couples and families. Of the direct-supervision hours, at least 50 hours must be with raw data (video, audio, and live supervision). For every week in which clients are seen, the student must have at least one hour of individual supervision. The ratio of supervision hours to treatment hours must not be less than one hour of supervision to five hours of clinical contact. Clinical training as defined by the Commission on Accreditation for Marriage and Family Therapy includes a minimum of twelve continuous months in a clinical internship.
4. Successful completion of a written comprehensive examination (taken before advancement to candidacy) and an oral examination (taken at the end of the program).

Clinical services

The program operates a community marriage and family therapy clinic to provide counseling services to individuals, couples, and families; and to give opportunity for clinical practice for MFAM student trainees and interns. Part of the student's field experience and internship may be taken at other clinics in the Riverside, San Bernardino, and Orange County areas. Paid internships may be available.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

Financial aid

The Marriage and Family Therapy Program students are eligible for federal, state, and private loans and grants. The Counseling and Family Sciences Department offers financial aid on a limited basis. Research assistant and other paid opportunities in the department are also available on a limited basis.

CURRICULUM COURSE REQUIREMENTS

The following are the major areas of study and the required and elective courses for each, totaling 78 quarter units.

THEORETICAL FOUNDATIONS OF MARITAL AND FAMILY THERAPY (9)

MFAM 551 Family Therapy: Theory and Practice (3)
MFAM 552 Marital Therapy: Theory and Practice (3)
MFAM 553 Family Systems Theory (3)

ASSESSMENT AND TREATMENT IN MARITAL AND FAMILY THERAPY (18)

FMST 614 Family Communication (3)
MFAM 515 Crisis-Intervention Counseling (3)
MFAM 568 Group Process Theory and Procedures: Theories in MFAM Therapy (3)
MFAM 624 Personality, Marital, and Family Assessment (3)
MFAM 638 Family Therapy and Chemical Abuse (2-3)
MFAM 644 Family Therapy and Child Abuse (2)
MFAM 665 Structural Family Therapy (2)

HUMAN DEVELOPMENT AND FAMILY STUDIES (16)

FMST 514 Crosscultural Counseling Family Values (3)
MFAM 545 Gender Perspectives (2)
MFAM 556 Psychopathology and Diagnostic Procedures I (3)
MFAM 558 Advanced Human Growth and Development (3)
MFAM 584 Treatment of Child and Adolescent Problems (2)
MFAM 669 Human Sexual Behavior (3)

ETHICS AND PROFESSIONAL STUDIES (7)

MFAM 535 Case Presentation and Professional Studies (4)
MFAM 614 Law and Ethics (3)

RESEARCH (7)

MFAM 501 Research Tools and Methodology I (3)
MFAM 502 Research Tools and Methodology II (3)
MFAM 697 Project (1)

SUPERVISED CLINICAL PRACTICE (12)

MFAM 536, 537 Case Presentation Seminar (2, 2)
MFAM 635, 636, 637 Case Presentation Seminar (3, 3, 2)
MFAM 534 Clinical Training (300 hours total)
MFAM 634 Advanced Clinical Training (300 hours total)

RELIGION (3)

RELR 564 Religion, Marriage, and the Family (3)

ELECTIVES (6)

FMST 528 Parenting (2)
FMST 529 Family Life Education (2)
MFAM 516 Play Therapy (2)
MFAM 557 Object-Relations Family Therapy (2)
MFAM 566 Psychopathology and Diagnostic Procedures II (2)
MFAM 605 Gestalt Family Therapy (2)
MFAM 657 Setting up a Private Practice in Family Therapy (2)
MFAM 658 Reality Family Therapy (2)
MFAM 663 Brief Family Therapy (2)
MFAM 664 Experiential Family Therapy (2)
MFAM 670 Seminar in Sex Therapy (2)
MFAM 675 Clinical Problems in Marriage and Family Therapy (1-2)
MFAM 694 Directed Study: Marriage and Family (1-4)
MFAM 695 Research Problems: Marriage and Family (1-4)

POST-MASTER'S

MFAM 651 AAMFT-Approved Supervisor Training (2)
MFAM 744 Clinical Internship (1)

COURSES

GRADUATE COURSES

MFAM 501 Research Tools and Methodology I (3)
Current social research methods, practice in the use of techniques, consideration of the philosophy of the scientific method, and familiarization with MFAM test instruments.
Prerequisite: An introductory course in statistics.

MFAM 502 Research Tools and Methodology II (3)
Qualitative methodology. Designed to prepare students to undertake research projects using the intensive interview method of qualitative research. Practical and epistemological issues and problems in qualitative research explored in a workshop format.
Prerequisite: MFAM 501 or consent of the instructor.

MFAM 515 Crisis-Intervention Counseling (3)
Experiential course where theory, techniques, and practices of crisis intervention are presented, with special attention to the development of the basic communication skills of counseling. Areas included which are intended to contribute to the development of a professional attitude and identity are: confidentiality, interprofessional cooperation, professional socialization, and organization. Therapeutic tapes also presented covering topics such as death and dying, incest, spousal abuse, and rape. Laboratory required.

MFAM 516 Play Therapy (2)
Experiential course designed for practitioners and graduate students to learn how to apply play therapy techniques in dealing with childhood problems such as molestation, physical abuse, depression, trauma, and family conflict.

MFAM 534 Clinical Training (300 total clock hours)
Supervised clinical counseling of individuals, couples, families, and children. At least one hour of individual supervision per week and two hours of case presentation seminar per week. Continuous registration for this portion of the clinical training until completion of at least 300 clock hours.

MFAM 535 Case Presentation and Professional Studies (4)
Formal presentation of ongoing individual, marital, and family cases by clinical trainees; taping, video playbacks, and verbatim reports with faculty and clinical peers; exploring of the interface between MFCCs and other professionals; examining of licensure procedures; applying to professional organizations (AAMFT, etc.); developing professional attitude and identity. Limited to students in clinical training.

MFAM 536, 537 Case Presentation Seminar (2, 2)
Formal presentation of ongoing individual, marital, and family cases by clinical trainees; taping, video playbacks, and verbatim reports with faculty and clinical peers; examination and training in applied psychotherapeutic techniques, assessment, diagnosis, prognosis, and treatment of premarital, couple, family, and child relationships; dysfunctional and functional aspects examined, including health promotion and illness prevention. Limited to students in clinical training.

MFAM 545 Gender Perspectives (2)
Explores the identities, roles, and relationships of women and men in light of social, cultural, and historical perspectives. Implications for the family therapist explored.

MFAM 551 Family Therapy: Theory and Practice (3)
Overview of the major theories in marriage and family therapy. Systems theory concepts explored in light of the major models of family therapy.
Prerequisite: A course in personality theories.

MFAM 552 Marital Therapy: Theory and Practice (3)
Designed to provide an overview of the marital therapy literature, with a focus on clinical theory and techniques.

MFAM 553 Family Systems Theory (3)
Review of Bowen theory, theory of family systems; introduction to family psychotherapy as an outgrowth of the theory. Students examine their own families of origin.

MFAM 556 Psychopathology and Diagnostic Procedures I (3)
Explores the history and development of psychopathology and how it relates to current clinical practice in general and marriage and family therapy in particular. Utilizes the multiaxial classifications of the DSM-IV as a practical basis for diagnostics.
Prerequisite: A course in abnormal psychology.

MFAM 557 Object-Relations Family Therapy (2)
Designed in a seminar form to acquaint students in marriage and family therapy with the basics of object relations theory. Special emphasis given to the unique properties of object relations systems theory in bridging intrapsychic and environmental forces.

MFAM 558 Advanced Human Growth and Development (3)
Human biological, psychological, and social development from conception to death including, but not limited to, childbirth, child rearing, childhood, adolescence, adulthood, marriage, divorce, blended families, step-parenting and geriopsychology. Overview of concepts, theories, and research relevant to human development. Emphasis on development over the life span in the context of family interaction and its impact on family therapy.

MFAM 559 Cognitive Behavioral Couples Therapy
Experiential course in which major cognitive behavioral family therapy therapists are surveyed, and techniques of treatment are integrated into practice in laboratory.

MFAM 566 Psychopathology and Diagnostic Procedures (2)
Focuses on the etiology of marital dysfunction specifically from a dual function of individual and systems psychopathology.
Prerequisite: MFAM 556.

MFAM 568 Group Process Theory and Procedures: Theories in MFAM Therapy (3)
Major theoretical approaches surveyed include individual theories, marital groups, network, and family therapy groups. Group laboratory experience provided wherein students apply theory to practice and develop group leadership skills.

MFAM 584 Treatment of Child and Adolescent Problems (2)
Psychodynamics involved in child and adolescent problems with respect to the family relationship. Demonstration of a variety of counseling approaches to the treatment of children and adolescents.

MFAM 605 Gestalt Family Therapy (2)
Principles of Gestalt psychology and therapy; the relationship between the individual and the physical, emotional, societal, and spiritual environment. Group experience which permits the spiritual and affective aspects of Gestalt therapy to be expressed and integrated with systems theory.

MFAM 614 Law and Ethics (3)
Laws pertaining to the family: child welfare, separation, divorce, and financial aspects of family maintenance. Case management, referral procedures, professional and client interaction, ethical practices (AAMFT), ethical relations with other professions, legal responsibilities, liabilities, and confidentiality. Current legal patterns and trends in the mental health profession. Exploration between the practitioner's sense of self and human values and his/her professional behavior and ethics.

MFAM 624 Personality, Marital, and Family Assessment (3)
Application of psychological testing methods in the diagnostic assessment of individual, family, and group behavioral dynamics as encountered in marriage and family counseling. Observations and/or laboratory experience.

MFAM 634 Advanced Clinical Training (300 total clock hours)
Supervised clinical counseling of individuals, couples, families, and children. At least one hour of individual supervision per week and two hours of case presentation seminar per week. Continuous registration for this portion of the clinical training until completion of a total of at least 300 clock hours.

MFAM 635, 636, 637 Case Presentation Seminar (3, 3, 2)
Formal presentation of ongoing individual, marital, and family cases by clinical trainees. Taping, video playbacks, and verbatim reports with faculty and clinical peers. Limited to students enrolled in clinical training.

MFAM 638 Family Therapy and Chemical Abuse (2)
Current theories and treatment of chemical dependencies, emphasis on family therapy, assessment techniques, understanding of how chemicals affect the mental and biological systems.

MFAM 639 Interdisciplinary Professional Seminar (2)
Designed from different mental health disciplines to orient the student to the arena of professional issues regarding family counseling.

MFAM 644 Family Therapy and Child Abuse (2)
Definition and incidence of physical and emotional abuse, neglect, sexual molestation, family dynamics; offender and non-offender characteristics; treatment of children, adolescents, the family, and adults abused as children; treatment modalities, including individual, group, and family therapy; ethical and legal issues; referral sources; assessment; interview techniques; and confidentiality. Minimum of 20 contact hours.

MFAM 651 AAMFT-Approved Supervisor Training (2)
Postgraduate: A course designed to offer the didactic component requirement for AAMFT-approved supervisor designation.

MFAM 657 Setting up a Private Practice in Family Therapy (2)
The legal, ethical, and economic aspects of developing and maintaining a private practice. Development of professional attitude and identity of professional organizations such as AAMFT.

MFAM 658 Reality Family Therapy (2)
A clinically oriented seminar in which students learn the theory of reality therapy and how to integrate it into the practice of marriage and family therapy. Emphasis on the practice and therapeutic skills associated with the use of reality therapy with clients.

MFAM 663 Brief Family Therapy (2)
Examines the area of brief therapy in general and forms of brief family therapy in particular. In-depth study made of brief family therapy.

MFAM 664 Experiential Family Therapy (2)
Examination of various experiential family theories. Laboratory experience included.

MFAM 665 Structural Family Therapy (2)
Designed to enhance observational, conceptual, planning, and intervention skills; increase ability to understand verbal and nonverbal communication; and broaden understanding of structural family therapy.

MFAM 669 Human Sexual Behavior (3)
Sexuality in contemporary society from the socio-psychological viewpoint. Anatomy and physiology of human sexuality: reproduction, normal and abnormal sexual response, psychosexual development, human fertility, human sexual dysfunction; integration of systems theory. A minimum of 30 contact hours.

MFAM 670 Seminar in Sex Therapy (2)
Discussion of the major male and female sexual dysfunctions; therapeutic processes of treatment.
Prerequisite: MFAM 669.

MFAM 675 Clinical Problems in Marriage and Family Therapy (2)
Intensive, clinically focused course using videotape, live interview, and role playing. Marriage and family counseling methods observed and applied to problems representative of clinical practice.

MFAM 694 Directed Study: Marriage and Family (1-4)
Individual study in areas of special interest concerning the family and its problems. May be repeated for credit at the discretion of the faculty.

MFAM 695 Research Problems: Marriage and Family (1-4)
Directed research in the student's special field of interest in the family.
Prerequisite: MFAM 501 or concurrent registration with the consent of the coordinator.

MFAM 697 Project (1)
Student submits a written modality paper and a case description, and makes a video tape presentation of a final case project to a three-member committee selected by the student. Oral response to a case vignette required.
Prerequisite: Advancement to candidacy.

MFAM 744 Clinical Internship (1)
Postgraduate: Supervised clinical counseling of individuals, couples, families, and children. One hour of individual supervision per week. Postgraduates only. Approved by internship coordinator.

MEDICAL SCIENTIST PROGRAM

ANTHONY J. ZUCCARELLI, Ph.D., California Institute of Technology 1974
Director; Professor of Microbiology and Biochemistry
Molecular genetics, bacterial genomic polymorphism, bacterial plasmids

The faculty that participate in this program come from the biomedical science programs of the Graduate School, from the clinical departments of the School of Medicine at Loma Linda University, and from research laboratories outside of Loma Linda University.

The Medical Scientist Program integrates the education programs leading to the Ph.D. and M.D. degrees. The foundation course in the program is a sequence that explores the biochemical, molecular, and cellular functions of living systems within the context of the biomedical sciences. Through correlative seminars, this basic material is extended to include organ systems and is applied to the study of human diseases. Subsequent courses in the curriculum include specialized areas of biomedical and clinical sciences. Research and dissertation are supervised by graduate faculty of the basic biomedical sciences. An application to the School of Medicine, processed through the American Medical College Application Service (AMCAS), should be completed by November of the year prior to admission. A separate application to the Graduate School, directed to the Medical Scientist Program, should be submitted by February of the year of admission.

DOCTOR OF PHILOSOPHY/DOCTOR OF MEDICINE

Admission

Applicants submit complete applications (with fees) to both the Graduate School and to the School of Medicine during the senior undergraduate year. The applications are considered concurrently by two separate admissions committees. Applicants must be accepted into both the Graduate School and the School of Medicine to participate in the program. The Medical Scientist Program admissions committee bases its recommendations upon academic criteria; personal interviews; G.R.E. and MCAT scores; and other measures of analytical potential, creativity, compassion, and initiative. Accepted applicants are invited to participate in ongoing research in one of the biomedical science departments during the summer preceding their matriculation.

Curriculum

The curriculum is innovative in content and sequence. It includes courses that provide a pervasive research perspective, as well as those that provide basic instruction in clinical sciences. A three-quarter course sequence in biochemistry, molecular biology, cell biology, and immunology taken during the first year emphasizes analytical thinking and problem solving as a foundation for a research-oriented approach to biomedical science and clinical medicine. Weekly seminar sessions merge research and clinical approaches to medical problems and expand the perspective of the program to include organ systems and disease processes.

The typical sequence of courses in the curriculum is outlined below, though several variations are possible, with approval of the program director and curriculum committee.

First year:	Biochemistry, molecular biology, cell biology/immunology, genetics, gross anatomy/embryology, histology, physical diagnosis, clinical correlates, introduction to research, research rotations

First summer:	Research
Second year:	Modification of School of Medicine freshman year (human behavior, neuroscience, physical diagnosis, pathology, and may also include microbiology or physiology), clinical correlates
Second summer:	Research
Third year:	Modification of School of Medicine sophomore year, clinical correlates; board examination (USMLE Step I)
Research years:	Two or more years to complete research, graduate course work, and Ph.D. degree
Junior year:	School of Medicine
Senior year:	School of Medicine

Advisement

Admitted students are classified as medical scientists on both the School of Medicine and Graduate School rosters and are advised by the Medical Scientist Program director. During the second year, students choose a basic science program (anatomy, biochemistry, microbiology and molecular genetics, pharmacology, or physiology) in which they will pursue their subsequent research and graduate course work. After making that selection, they will be guided by the coordinator for that graduate program and by a guidance committee.

Time limits

Limits apply to the time allotted for the completion of graduate degrees. Four years (between the sophomore and junior years of the School of Medicine curriculum) are allowed for the completion of a Ph.D. degree; two years are allowed for completion of the M.S. degree. Completion within these limits is required to retain eligibility for further tuition waivers for School of Medicine course work, as described under Financial Assistance.

It is strongly recommended that the students compete their graduate degree prior to reentry into the School of Medicine for the junior year. No additional financial aid will be provided until the graduate degree is completed.

Financial assistance

Financial assistance to students in the Medical Scientist Program may provide:

1. Stipends during those periods in which students are most directly involved in graduate education — the first year and the research years. The amount of the stipend is similar to that available to Ph.D. degree students in the biomedical science graduate programs.
2. A tuition waiver for all Graduate School course work.
3. Tuition deferment for the freshman and sophomore years of the School of Medicine curriculum. When a student completes an M.S. or Ph.D. degree, tuition deferred from the freshman and sophomore years is canceled.
4. A tuition waiver for two quarters of tuition during the junior or senior years in the School of Medicine curriculum, provided the student has completed an M.S. degree.
5. Tuition waiver for both the junior and senior years of the School of Medicine curriculum, provided the student has completed a Ph.D. degree.

Completion of the M.D. degree terminates the student's participation in the Medical Scientist Program and ends the availability of tuition waiver. Any tuition deferments then in force will convert to loan obligations at that time.

COURSES

CMBL 501 Steady State Cell (8)
The generalized cell. Its structural and functional integrity in a thermodynamically hostile environment. Biochemical concepts of the flow of biological information and of free energy. Emphasis on the interplay of information and energy, the integrating role of compartmentalization, and regulation of metabolic pathways. Fall Quarter.

CMBL 502 The Cell in Transition (8)
Study of the principles and tools of molecular biology in the context of current research. Topics include the characteristics of mobile genetic elements, bacteriophages and plasmids, genetic recombination, DNA-modifying enzymes, cloning vehicles, directed mutagenesis, and nucleotide sequencing; also structure and function of bacterial operons, molecular biology of selected eukaryotic viruses, eukaryotic gene structure, RNA splicing, chromosome organization, regulation of cell proliferation, transcriptional and posttranscriptional regulation of gene expression, oncogenes. Also surveys current concepts of gene regulation, with emphasis on eukaryotic systems. Winter Quarter.

CMBL 503 The Differentiated Cell (10)
Biological membranes and cell fibrillar systems as a basis for studying specialized structures and functions of selected differentiated cell types. The role of cell-cell interactions in specialized tasks. Emphasis on underlying molecular mechanisms of specialized cell function. Spring Quarter.

CMBL 511, 512, 513 Clinical Correlates (1, 1, 1)
A three-quarter companion sequence to CMBL 501, 502, 503 that utilizes the topics of cell functions presented in the major sequence as a basis for discussion of clinical problems arising from abnormalities in those functions. Fall, Winter, Spring Quarters.

CMBL 537 Introduction to Human Genetics (1)
Introduction to medical genetics, human chromosomal abnormalities, Mendelian inheritance, multifactorial inheritance, prenatal diagnosis, newborn screening, and genetic counseling. Winter Quarter.

CMBL 538 Molecular Biology of Prokaryotes and Recombinant DNA (4)
Study of the principles and tools of molecular biology in the context of current research with prokaryotic organisms. Topics include the characteristics of mobile genetic elements, bacteriophages and plasmids, genetic recombination, DNA-modifying enzymes, cloning vehicles, directed mutagenesis, and nucleotide sequencing. Crosslistings: BCHM 539, BIOL 546.

Prerequisite: CMBL 501, BCHM 511 or equivalent.

CMBL 539 Molecular Biology of Eukaryotes and Gene Regulation (4)
Surveys current concepts of gene regulation, with emphasis on eukaryotic systems. Topics include the structure and function of bacterial operons, molecular biology of selected eukaryotic viruses, eukaryotic gene structure, RNA splicing, chromosome organization, regulation of cell proliferation, transcriptional and posttranscriptional regulation of gene expression, oncogenes. Crosslistings: MICR 538, BCHM 545.

Prerequisite: CMBL 538.

CMBL 541 Cellular Structural Elements (4)
Comprehensive description of biological membranes and cytoskeletal fibrillar systems that will form a basis for elucidating the functions of specialized cells. Spring Quarter.

CMBL 542 Signal Transduction and Regulation (3)
Comprehensive description of signal transduction pathways and other cellular regulatory mechanisms that form the basis of receptor-response phenomena.

CMBL 543 Cell-Cell Interactions (3)
Discussion of the role of cell-cell interactions and the mechanism for cellular specialization emphasizing the immune system. Spring Quarter.

MICROBIOLOGY

BARRY L. TAYLOR, Ph.D. Case Western Reserve University 1973
Chair; Professor of Microbiology and Biochemistry
Microbial physiology, mechanism of oxygen chemoreceptors, bacterial chemotaxis

JAMES D. KETTERING, Ph.D. Loma Linda University 1974
Program Coordinator; Professor of Microbiology
Virology, tumor immunology, medical bacteriology

The Department of Microbiology offers programs leading to the Master of Science and the Doctor of Philosophy degrees. The programs include a core curriculum that provides a broad background in medical microbiology, bacterial physiology, immunology, and molecular biology. Advanced courses allow the student to develop fully an area of interest. The department is developing strengths in molecular genetics and the applications of recombinant DNA technologies, in microbial physiology, in bacterial chemotaxis, and in immunology, including transplant and cancer immunology.

The *research or thesis* Master of Science degree provides training for persons who will become technicians involved in biomedical research, for individuals who will follow a career in the biotechnology industry, or for medical technologists seeking specialized research training.

The *course work* Master of Science degree provides content appropriate for medical technologists preparing for the specialist in microbiology certification; and for secondary teachers seeking advanced training in areas such as molecular biology, immunology, or microbiology.

The Doctor of Philosophy degree is designed to prepare the student for a career of independent research and teaching.

In addition to these programs, combined M.D./M.S., D.D.S./M.S., M.D/Ph.D., D.D.S./Ph.D. degrees are offered. (See sections on Combined Science/Professional Degrees and Medical Scientist Program.) The combined M.S./professional degrees are designed to provide additional content or research experience as a background for postgraduate medical or dental education. The combined Ph.D./professional degree program prepares the student for a career in academic medicine or dentistry — combining research, teaching, and clinical practice.

FACULTY

LEONARD R. BULLAS, Ph.D. Montana State University 1963
Professor of Microbiology
Microbial and molecular genetics, bacteriology

DAILA S. GRIDLEY, Ph.D. Loma Linda University 1978
Professor of Microbiology and Radiation Medicine
Cancer immunology

GEORGE T. JAVOR, Ph.D. Columbia University 1967
Professor of Microbiology and Biochemistry
Bacterial physiology

WILLIAM H. R. LANGRIDGE, Ph.D. University of Massachusetts 1973
Professor of Microbiology
Plant molecular genetics, autoimmunity

BENJAMIN H. S. LAU, Ph.D. University of Kentucky 1966; M.D. Loma Linda University SM 1980
Professor of Microbiology and Surgery (urology)
Cellular and tumor immunology, medical bacteriology, mycology

JOHN E. LEWIS, Ph.D. Loma Linda University GS 1969
Professor of Microbiology, Pathology, and Medicine
Immunology, medical microbiology

SANDRA L. NEHLSEN-CANNARELLA, Ph.D. National Institute for Medical Research, London 1971
Professor of Microbiology and Surgery; Research Professor of Pathology
Transplantation immunology, reproductive immunology, autoimmunity

JOHN J. ROSSI, Ph.D. University of Connecticut 1976
Professor of Microbiology and Biochemistry
Molecular biology, ribosomes, gene expression

ANTHONY J. ZUCCARELLI, Ph.D. California Institute of Technology 1974
Professor of Microbiology and Biochemistry
Molecular genetics, bacterial genomic polymorphism, bacterial plasmids

GIUSEPPE A. MOLINARO, M.D. Naples University 1960
Associate Research Professor of Microbiology and Pathology
Immunology

JUN-ICHI RYU, Ph.D. Tokyo Metropolitan University 1977
Associate Professor of Microbiology
Molecular genetics

DONNA D. STRONG, Ph.D. University of California, Los Angeles 1977
Associate Professor of Microbiology, Biochemistry, and Medicine
Molecular biology and recombinant DNA

ALAN ESCHER, Ph.D. Cornell University 1992
Assistant Professor of Microbiology
Molecular chaperonins, mammalian artificial chromosomes

LORA GREEN, Ph.D. University of California, Riverside 1987
Assistant Professor of Microbiology
Immunology

WENDY HAGGREN, Ph.D. University of Texas Health Science Center, San Antonio, 1989
Assistant Research Professor of Microbiology
Molecular biology, mammalian circadian rhythm

MARK S. JOHNSON, Ph.D. University of Utah 1984
Assistant Research Professor of Microbiology
Microbial biochemistry, intracellular signaling in microorganisms

ASSOCIATE FACULTY

YOKO FUJITA-YAMAGUCHI, Ph.D. University of Tokyo 1977
Visiting Professor of Microbiology
Endocrinology, receptor biology, and cancer

KEIICHI ITAKURA, Ph.D. Tokyo College of Pharmacy 1970
Visiting Professor of Microbiology
Molecular genetics

ALADAR A. SZALAY, Ph.D. Institute of Biochemistry and Plant Physiology 1972
Visiting Professor of Microbiology
Artificial chromosome, human gene therapy

EDOUARD CANTIN, Ph.D. University of Cambridge 1976
Adjunct Associate Research Professor
Molecular virology

IRA ROY, Ph.D. Ohio State University 1965
Associate Professor of Microbiology
Diagnostic mycology, bacteriology, antimicrobial agents

MASTER OF SCIENCE

CURRICULUM

The student completes courses that constitute a core sequence for microbiology graduate programs: Medical Microbiology (MICR 521), Regulation of Gene Expression (MICR 535), Basic Immunology (MICR 520), and Introduction to Graduate Immunology (MICR 530). In addition, 3 units of religion and 3 units of seminar are required. Other requirements depend on the program selected A minimum of 48 units is required for graduation.

The candidate may elect an emphasis in research and/or in additional course work.

Option A: Research

In addition to the core sequence, 13 units of additional course work in elective microbiology and cognates are required. This may include 5 units of a minor such as biochemistry or human physiology. Biochemistry is required if a complete biochemistry sequence has not been taken. The candidate is required to complete 9 units of research and 3 units of thesis, leading to the presentation of a thesis or publishable paper.

Option B: Course work

This is a terminal degree. In addition to the core sequence, 17-21 units of additional course work in elective microbiology and cognates are required. From 4 to 8 units of laboratory experience and 4 to 8 units of additional course work replace the research and thesis requirements of the research Master of Science degree. The laboratory experience involves a formal practicum in the clinical laboratory of Loma Linda University Medical Center, laboratory courses, or a research project. The student must also pass a comprehensive examination covering three areas of microbiology.

DOCTOR OF PHILOSOPHY

The student who has completed a bachelor's degree with a superior academic record may apply directly for admission to the Doctor of Philosophy degree program. This is a full-time program which can be completed by most candidates in four or five years.

The core curriculum includes MICR 538 Genetic Organization of Prokaryotes and Eukaryotes and MICR 536 Laboratory in Gene Transfer and Gene Expression, in addition to the core courses required for the Master of Science degree. Two elective microbiology courses (5-7 units) selected from MICR 533, MICR 534, MICR 546, MICR 565, MICR 594, MICR 626, or similar didactic courses; and 15 units of cognate electives are required.

Biochemistry is recommended as a cognate course and is required for students who have not completed an approved course in biochemistry. MICR 566 Cell Culture is also recommended as an elective cognate.

For combined-degree students, the cognate requirements are satisfied by courses in their professional program (M.D. or D.D.S.).

In addition to religion (3 units), seminar (3 units), and dissertation (3 units), the primary requirement for the Ph.D. degree is the completion of a significant, original contribution to microbiological research. Candidates for the Doctor of Philosophy degree are assigned to laboratories and are expected to participate in research during the first year of their graduate program. They must pass a written comprehensive examination in three of five selected areas of microbiology, and an oral comprehensive examination of a written research proposal. A minimum grade of B is required in all core courses. It is expected that students will assist in teaching a laboratory course for a minimum of one quarter. After passing the written and oral examinations, the student applies for admission to candidacy. The candidacy period is spent in full-time research. After completing the research and writing the dissertation, the dissertation is publicly defended at an oral examination.

Financial aid deadline

Applications for admission requesting financial support should be completed by February 1.

General information

Details of the graduate program are given in the "Student Guide" supplied by the Department of Microbiology.

Microbiology minor

A minor in the department consists of a minimum of 9 units of microbiology course work.

COMBINED-DEGREES PROGRAMS

Information about the M.D./M.S., M.D./Ph.D., D.D.S./M.S., and D.D.S./Ph.D. programs offered in conjunction with the Department of Microbiology are to be found in the sections Programs and Degrees and Medical Scientist Program.

Prerequisites

The minimum science prerequisites for admission to the graduate programs are (quarter units):

General biology (12)
General chemistry (12)
Organic chemistry (12)
General physics (12)
Microbiology (strongly recommended)
Biochemistry (strongly recommended) (8)

Waiver of any one of these requirements is only by departmental consent, which must be obtained before admission into the program.

General information

For information about the requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

COURSES

MICR 520 Basic Immunology (2.5)
Study of cellular and molecular aspects of the immune system, immune responses associated with host defense and disease processes, cellular interaction, and modern immunologic technology. Identical to the immunology section of MDCJ 513.
Prerequisite: Permission of department.
Lewis.

MICR 521 Medical Microbiology (8)
A systematic study of bacteria, fungi, viruses, and animal parasites of medical importance; pathogenic mechanisms; methods of identification and prevention; and clinical correlations. Crosslisting to MICR 511.
Lau, Staff.

MICR 530 Introduction to Graduate Immunology (2-3)
Selected topics of modern immunology introduced to graduate students, with emphasis on understanding key paradigms.
Prerequisite: MICR 520 or concurrent enrollment in MDJC 514.
Molinaro.

MICR 533 Biological Membranes (3)
Comprehensive description of biological membranes, oxidative phosphorylation, active transport, and signal transduction. Identical to the membranes, transport, and signal transduction sections of CMBL 503.
Prerequisite: A course in biochemistry.
Hessinger, Taylor.

MICR 534 Microbial Physiology (3)
Provides in-depth coverage of microbial nutrition and growth kinetics; structure and function; bioenergetics and metabolism; nutrient transport; and special bacterial groups and processes unique to microorganisms.
Prerequisite: MICR 521 and a course in biochemistry.
Taylor.

MICR 535 Regulation of Gene Expression (4)
Explores the processes of transcription and translation. Topics include the effect of chromatin on transcription; transcription initiation, elongation, and termination; RNA processing; regulation of gene expression by enhancers, silencers, repressors, and attenuation; tRNA; rRNA; ribosomes; RNA translation; protein folding and degradation; and posttranslational modification of proteins.
Crosslistings: CMBL 538, BIOL 546, BCHM 539.
Prerequisite: BCHM 511, CMBL 501 or equivalent.
Staff.

MICR 536 Laboratory in Gene Transfer and Gene Expression (4)
Intensive (3 weeks) laboratory course in the methods of gene transfer and gene regulation in prokaryotes and eukaryotes. Evaluation and discussion of experimental results in group sessions. Guest lecturers on related topics. Suitable for faculty and postdoctoral fellows who wish to learn modern molecular biology techniques. Limited to 15 participants.
Prerequisite: CMBL 501, 502 or MDCJ 512 or equivalent.
Escher, Staff.

MICR 538 Genetic Organization of Prokaryotes and Eukaryotes (4)
Surveys the organization of genetic information that guides life processes of viral, prokaryotic, and eukaryotic organisms. Examination of bacterial viruses, bacteria, eukaryotic viruses, and cells of higher organisms, with emphasis on what is known about the human genome. Crosslistings CMBL 539; BCHM 545.
Prerequisite: MICR 535 (CMBL 538).
Staff.

MICR 546 Advanced Immunology (4)
Emerging concepts of immunology first discussed by the class and then reviewed by guest speakers on a weekly schedule
Prerequisite: MICR 530 or consent of the instructor.
Molinaro.

MICR 565 Virology (3)
Fundamental aspects of virus-cell relationships of selected groups of animal viruses. Lectures and a library research project. Guest lecturers.
Prerequisite: MICR 521 (MICR 511) or consent of instructor.
Kettering.

MICR 566 Cell Culture (3)
Practical aspects of growth of animal cells in culture. Experience with both primary cell cultures and established cell lines.
Gridley.

MICR 594 Medical Mycology (3)
Systematic study of those fungi that cause disease in humans and animals, with special emphasis on the clinical and diagnostic features of fungal infections and the epidemiology and public health significance of the fungi.
Prerequisite: MICR 521 (MICR 511).
Roy.

MICR 604 Seminar in Microbiology (1)

MICR 605 Colloquium (1)
Seminar series designed for graduate students. Presentations by peers on a topic selected and directed by a graduate faculty member. All students are required to attend the colloquium. Students who are registered for colloquium are required to give a presentation.
Staff.

MICR 624 Special Problems in Microbiology (2-4)
Designed primarily for students enrolled in a course work M.S. degree program who elect to work on a research problem.
Staff.

MICR 625 Independent Study in Microbiology Literature (2-4)
In-depth exploration of a specific topic, selected in consultation with the mentor, such as the antecedents for theses or dissertation research. A formal proposal for the scope and evaluation of the independent study must be approved by the faculty prior to enrollment in this course. This does not satisfy an elective requirement in the microbiology program.
Staff.

MICR 626 Special Topics in Microbiology (2-4)
Critically evaluates current progress in a specific research area, including recently published papers and unpublished manuscripts. Each course is taught by a resident or a visiting scientist who is a recognized authority in the research area under discussion. Students may register for multiple courses under this designation.
Staff.

MICR 634 Clinical Microbiology Practicum (4)
Rotations through the clinical microbiology laboratory at Loma Linda University Medical Center. Includes exposure to all aspects of testing procedures necessary for the identification of microorganisms isolated from patient specimens. Instrumentation, automation, and rapid testing identification methods included with "hands-on" experience. Rotation to include TB and mycology, anaerobic bacteriology, blood, special microbiology, parasitology, and general bacteriology.
Prerequisite: Consent of instructor.
Lewis.

MICR 697 Research (1-8)

MICR 698 Thesis (1-3)

MICR 699 Dissertation (arranged)

NURSING

HELEN E. KING, Ph.D. Boston University 1973
Dean; Professor of Nursing

LOIS VAN CLEVE, Ph.D. Claremont Graduate School 1985
Program Coordinator; Professor of Nursing

The sections that follow describe the nursing curricula offered by the Graduate School (Master of Science,/and Post-master's Certificate Programs) and list the courses for each: School of Nursing students are expected to operate under the general policies of the University and the School of Nursing and the specific policies of the Graduate School program in which they are enrolled.

A curriculum leading to a Master of Science degree with preparation for advanced nursing practice or nursing administration is offered through the Graduate School of Loma Linda University. Options available for advanced nursing practice are outlined below.

In graduate education, the student has opportunity for the intense pursuit of knowledge in a chosen field of interest. Teaching focuses on attainment of knowledge and development of advanced intellectual, clinical, leadership, and investigative skills.

The CLINICAL OPTION in **Advanced Nursing Practice** can be pursued in the following areas:

- Adult and Aging Family
- Adult Critical Care
- Adult Nurse Practitioner
- Growing Family
- School Nursing
- Neonatal Critical Care Nurse Practitioner
- Pediatric Critical Care Nurse Practitioner
- Pediatric Nurse Practitioner
- Family Nurse Practitioner

The NURSING ADMINISTRATION OPTION prepares nurses for leadership in a variety of organizational settings. The curriculum draws from the practice of nursing, management, and related fields, and includes administrative, research, and clinical components.

Convenient scheduling of classes allows one to complete the program on a full-time or part-time basis. Required nursing courses are scheduled in late afternoons to accommodate working nurses. Applications may be initiated throughout the year.

A minimum of 53-67 quarter units is required to complete the program. The sequence ideally begins in the Fall Quarter; however, students may commence their studies any term during the year; and part-time study is available.

FACULTY

PATRICIA S. JONES, Ph.D Vanderbilt University, Peabody College 1977
Professor of Nursing
Adult and Aging Family

ELIZABETH A. BOSSERT, D.N.S., University of California, San Francisco, 1990
Associate Professor of Nursing
Growing Family

MICHAEL C. GALBRAITH, Ph.D. Claremont Graduate School 1989
Professor of Nursing

FRANCES P. MILLER, Ph.D. University of California, Riverside 1985
Associate Professor of Nursing

RONALD M. PERKIN, M.D. University of South Florida 1976
Professor of Pediatrics SM
Pediatric critical care

RUTH S. WEBER, Ed.D. Loma Linda University Riverside SE 1991
Associate Professor of Nursing
Nursing administration

ASSOCIATE FACULTY

MARGARET A. BURNS, D.N.Sc Catholic University of America 1985
Associate Professor of Nursing

EVA G. MILLER, M.S. Loma Linda University 1975
Associate Professor of Nursing
School nursing

DAVED W. VAN STRALEN, M.D. University of California, Irvine 1984
Instructor in Pediatrics SM
Pediatric critical care

CLINICAL FACULTY

DOUGLAS J. FANTAZIA, M.S. Loma Linda University 1994
Assistant Clinical Professor of Nursing
Neonatal critical care nurse practitioner

DIANNE OTTOSON, M.S. University of California, Los Angeles 1986
Family nurse practitioner

ROBIN WILLIAMS, M.S. Loma Linda University 1993
Assistant Clinical Professor of Nursing
Pediatric critical care nurse practitioner

ADMISSION TO THE GRADUATE PROGRAM

Admission

The following criteria are considered for admission to the graduate program in nursing:

1. A baccalaureate degree in nursing from a college or university accredited by the National League for Nursing (or its equivalent).

2. An undergraduate record with a grade average of B (3.00), both cumulative and in the nursing major.

3. An A.S. degree or diploma in nursing from an NLN-accredited program with a B.S. or B.A. degree in another field, including 20-24 quarter units of approved, upper-division clinical nursing with at least 8 quarter units of community health nursing (with field experience).

4. A combined score of 1500 for the verbal, quantitative, and analytic sections of the Graduate Record Examination.

5. A current California registered nurse license before enrollment in clinical nursing courses.

6. Nursing experience in the area of the desired clinical major before beginning graduate study and one year of experience as a registered nurse (required to enter the nursing administration major).

7. A minimum of one year of experience in the desired clinical area prior to beginning the sequence of specialty courses.

8. Prerequisite courses, including:

General statistics (descriptive and beginning inferential), 3 quarter units.

Introduction to research methods, 2-3 quarter units.

PROGRAM REQUIREMENTS

Grades

A minimum grade point average of 3.00 must be maintained in all work taken for the degree and in the nursing major.

Thesis option

The student has the option of completing a thesis within the curriculum for the master's degree. The decision is made in consultation with the student's adviser.

Candidacy

Students are eligible for candidacy after completing 16 and before completing 24 units of required graduate course work.

Examination

A comprehensive written and oral examination is required. The examination must be taken before enrolling in the last 8 units of the program.

Curriculum change

To maintain quality education, the curriculum is subject to change without prior notice. Students in continuous attendance will meet graduation requirements of the BULLETIN under which they enter the Graduate School.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

CORE COURSE REQUIREMENTS

For the Master of Science degree in nursing, the student must complete 53-67 quarter units. Elective courses are selected in consultation with the student's adviser. The following core courses are required of all students:

NRSG 507	Theory Development	(3)
NRSG 515	Health Policy: Issues and Process	(3)
NRSG 604	Nursing in Family Systems	(3)
NRSG 681, 682	Research Methods I, II	(3, 2)
STAT 514	Intermediate Statistics for Health-Science Data	(3)
RELE 524	Christian Bioethics	(3)

Students who choose the thesis option take:

NRSG 697	Research	(3)
NRSG 698	Thesis in Nursing	(2)
TOTAL		19-22

CLINICAL OPTIONS

The clinical option in nursing prepares nurse specialists who have advanced nursing knowledge, clinical expertise, and functional preparation. Clinical options are offered in the following areas. A class preceded by an (*) indicates a course that is offered every other year.

THE ADULT AND AGING FAMILY

The Adult and Aging Family clinical option prepares students for a variety of leadership roles in nursing, including clinical specialization and teaching. Clinical and theoretical content focuses on adult and aging clients and families. The program offers opportunities to develop knowledge and expertise for advanced practice in oncology nursing, coronary-care nursing, and gerontological nursing. The curriculum includes preparation for certification by the American Nurses Association as a clinical nurse specialist in either medical-surgical nursing or gerontological nursing after completing the required practice hours.

Clinical focus

*NRSG 624	The Adult and Aging Family I	3
*NRSG 626	The Adult and Aging Family II	3
*NRSG 628	Clinical Practicum: Adult and Aging Family	3
NRSG 651	Advanced Physical Assessment	3

Required cognates

PHSL 533	Physiology I	4
NRSG 547	Management: Principles and Practices	3

Teaching option

NRSG 544	Teaching and Learning Theory	4
*NRSG 545	Teaching Practicum	3
NRSG 546	Curriculum Development in Higher Education	3

Advanced practice option

NRSG 544	Teaching and Learning Theory	4
PHSL 534	Physiology II	

ADULT CRITICAL CARE

The *Adult Critical Care* clinical option offers opportunities to develop knowledge and expertise for advanced practice in several areas of critical care nursing, including trauma and cardiovascular nursing.

This clinically oriented course of study prepares the nurse to function autonomously and in collaboration with other health professionals as an expert clinician and as educator, consultant, researcher, and manager.

Clinical focus

*NRSG 624	Adult and Aging Family I	3
*NRSG 631	Adult Critical Care I	4
*NRSG 632	Adult Critical Care II	6
*NRSG 633	Adult Critical Care III: Practicum	6

Required cognates

PHSL 533	Physiology I	4
NRSG 547	Management: Principles and Practices	3

Teaching option

NRSG 544	Teaching and Learning Theory	4
*NRSG 545	Teaching Practicum	3
NRSG 546	Curriculum Development in Higher Education	3

Advanced practice option

NRSG 544	Teaching and Learning Theory	4
PHSL 534	Physiology II	3
	OR	
NRSG 651	Advanced Physical Assessment	3

ADULT NURSE PRACTITIONER

The *Adult Nurse Practitioner* clinical option prepares the nurse to exercise independent judgment in assessment, supervision, and management of sick adults with consultation, collaboration, and supervision by primary care physicians and nursing faculty. The curriculum prepares the student to be certified by the state of California and the American Nurses Association as a nurse practitioner.

Clinical Focus

NRSG 561	Adult Primary Healthcare I	4
NRSG 562	Adult Primary Healthcare II	6
NRSG 563	Adult Primary Healthcare III	7
NRSG 564	Adult Primary Healthcare IV	13
NRSG 651	Advanced Physical Assessment	3

Required cognates

PHSL 533	Physiology I	3
NRSG 544	Teaching and Learning Theory	4
NRSG 547	Management: Principles and Practices	3
NRSG 555	Pharmacology	3

ADULT NURSE PRACTITIONER POST-MASTER'S CERTIFICATE

6131

The *Adult Nurse Practitioner* post-master's certificate is a 5-quarter unit program designed to prepare the nurse with a master's degree in a clinical area of nursing to become certified by the Board of Registered Nursing as a nurse practitioner in the state of California.

Prerequisites: Graduate-level physiology and advanced physical assessment.

Required courses

NRSG 555	Pharmacology	3
NRSG 561	Adult Primary Healthcare I	4
NRSG 562	Adult Primary Healthcare II	6
NRSG 563	Adult Primary Healthcare III	7
NRSG 564	Adult Primary Healthcare IV	13
NRSG 604	Nursing in Family Systems	2

Required experience

A minimum of one year full-time experience.

THE GROWING FAMILY

The *The Growing Family* clinical option prepares students for a variety of leadership roles in nursing, including clinical specialization and teaching. The curriculum offers opportunity for the student to choose as an emphasis providing advanced nursing care to families in the early phase of childbearing or in the care of children.

The curriculum includes preparation for certification by the American Nurses Association as a child and adolescent nurse specialist or as a maternal-child health nurse specialist after completing the required practice hours.

Clinical focus

NRSG 614	The Childbearing Family	3
NRSG 615	The Childrearing Family	3
NRSG 617	Clinical Practicum: Growing Family	3
NRSG 651	Advanced Physical Assessment	3

Required cognates

NRSG 547	Management: Principles and Practices	3
PHSL 533	Physiology I	4

Teaching option

NRSG 544	Teaching and Learning Theory	4
*NRSG 545	Teaching Practicum	3
NRSG 546	Curriculum Development in Higher Education	3

Advanced practice option

NRSG 544	Teaching and Learning Theory	4
PHSL 534	Physiology II	

SCHOOL NURSING **

The *School Nursing* clincial option prepares students to meet both the requirements for a health services (school nurse) credential issued by the state of California and a Master of Science degree. It builds on the content of the baccalaureate degree and has a strong emphasis in advanced nursing theories, cultural and behavioral concepts, research, and nursing issues. The role of the school nurse encompasses a broad range of activities, including health-promotion education, illness prevention and detection, counseling and guidance, and providing specialized health services to students and their families.

Clinical focus

NRSG 512	School Nursing Services	6
NRSG 544	Teaching and Learning Theory	4
NRSG 614	The Childbearing Family	3
NRSG 615	The Childrearing Family	3
NRSG 547	Management: Principles and Practices	3
NRSG 651	Advanced Physical Assessment	3

Required cognates

NRSG 546	Curriculum Development in Higher Education	3
EDPC 460	Exceptional Child (or equivalent)	3

** Public health nursing certificate required.

NEONATAL CRITICAL CARE NURSE PRACTITIONER

Within the *Neonatal Critical Care Nurse Practitioner* clinical option, students specialize in the theory and practice of neonatal intensive-care nursing. The curriculum prepares the nurse to exercise independent judgment in assessment, supervision, and management of sick newborns with consultation, collaboration, and general supervision of neonatologists and nursing faculty. Working with families, the nurse will fill the role of consultant and educator. The curriculum prepares the student to be certified by the state of California and the American Nurses Association as a nurse practitioner.

Clinical focus

NRSG 614	The Childbearing Family	2
*NRSG 619	Neonatal Critical Care I	4
*NRSG 620	Neonatal Critical Care II	6
*NRSG 621	Neonatal Critical Care III	6
*NRSG 622	Neonatal Critical Care IV: Practicum	13

Required cognate

PHSL 533	Physiology I	4

PEDIATRIC CRITICAL CARE NURSE PRACTITIONER

Students choosing the *Pediatric Critical Care Nurse Practitioner* clinical option specialize in the theory and practice of pediatric intensive-care nursing. The curriculum prepares the nurse to exercise independent judgment in assessment, supervision, and management of sick children with consultation, collaboration, and supervision by pediatric intensivists and nursing faculty. Working with families, the nurse will fill the role of consultant and educator. The curriculum prepares the student to be certified by the state of California as a nurse practitioner.

Clinical focus

NRSG 614	The Childbearing Family	2
*NRSG 641	Pediatric Critical Care I	6
*NRSG 642	Pediatric Critical Care II	4
*NRSG 643	Pediatric Critical Care III	6
*NRSG 644	Pediatric Critical Care IV: Practicum	13

Required cognate

PHSL 533	Physiology I	4

7034 7029

NEONATAL or PEDIATRIC CRITICAL CARE NURSE PRACTITIONER POST-MASTER'S CERTIFICATE

The *Neonatal* or *Pediatric Critical Care Nurse Practitioner* post-master's certificate is a 31-unit curriculum designed to prepare the nurse who has a master's degree in parent/child nursing (or the LLU master's degree with the Growing Family major or its equivalent) to become certified by the Board of Registered Nursing as a nurse practitioner in the state of California.

Admission requirements

1. Completion of a master's degree with a clinical major in parent/child nursing or its equivalent from a National League for Nursing-approved program.
2. Current California nurse licensure.
3. Minimum of one year full-time experience in a tertiary-level neonatal intensive care or pediatric intensive care unit. Each applicant's clinical experience will be individually evaluated.
4. Graduate-level physiology.

NEONATAL CRITICAL CARE NURSE PRACTITIONER CERTIFICATE

Required courses

NRSG 614	The Childbearing Family	2
*NRSG 619	Neonatal Critical Care I	4
*NRSG 620	Neonatal Critical Care II	6
*NRSG 621	Neonatal Critical Care III	6
*NRSG 622	Neonatal Critical Care IV: Practicum	13

The preceding 31 units plus 14 units of credits from the previous M.S. degree, will meet the Board of Registered Nursing total requirements of 45 quarter units to qualify as a nurse practitioner.

PEDIATRIC CRITICAL CARE NURSE PRACTITIONER CERTIFICATE

Required courses

NRSG 614	The Childbearing Family	2
*NRSG 641	Pediatric Critical Care I	4
*NRSG 642	Pediatric Critical Care II	6
*NRSG 643	Pediatric Critical Care III	6
*NRSG 644	Pediatric Critical Care IV: Practicum	13

The preceding 31 units plus 14 units of credits from the previous M.S. degree, will meet the Board of Registered Nursing total requirements of 45 quarter units to qualify as a nurse practitioner.

PEDIATRIC NURSE PRACTITIONER

The *Pediatric Nurse Practitioner* clinical option prepares the nurse to exercise independent judgment in assessment, supervision, and management of sick children with consultation, collaboration, and supervision by pediatric practice physicians and nursing faculty. The curriculum prepares the student to be certified by the state of California and the American Nurses Association as a nurse practitioner.

Clinical focus

NRSG 651	Advanced Physical Assessment	3
NRSG 551	Pediatric Primary Healthcare I	4
NRSG 552	Pediatric Primary Healthcare II	6
NRSG 553	Pediatric Primary Healthcare III	7
NRSG 554	Pediatric Primary Healthcare IV	13

Required cognates

PHSL 533	Physiology I	3
NRSG 544	Teaching and Learning Theory	4
NRSG 547	Management: Principles and Practices	3
NRSG 555	Pharmacology	3

7032

PEDIATRIC NURSE PRACTITIONER POST-MASTER'S CERTIFICATE

The *Pediatric Nurse Practitioner* post-master's certificate is a 35-quarter unit program designed to prepare the nurse with a master's degree in a clinical area of nursing to become certified by the Board of Registered Nursing as a nurse practitioner in the state of California.

Prerequisites: Graduate-level physiology and advanced physical assessment.

Required courses

NRSG 551	Pediatric Primary Healthcare I	4
NRSG 552	Pediatric Primary Healthcare II	6
NRSG 553	Pediatric Primary Healthcare III	7
NRSG 554	Pediatric Primary Healthcare IV	13
NRSG 555	Pharmacology	3
NRSG 604	Nursing in Family Systems	2

Required experience

A minimum of one year full-time experience.

FAMILY NURSE PRACTITIONER

The *Family Nurse Practitioner* clinical option prepares the nurse to exercise independent judgment in assessment, supervision, and management of sick families with consultation, collaboration, and supervision by family practice physicians and nursing faculty. The curriculum prepares the student to be certified by the state of California and the American Nurses Association as a nurse practitioner.

Clinical focus

NRSG 651	Advanced Physical Assessment	3
NRSG 652	Family Primary Healthcare I	4
NRSG 653	Family Primary Healthcare II	6
NRSG 654	Family Primary Healthcare III	7
NRSG 655	Family Primary Healthcare IV	13

Required cognates

PHSL 533	Physiology I	3
NRSG 544	Teaching and Learning Theory	4
NRSG 547	Management: Principles and Practices	3
NRSG 555	Pharmacology	3

7031

FAMILY NURSE PRACTITIONER POST-MASTER'S CERTIFICATE

The *Family Nurse Practioner* post-master's certificate is a 35-quarter unit program designed to prepare the nurse with a master's degree in a clinical area of nursing to become certified by the Board of Registered Nursing as a nurse practitioner in the state of California.

Prerequisites: Graduate-level physiology and advanced physical assessment.

Required courses

NRSG 604	Nursing in Family Systems	2
NRSG 652	Family Primary Healthcare I	4
NRSG 653	Family Primary Healthcare II	6
NRSG 654	Family Primary Healthcare III	7
NRSG 655	Family Primary Healthcare IV	13
NRSG 555	Pharmacology	3

Required experience

A minimum of one year full-time experience in a tertiary or community setting.

NURSING ADMINISTRATION

The *Nursing Administration* option prepares nurses for leadership in a variety of organizational settings. The curriculum draws from the practice of nursing, management, and related fields, and includes administration, research, and clinical components.

Required courses

NRSG ___	Clinical course	3
*NRSG 541	Nursing Administration Practicum I	3
*NRSG 542	Nursing Administration Practicum II	3
*NRSG 543	Nursing Administration	3
HADM 541, 542	Financial Accounting of Healthcare Organizations I, II	3, 3
HADM 528	Organizational Behavior in Healthcare	3
HADM 514	Healthcare Economics	3
	OR	
HADM 564	Healthcare Finance	3

NURSING MANAGEMENT POSTBACCALAUREATE CERTIFICATE

The *Nursing Management* postbaccalaureate certificate is a 25-quarter unit program designed for the nurse with a baccalaureate degree who is interested in a career in nursing management.

Admission requirements

The following are admission requirements for the program:

1. Current employment in a first-level or middle-management position, or employment in a nursing management position for at least two of the last five years.
2. Current California nurse licensure.
3. Baccalaureate degree with a major in nursing, with cumulative G.P.A. of 3.0.

Required courses

NRSG 507	Theory Development	3
NRSG 515	Health Policy: Issues and Process	3
*NRSG 543	Nursing Administration	3
HADM 514	Healthcare Economics	3
	OR	
HADM 564	Healthcare Finance	3
HADM 528	Organizational Behavior in Healthcare	3
HADM 541, 542	Financial Accounting of Healthcare Organizations I, II	3, 3

Electives in areas of marketing, finance, legal and regulatory issues, and economics

TOTAL QUARTER UNITS 25

Upon completion of the certificate program, the student may apply for acceptance to the M.S. degree program in nursing administration. The Graduate Record Examination is required. Courses completed with a grade of B or higher will apply toward the M.S. degree.

COURSES

NRSG 507 Theory Development (3)
Studies the components of theory and the process and progress of theory development in nursing. Explores the relationship of theory to nursing practice and research. Examines conceptual models in nursing for their application and value in practice.

NRSG 509 Guided Study (1-6)
Opportunity for study in a particular area of nursing under faculty direction.

NRSG 512 School Nursing Services (4-6)
Explores the role of the school nurse and administrative styles in school health programs. School health program planning; methods of implementation and evaluation examined within the context of school systems, family systems, and healthcare- delivery systems. Students registered for 5 or 6 units involved in clinical experience designed to develop competencies in school nursing. Offered every other year.

NRSG 515 Health Policy: Issues and Process (3)
Examines the impact of the sociopolitical system. Current trends and issues affecting the changing profession of nursing, as well as the impact of nursing on these systems in the workplace, government, professional organizations, and the community.

NRSG 541, 542 Nursing Administration Practicum I, II (3,3)
Observation and practice in selected levels of nursing administration.

Prerequisite: NRSG 543; HADM 528 or equivalent; 6 quarter units of clinical nursing.

NRSG 543 Nursing Administration (3)
Study, application, and evaluation of principles of management as they apply to nursing leadership.

Prerequisite: NRSG 507, 604; HADM 528.

NRSG 544 Teaching and Learning Theory (4)
Exploration of the components of the teaching-learning process. Opportunity provided for students to practice specific teaching strategies.

NRSG 545 Teaching Practicum (3)
Designed to assist the student in developing the ability to teach nursing in the clinical area of choice. Emphasis on the nurse-teacher as facilitator of learning. Integration of knowledge and skills related to educational methodology and clinical nursing. Practice in teaching students in clinical and classroom settings.

Prerequisite or concurrent: NRSG 544, 546; and 12 quarter units of clinical nursing.

NRSG 546 Curriculum Development in Higher Education (3)
Examines principles of curriculum development — including the selection, organization, and evaluation of learning experiences — with an emphasis on the nursing major. Examines the nature, place, and interrelationship of general and specialized education in higher education.

NRSG 547 Management: Principles and Practices (3)
Analysis of administrative issues in healthcare settings. Organizational complexities, power distribution, political strategies, interdependence of management and clinical teams. Focuses on the application of selected management theory to the practice of nursing.

NRSG 551 Pediatric Primary Healthcare I (4)
Provides a beginning introduction to the problem-oriented approach to assessment and diagnosis. Prepares the nurse practitioner student as a primary care clinician, an evaluator, and an educator through integration of the traditional nursing and nurse practitioner roles.

Prerequisite: NRSG 651.

NRSG 552 Pediatric Primary Healthcare II (6)
Includes aspects of health maintenance and promotion and evaluation of common health problems, integrating the student's understanding of pathophysiology, epidemiology, pharmacology, diagnostic studies, and physical assessment skills to formulate diagnoses (medical and nursing) and management plans.

Prerequisite: NRSG 551.

NRSG 553 Pediatric Primary Healthcare III (7)
Advanced course in continuing the aspects of health maintenance and promotion and evaluation of common health problems, integrating the student's understanding of pathophysiology, epidemiology, pharmacology, diagnostic studies, and physical assessment skills to formulate diagnoses (medical and nursing) and management plans.

Prerequisite NRSG 552.

NRSG 554 Pediatric Primary Healthcare IV (13)
Final course in the pediatric primary healthcare series, aimed at preparing the nurse practitioner student to function independently and collaboratively with other health professionals.

Prerequisite: NRSG 553.

NRSG 555 Pharmacology in Advanced Practices (3)
Overview of the major drug classifications and discussion of the therapeutic use of drugs in the maintenance and strengthening of the client system lines of resistance and defense.

NRSG 561 Adult Primary Healthcare I (4)
Provides a beginning introduction to the problem-oriented approach to assessment and diagnosis. Prepares the nurse practitioner student as a primary care clinician, an evaluator, and an educator through integration of the traditional nursing and nurse practitioner roles.

Prerequisite: NRSG 651.

NRSG 562 Adult Primary Healthcare II (6)
Includes aspects of health maintenance and promotion and evaluation of common health problems integrating the student's understanding of pathophysiology, epidemiology, pharmacology, diagnostic studies, and physical assessment skills to formulate diagnoses (medical and nursing) and management plans.

Prerequisite: NRSG 561.

NRSG 563 Adult Primary Healthcare III (7)
Advanced course in continuing the aspects of health maintenance and promotion and evaluation of common health problems integrating the student's understanding of pathophysiology, epidemiology, pharmacology, diagnostic studies, and physical assessment skills to formulate diagnoses (medical and nursing) and management plans.

Prerequisite: NRSG 562.

NRSG 564 Adult Primary Healthcare IV (13)
Final course in the adult primary healthcare series aimed at preparing the nurse practitioner student to function independently and collaboratively with other health professionals.

Prerequisite: NRSG 563.

NRSG 604 Nursing in Family Systems (3)
Concepts and theories guiding advanced nursing practice to families, including systems; stress and coping; role; change; family-assessment models. Clinical experience concurrent.

NRSG 606 The Family in the Community (2-3)
Study given to the assessment and organization of families and special populations within the community system. Nursing process used in the identification of healthcare needs and the promotion of health within the macrosystem. Clinical experience concurrent with 3 units.

NRSG 614 The Childbearing Family (3)
Study of the family system during childbearing. Discussion of social, cultural, physiological, and psychological factors influencing the family's changing roles and relationships. Exploration of theories and research findings dealing with the evolving parent/child relationship. Clinical experience concurrent.

Prerequisite: NRSG 507, 604.

NRSG 615 The Childrearing Family (3)
Focus on understanding the adaptation of the family system during the childrearing years. Study of common health problems of childhood, including illness and hospitalization. Emphasis on the nursing role in minimizing trauma and promoting normal development. Clinical experience concurrent.

Prerequisite: NRSG 614.

NRSG 617 Clinical Practicum: Growing Family (3)
Designed to assist the student in developing expertise as a clinical specialist in a selected area of nursing practice of The Growing Family. Includes intensive clinical practice under the guidance of a preceptor.

Prerequisite: NRSG 507, 604, 614, 615.

NRSG 619 Neonatal Critical Care I (4)
Focuses on maternal conditions that affect the fetus/newborn during the perinatal period. Concepts and principles of genetics, embryology, growth and development, psychosocial aspects, and physiology/pathophysiology as they relate to the care-giver role of the clinical nurse specialist/practitioner. Offered every other year.

Prerequisite: NRSG 507, 604, 614.

NRSG 620 Neonatal Critical Care II (6)
Focuses on the physiology of the well neonate and pathophysiology of the critically ill neonate. Concepts and principles of neonatal disease entities and disorders studied as they relate to clinical management strategies and the care-giver role of the clinical nurse specialist/practitioner. Offered every other year.

Prerequisite: NRSG 619.

NRSG 621 Neonatal Critical Care III (6)
Prepares students for their management role as practitioner and clinical specialist, utilizing the theories and principles of nursing and medical management, problem solving, record keeping, and role definition. Offered every other year.

Prerequisite: NRSG 620.

NRSG 622 Neonatal Critical Care IV: Practicum (13)
Synthesizes concepts, principles, theories, knowledge, and skills from the preceding advanced neonatal critical-care nursing courses to the practice setting. Offered every other year.

Prerequisite: NRSG 621.

NRSG 624 The Adult and Aging Family I (3)
Addresses concepts and theories relevant to nursing practice with adults who are experiencing/responding to health-related problems associated with an acute or chronic illness, or the aging process. Focuses on promoting effective individual and family coping. Clinical experience concurrent.

Prerequisite: NRSG 507, 604.

NRSG 626 The Adult and Aging Family II (3)
Focuses on the aging adult in the context of family and contemporary society. Issues related to the needs and care of elderly individuals, factors

affecting their well-being, and the role of the nurse in promoting wellness both for the client and family. Clinical experience concurrent.
Prerequisite: NRSG 624.

NRSG 628 Clinical Practicum: Adult and Aging Family (3)
Designed to assist the student in developing expertise as a clinical specialist in a selected area of The Adult and Aging Family. Includes intensive clinical practice under the guidance of a preceptor.
Prerequisite: NRSG 626.

NRSG 631 Adult Critical Care I (4)
Study of pathophysiologic phenomena commonly encountered in nursing care of the critically ill adult. Provides a foundation for advanced nursing practice by emphasizing nursing judgment in (1) anticipating alterations in clinical status related to pathophysiological changes, and (2) identification of appropriate nursing interventions. Offered every other year.
Prerequisite: NRSG 507, 604, 624; PHSL 533.

NRSG 632 Adult Critical Care II (6)
Focuses on selected concepts related to nursing management of critically ill adults. Subroles of the clinical nurse specialist addressed. Concurrent clinical practice provides opportunity for increasing expertise as a clinical specialist in adult critical care. Offered every other year.
Prerequisite: NRSG 631.

NRSG 633 Adult Critical Care III: Practicum (6)
Designed for implementation of the clinical nurse specialist role in an adult critical-care setting. Students practice in a selected agency with an advanced practice preceptor role model, focusing on experiencing the subroles of expert clinician, educator, consultant, and researcher. Offered every other year.
Prerequisite: NRSG 632.

NRSG 641 Pediatric Critical Care I (6)
Focuses on the physiology of the well infant/child and pathophysiology of the critically ill infant/child. Disease entities and disorders studied as they relate to clinical management strategies and the caregiver role of the clinical nurse specialist/practitioner. Offered every other year.
Prerequisite: NRSG 507, 604, 614.

NRSG 642 Pediatric Critical Care II (4)
Nursing assessment and clinical management strategies for children with critical illness and trauma. Emphasis placed on understanding principles of pathophysiology, pharmacology, and nutrition; and the effect of critical illness on the family system.
Prerequisite: NRSG 641.

NRSG 643 Pediatric Critical Care III (6)
Prepares students for the roles of their practice domain: care giver, educator, consultant, and researcher. Principles of nursing and medical management, problem solving, and record keeping applied. Opportunity for increasing clinical skill. Offered every other year.
Prerequisite: NRSG 642.

NRSG 644 Pediatric Critical Care IV: Practicum (13)
Synthesis and application of concepts, principles, theories, knowledge, and skills from the preceding pediatric critical-care nursing courses to the practice setting. Opportunity to experience all aspects of the CNS/practitioner role.
Prerequisite: NRSG 643.

NRSG 651 Advanced Physical Assessment (3)
Provides an in-depth review of physical assessment skills and knowledge to prepare the student to successfully conduct a complete history and physical throughout patient life span. Incorporates lecture, audiovisual aids, laboratory skills practicum, and individual study.

NRSG 652 Family Primary Healthcare I (4)
Provides a beginning introduction to the problem-oriented approach to assessment and diagnosis. Prepares the nurse practitioner student as a primary care clinician, an evaluator, and an educator through integration of the traditional nursing and nurse practitioner roles.
Prerequisite: NRSG 651.

NRSG 653 Family Primary Healthcare II (6)
Includes aspects of health maintenance and promotion and evaluation of common health problems, integrating the student's understanding of pathophysiology, epidemiology, pharmacology, diagnostic studies, and physical assessment skills to formulate diagnoses (medical and nursing) and management plans.
Prerequisite: NRSG 652.

NRSG 654 Family Primary Healthcare III (7)
Advanced course in continuing the aspects of health maintenance and promotion and evaluation of common health problems, integrating the student's understanding of pathophysiology, epidemiology, pharmacology, diagnostic studies, and physical assessment skills to formulate diagnoses (medical and nursing) and management plans.
Prerequisite: NRSG 653.

NRSG 655 Family Primary Healthcare IV (13)
Final course in the family primary healthcare series, aimed at preparing the nurse practitioner student to function independently and collaboratively with other health professionals within a family-oriented setting.
Prerequisite: NRSG 654.

NRSG 681 Research Methods I (3)
Guides the student in understanding scientific thinking and research methods beyond the introductory level. Research literature in nursing and related fields used to illustrate the application of principles of research. Development of a research area of interest by identifying a research problem and reviewing the relevant literature.
Prerequisite STAT 414 or equivalent; NRSG 498 or equivalent; NRSG 507, 604.

NRSG 682 Research Methods II (2)
Application of research concepts in the completion of a research proposal. Focuses on design issues and management and analysis of data.
Prerequisite: NRSG 681.

NRSG 697 Research (3)

NRSG 698 Thesis (2)

PHARMACOLOGY

IAN M. FRASER, Ph.D. Cambridge University 1952
Chair; Professor of Pharmacology
Drug metabolism, chemotherapy

MARVIN A. PETERS, Ph.D. University of Iowa 1969
Program Coordinator; Professor of Pharmacology
Drug metabolism, biochemical pharmacology, neuropharmacology

The Program in Pharmacology, in cooperation with other departments of the University, offers an interdisciplinary program with emphasis in cellular and molecular pharmacology or in systems pharmacology leading to the Doctor of Philosophy, concurrent D.D.S./Ph.D., or concurrent M.D./Ph.D. degree. The student may choose to emphasize either a cell or molecular pharmacology curriculum with selected interdisciplinary courses and seminars coordinated by the faculties in the Departments of Pharmacology, Biochemistry, and Microbiology; or a systems pharmacology curriculum with selected interdisciplinary courses and seminars coordinated by the faculties in the Departments of Pharmacology, Anatomy, and Physiology. These degree programs provide opportunities for qualified students to prepare for careers in teaching and research.

FACULTY

ALLEN STROTHER, Ph.D. Texas A and M University 1963
Professor of Pharmacology
Drug metabolism, biochemical pharmacology, nutrition

DAVID A. HESSINGER, Ph.D. University of Miami 1970
Professor of Physiology and Pharmacology
Cell biology, sensory transduction, marine toxicology

ROBERT W. TEEL, Ph.D. Loma Linda University GS 1972
Professor of Physiology and Pharmacology
Carcinogen metabolism, chemoprevention of cancer

C. RAYMOND CRESS, Ph.D. Oregon State University 1970
Associate Professor of Pharmacology
Toxicology

RAMON GONZALEZ, JR., Ph.D. Wake Forest University 1973
Associate Professor of Physiology and Pharmacology
Cardiovascular physiology, control of circulation

WILLIAM J. PEARCE, Ph.D. University of Michigan 1979
Associate Professor of Physiology and Pharmacology
Cardiovascular physiology, control of cerebral circulation

JOHN BUCHHOLZ, Ph.D. Loma Linda University 1989
Assistant Professor of Pharmacology
Drug metabolism

LUBO ZHANG, Ph.D. Iowa State University, Ames 1990
Assistant Professor of Pharmacology
Biochemical pharmacology

ASSOCIATE FACULTY

RALPH E. CUTLER, M.D. University of California, Los Angeles 1956
Professor of Pharmacology; Chief, Clinical Pharmacology Section
Clinical pharmacology

DOCTOR OF PHILOSOPHY

Prerequisites

The incoming student must have completed the prerequisites or have made suitable arrangements to do so, as stated below and in the Programs and Degrees and the Academic Practices sections of division I of this BULLETIN.

The optimum undergraduate preparation for a student to do well in graduate pharmacology is a major in chemistry with a minor in biology, or a biology major with a chemistry minor. Either combination should include a good background in elementary physics.

Admission

A student may be admitted to a program of study toward the Doctor of Philosophy degree in pharmacology after having completed an undergraduate program or after successfully completing a master's degree in one of the natural sciences. Applicants to a graduate program in pharmacology are expected to have a baccalaureate degree with the following minimum prerequisites in their undergraduate preparation (quarter units):

Biology (8)
Chemistry (20) (including general, quantitative, and organic chemistry)
Physics (8)

With the consent of the department, applicants who do not meet the foregoing requirements may be admitted to the Graduate School on a provisional basis until the deficiencies are removed.

Financial aid

Applications for admission requesting financial support should be completed by February 1.

Master's degree credit toward doctoral degree

Applicants having completed a master's degree elsewhere may receive up to 48 quarter units of academic credit toward the doctoral degree. The amount of credit given will depend on the course work taken during the master's degree program.

Terminal master's degree

Incoming students will not be accepted into the program with the intent of completing a master's degree only. However, if a student pursuing a Ph.D. degree finds it impossible or undesirable to continue, a terminal master's degree may be awarded, providing s/he has completed a minimum of 48 quarter units. Of this total, 30 units must be in pharmacology.

Program requirements

The student may select 18 units of cognate courses in consultation with the departmental adviser. A maximum of 12 of the 30 units of pharmacology may be in research leading to the preparation and successful oral defense of a formal thesis, or the results may be in the form of a publishable scientific paper.

Ph.D. degree

A student pursuing the Ph.D. degree will be required to take a minimum of four academic years of full-time work (approximately 100 quarter units). A minimum of 30 units of course work must be in the major field of study, with an additional 26 to 43 units of course work in selected cognates. An additional 20 to 30 units of research, 4 units of seminar, and 3 to 4 units for writing and defense of the dissertation will also be required.

The candidate must take comprehensive written and oral examinations over the major field of study and prepare an acceptable dissertation based on the research program, as stated in division II of the Graduate School BULLETIN.

COMBINED-DEGREES PROGRAMS

In each combined degrees program, some Graduate School credit may be accepted for certain courses taken toward the professional degree. Consent for such credit must be obtained from the Department of Pharmacology and the Graduate School after the courses are completed with satisfactory grades. For a course taken in a professional curriculum to be accepted for graduate credit, the student must maintain the competence required for the respective graduate level.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

COURSES

PHRM 511, 512 General and Systematic Pharmacology I, II (6, 3)
Principles of drug action: drug receptors, absorption and fate of drugs, drug toxicity, and drug development. Systematic consideration of the pharmacology and the therapeutic value of the drugs used in medicine. Demonstration and laboratory exercises illustrating the effects of drugs in man or animals.
Staff.

PHRM 534 Topics in Pharmacology for Dentistry (2)
Lectures and discussions dealing with pharmacologic agents used in dentistry. Emphasis on the current agents used in dental anesthesia, both local and general. Offered on demand.
Fraser, Staff.

PHRM 535 Clinical Pharmacology (3)
Lectures, discussions, ward rounds, and/or laboratory exercises dealing with therapeutic problems related to common medicinal agents. Offered on demand.
Cutler, Staff.

PHRM 544 Topics in Advanced Pharmacology (3)
Lectures and discussions dealing with current advanced concepts in pharmacology, such as structure-action relationships, mechanisms of action, and metabolism and detoxification of therapeutic agents. Offered on demand.
Fraser, Staff.

PHRM 545 Laboratory in Advanced Pharmacology (1-2)
Experimental studies illustrating the didactic material presented in PHRM 544. Offered on demand.
Fraser, Staff.

PHRM 554 Neuropharmacology (4)
Systematic discussion of drugs that affect primarily the nervous system, with major emphasis on mechanism of action.
Peters, Staff.

PHRM 555 Laboratory in Neuropharmacology (1)
Experimental studies illustrating the didactic material presented in PHRM 554.
Peters, Staff.

PHRM 564 Cardiovascular and Renal Pharmacology (3)
Systematic discussion of drugs that affect primarily the cardiovascular and renal systems, with major emphasis on mechanism of action. Offered on demand.
Cutler, Staff.

PHRM 565 Laboratory in Cardiovascular and Renal Pharmacology (1)
Experimental studies illustrating the didactic material presented in PHRM 564. Offered on demand.
Cutler, Staff.

PHRM 574 Chemotherapy (3)
Systematic discussion of drugs that are used primarily in the treatment of infections, with major emphasis on mechanism of action. Offered on demand.
Fraser, Staff.

PHRM 575 Laboratory in Chemotherapy (1)
Experimental studies illustrating the didactic material presented in PHRM 574. Offered on demand.
Fraser, Staff.

PHRM 584 Drug Metabolism and Biochemical Pharmacology (3)
Detailed discussion of the fate of drugs in the body, together with related aspects of biochemical actions of drugs.
Strother, Staff.

PHRM 585 Laboratory in Drug Metabolism and Biochemical Pharmacology (1)
Experimental studies illustrating the didactic material presented in PHRM 584.
Strother, Peters.

PHRM 586 Toxicology (3)
Discussion of deleterious effects of drugs and common poisons. Measures that can be taken to combat poisoning. Offered on demand.
Cress, Staff.

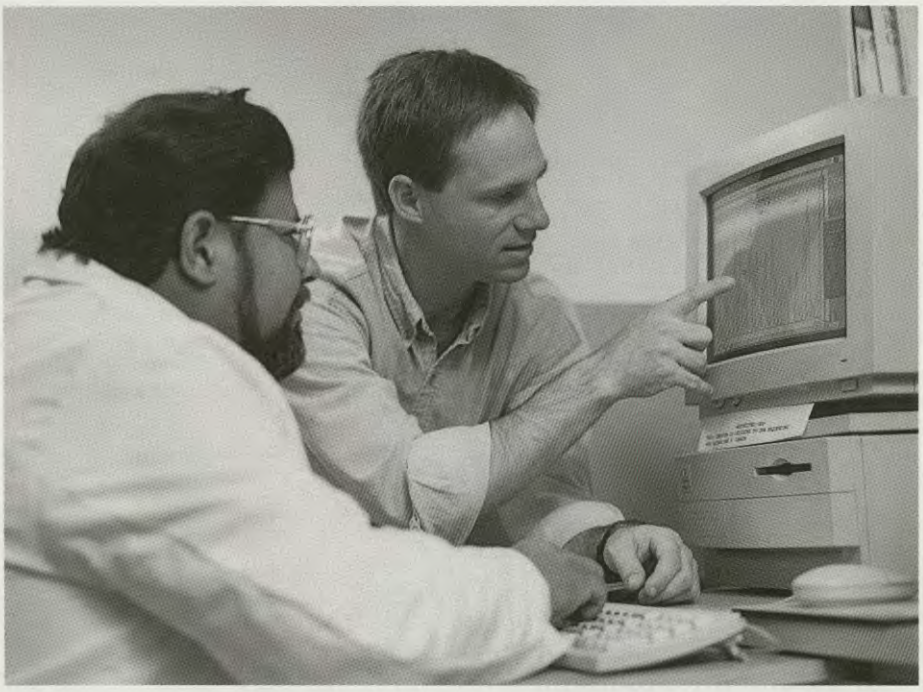
PHRM 605 Integrative Biology Graduate Seminar (1)
This seminar, coordinated by the Departments of Anatomy and of Pharmacology and Physiology, consists of reports from current literature and the presentation of student and faculty research on various aspects of regulatory and integrative biology as applied to cells, tissues, organs, and systems. Both students and faculty are expected to participate in a discussion and critical evaluation of the presentation.

PHRM 684 Special Problems in Pharmacology (2-6)
Assignments in literature reviews and/or laboratory exercises.

PHRM 697 Research (1-6)

PHRM 698 Thesis (1-6)

PHRM 699 Dissertation (1-6)



PHYSIOLOGY

JOHN LEONORA, Ph.D. University of Wisconsin 1957
Cochair; Program Coordinator; Professor of Physiology
Endocrinology

The graduate program in physiology provides a Christian environment in which Ph.D. degree candidates may pursue curricula oriented to their specific interests. Individual attention is assured by maintenance of a small student/faculty ratio.

Research opportunities are available in cell biology; cardiovascular, respiratory, neuro-, reproductive, endocrine, exercise, bone, and neonatal physiology.

FACULTY

W. ROSS ADEY, M.D. University of Adelaide, Australia 1949
Distinguished Professor of Physiology
Neurophysiology

LAWRENCE D. LONGO, M.D. Loma Linda University SM 1954
Distinguished Professor of Gynecology and Obstetrics and Physiology
Placental exchange, fetal physiology

RAYMOND D. GILBERT, Ph.D. University of Florida, Gainesville 1971
Professor of Physiology
Fetal cardiovascular physiology

DAVID A. HESSINGER, Ph.D. University of Miami 1970
Professor of Physiology and Pharmacology
Cell biology, sensory transduction, marine toxicology

SANDRA L. NEHLSEN-CANNARELLA, Ph.D. National Institute for Medical Research, Medical Research Council, London 1971
Professor of Surgery and Microbiology; Research Professor of Pathology and Immunology
Immunology

GORDON G. POWER, M.D. University of Pennsylvania 1961
Professor of Gynecology and Obstetrics and Physiology
Placental exchange, fetal physiology

ROBERT W. TEEL, Ph.D. Loma Linda University GS 1972
Professor of Physiology
Carcinogen metabolism, chemoprevention of cancer

RAMON R. GONZALEZ, Jr., Ph.D. Wake Forest University 1973
Associate Professor of Physiology
Cardiovascular physiology, control of circulation

RAYMOND G. HALL, Jr., Ph.D. Loma Linda University GS 1968
Associate Professor of Physiology
Cell physiology

ELWOOD S. McCLUSKEY, Ph.D. Stanford University 1959
Associate Professor of Physiology
Comparative physiology

CHARLES A. DUCSAY, Ph.D. University of Florida 1980
Associate Professor of Physiology and Pediatrics
Reproductive physiology, endocrinology

WILLIAM J. PEARCE, Ph.D. University of Michigan 1979
Associate Professor of Physiology/Pharmacology
Cardiovascular physiology, control of cerebral circulation

STEVEN M. YELLON, Ph.D. University of Connecticut 1981
Associate Professor of Physiology and Pediatrics
Reproductive endocrinology, neuroendocrinology, and biological rhythms

GEORGE MAEDA, Ph.D. Loma Linda University GS 1976
Associate Professor of Physiology
Neurophysiology

DAISY DE LEÓN, Ph.D., University of California, Davis 1987
Assistant Professor of Physiology
Endocrinology, breast cancer

MARINO DE LEÓN, Ph.D., University of California, Davis 1987
Assistant Professor of Physiology
Neurophysiology, molecular neurobiology

JEAN-MARC TIECHE, Ph.D. Loma Linda University GS 1979
Assistant Research Professor of Physiology
Endocrinology

ASSOCIATE FACULTY

MURRAY E. BRANDSTATER, M.B.B.S. Melbourne University, Australia 1957
Ph.D. University of Minnesota 1972
Professor of Rehabilitation Medicine
Neuromuscular physiology

WILLIAM H. FLETCHER, Ph.D. University of California, Berkeley 1972
Professor of Anatomy and Physiology
Neurophysiology

SUZANNE M. BAWIN, Ph.D. University of California, Los Angeles 1972
Associate Research Professor of Physiology and Neurosurgery
Electrophysiological studies of epileptiform activity

SUBBURAMAN MOHAN, Ph.D. University of Bangalore, India 1978
Associate Professor of Physiology, Medicine, and Periodontics
Bone matrix proteins and growth factors

LORA M. GREEN, Ph.D. University of California, Riverside, 1987
Assistant Professor of Microbiology and Physiology
Cell and molecular biology

PHILIP J. ROOS, M.D. Loma Linda University SM 1976
Assistant Professor of Medicine and Physiology
Pulmonary physiology

JEFFREY M. TOSK, Ph.D. Loma Linda University 1989
Assistant Research Professor of Psychiatry and Physiology
Neurobiology

DOCTOR OF PHILOSOPHY

Prerequisites

The equivalent of a major in one field of science or mathematics and a minor in another is prerequisite. Undergraduate courses should include zoology, chemistry through physical chemistry, and general physics. Mathematics through calculus is highly recommended.

Finanical aid deadline

Applications for admission requesting financial support should be completed by February 1.

Admission

A student may be admitted to a program of study toward the Doctor of Philosophy degree after having completed an undergraduate program as specified above or after successfully completing a master's degree in one of the natural sciences.

Master's degree credit toward doctoral degree

Applicants having completed a master's degree elsewhere may receive up to 48 quarter units of academic credit toward the doctoral degree. The amount of credit given will depend on the course work taken during the master's degree program.

Terminal master's degree

Incoming students will not usually be accepted into the program with the intent of completing a master's degree only. However, if a student pursuing a Ph.D. degree finds it impossible or undesirable to continue, a terminal master's degree may be awarded, providing s/he has completed a minimum of 48 quarter units. Of this total, 30 units must be in physiology.

Program requirements

In addition to physiology (30 units), the student may select 18 units of cognate courses in consultation with the departmental adviser. A maximum of 12 of the 30 units of physiology may be in research leading to the preparation and successful oral defense of a formal thesis, or the results may be in the form of a publishable scientific paper.

A student pursuing the Ph.D. degree will be required to take a minimum of four academic years of full-time work (approximately 100 quarter units). A minimum of 30 units of course work must be in the major field of study, with an additional 26 to 43 units of course work in selected cognates. An additional 20 to 30 units of research, 4 units of seminar, and 3 to 4 units for writing and defense of the dissertation will also be required.

The candidate must take a comprehensive written examination in all of the major areas of physiology. In addition, the student must take an oral examination over his/her area of special interest and related areas; and prepare an acceptable dissertation based on the research program, as stated in section I of this BULLETIN.

COMBINED-DEGREES PROGRAM

The program in physiology, in cooperation with other departments of the University, offers an interdisciplinary program with emphasis in either systems or cell physiology leading to the Doctor of Philosophy, concurrent M.D./Ph.D., or concurrent D.D.S./Ph.D. degrees. The physiology curriculum includes selected interdisciplinary courses and seminars coordinated by the faculties in the Departments of Physiology, Anatomy, and Pharmacology.

In the combined-degrees programs, some Graduate School credit may be accepted for certain courses taken toward the professional degree. Consent for such credit must be obtained from the program in physiology and the Graduate School after the courses are completed with satisfactory grades. For a course taken in a professional curriculum to be accepted for graduate credit, the student must maintain the competence required for the respective graduate level.

General requirements

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

COURSES

PHSL 501 Neurophysiology (3 units)
Basic lecture course on function of the nervous system, primarily designed for dental students and others requiring a rudimentary understanding of nervous processes. Beginning with the electrical activity of neurons, topics including communication between cells, skeletal muscle function, sensory systems, control of motor activity, and higher functions such as sleep and brain electrical activity are discussed.
Prerequisite: ANAT 505 Neuroanatomy or consent of the instructor.
Maeda.

PHSL 511, 512 Medical Physiology I, II (6, 3)
Physiological basis of normal and selected pathological conditions, modern concepts of homeostasis and negative feedback control systems. Utilization of modern electronic instrumentation to study function in man or experimental animals in laboratory sessions.
Staff.

PHSL 533, 534 Physiology I, II (4, 3)
Study of basic human physiology at the cellular and systemic levels, and of pathological conditions. Laboratory sessions utilizing modern electronic instrumentation to study function in man and experimental animals. Designed for students in all applied and basic sciences, except physiology.
Hall.

PHSL 535 Comparative Physiology (5)
Comparison of the major animal groups, from protozoa to mammals, with emphasis on analysis of diversity. Lecture four units, laboratory one unit. Offered alternate years.
Prerequisite: Zoology (preferably invertebrate), physiology (or biochemistry).
Hall, McCluskey.

PHSL 537 Neuroscience (8)
Integrated approach to the fundamentals of neuroanatomy and neurophysiology, with applications to clinical neurology.
Staff.

PHSL 541 Cell and Molecular Biology (4)
Life processes fundamental to animal, plant, and microorganism; a graduate-level introduction. Lecture 3 units, laboratory 1 unit each term. Offered alternate years.
Prerequisite: Organic chemistry and one of the following – biochemistry, molecular biology, or cell biology. Physics desirable.
Hall, McCluskey.

Courses 550-587 are advanced lecture and conference courses exploring the latest concepts in the respective area.
Prerequisite or concurrent: PHSL 511, 512; or the equivalent.

PHSL 550 Properties of the Nervous System (3)
Critical analysis of current neurophysiological data attempting to characterize the vertebrate nervous system. Emphasis on selected topics covering neuronal topology, intracellular recordings, ultrastructure, evoked potentials, and neurotransmitter chemistry. Offered alternate years.
Prerequisite: Consent of the instructor.
Maeda.

PHSL 553 Applied Electronics for the Basic Sciences (4)
Introduction to basic electronics from an applications viewpoint, with lectures and laboratories aimed at enhancing the use of research instrumentation in the biological sciences. Using integrated circuits and other components, students will design, build, and test some simple circuits which are often part of the overall equipment in their laboratory. Offered alternate years.
Prerequisite: General physics and calculus.
Maeda.

PHSL 555 Biology of Cancer (lecture) (3)
Interdisciplinary approach to study of the causation, characterization, and prevention of cancer. Offered alternate years.
Teel, Hall.

PHSL 556 Biology of Cancer (laboratory) (2)
Introduction to techniques essential to research investigations in cancer. Offered alternate years.
Teel, Hall.

PHSL 558 Physiology of Exercise and Inactivity (3)
Effects of exercise and inactivity on the physiological systems of the body, including the skeletal, muscular, cardiovascular, respiratory, and others. Emphasis at the cellular and molecular levels. Study not only of immediate changes in the body necessary to meet the demands of exercise, but also the long-term adaptive changes. Offered alternate years.
Prerequisite: Medical physiology.
Hall.

PHSL 567 Respiratory Physiology (3)
Intensive course encouraging student participation in the principles and application of functional anatomy, gaseous physics, and diffusional processes; respiratory mechanics, blood gases, and reaction kinetics; uneven ventilation/blood flow, high altitude, exercise, and pulmonary function testing. Original reference reading required. Open to graduate, medical, and other students and technicians with experience in and commitment to the field. Offered alternate years.
Longo, Power

PHSL 569 Oxygenation of the Fetus and Newborn (2)
Dynamics and control of oxygen delivery to tissues. Exploration of any or all the steps in the pathway

linking blood oxygen transport, control of blood flow to the brain and other organs, theoretical and experimental aspects of oxygen diffusion in tissues, and the control of cellular respiration. Offered alternate years.

Longo.

PHSL 577 Cardiac Physiology (3)
Didactic course dealing with the developmental, transitional, and adult anatomy of the heart, as well as its electrical, mechanical, and metabolic processes in health and disease.

Prerequisite: An advanced physiology course or consent of the instructor. Offered alternate years.

Gonzalez.

PHSL 578 Vascular Physiology (3)
Study of the physical principles which govern flow of fluids (rheology), functional anatomy, and reflexes of the peripheral circulation. Also considered is the role of the peripheral vasculature in the control of cardiac output and blood flow to special regions, such as the brain, heart, skeletal muscle, etc. Offered alternate years.

Prerequisite: An advanced physiology course or permission of the instructor.

Gilbert.

PHSL 584 Readings in Neurophysiology (2)
Seminar tracing the development of twentieth-century ideas about the nervous system. The writings of three early neurobiologists (Sherrington, Pavlov, Herrick) emphasized in context with classical and current understanding of the nervous system.

Prerequisite: Consent of the instructor.

Maeda.

PHSL 585 Endocrinology (3)
Study of the physiologic effects of hormones secreted by the hypothalamus, pituitary, thyroid, adrenals, parathyroids, and pancreas. Emphasis on the specific effects on carbohydrate, protein, lipid, water, and electrolyte metabolism. Offered alternate years.

Leonora.

PHSL 587 Physiology of Reproduction (2)
Study of the development of the male and female reproductive systems, neural and hormonal control of reproductive function, fetal development, and parturition. Offered alternate years.

Yellon, Ducsay.

PHSL 595 Readings in Physiology (arranged)
Assigned reading and conferences on special problems in physiology.

Staff.

PHSL 596 Readings in Comparative Physiology (1)
Critical analysis of selected current or classic papers. Content variable. May be repeated for additional credit. Offered alternate years.

Prerequisite: A course in physiology.

McCluskey.

PHSL 597 Great Books in Physiology (1)
Critical and descriptive reports (written and oral) of books on a graduate reading list.

McCluskey.

PHSL 604 Perinatal Biology Graduate Seminar (1)

Longo.

PHSL 605 Integrative Biology Graduate Seminar (1)
Coordinated by the Departments of Anatomy and of Pharmacology and Physiology. Consists of reports from current literature and the presentation of student and faculty research on various aspects of regulatory and integrative biology as applied to cells, tissues, organs, and systems. Both students and faculty are expected to participate in a discussion and critical evaluation of the presentation.

PHSL 694 Special Problems in Physiology (arranged)

PHSL 697 Research (1-18)

PHSL 698 Thesis (1)

PHSL 699 Dissertation (2)

PSYCHOLOGY

HECTOR BETANCOURT, Ph.D., University of California, Los Angeles 1983
Chair, Program Coordinator; Professor of Psychology
Crosscultural and social psychology, attribution theory, prosocial behavior, conflict and violence

ALVIN J. STRAATMEYER, Ph.D., ABPP, University of South Dakota 1974
Coordinator of Clinical Training; Professor of Psychology
Geropsychology, hypnosis, death and grief work

The Department of Psychology offers a combination of innovative training opportunities in clinical and experimental psychology: the Doctor of Psychology (Psy.D.) and Doctor of Philosophy (Ph.D.) degrees are offered in the area of clinical psychology; the Ph.D. degree is also offered with emphases in a number of experimental areas; and combined-degrees programs, Psy.D/M.P.H. and Psy.D./Dr.P.H., are offered in coordination with the Preventive Care Program in the Department of Health Promotion and Education, School of Public Health.

The Ph.D. degree in clinical psychology follows the traditional scientist-practitioner (or "Boulder") model, which emphasizes training in research and clinical practice. The Psy.D. degree, based on the practitioner-scholar (or "Vail") model, emphasizes training in clinical practice based on the understanding and application of scientific psychological principles and research. The Psy.D./Dr.P.H. combined-degrees program combines training in psychology and health sciences to prepare individuals who will be qualified in the application of psychology to health promotion, preventive medicine, and healthcare, as well as for clinical practice and research.

The Ph.D. degree in experimental psychology is designed to train a small number of individuals for research and academic careers in basic as well as applied psychology. Applications for the experimental Ph.D. degree are currently accepted in two areas:

1. General experimental (e.g., psychophysiology, perception, cognition, and performance); and

2. Applied social psychology (e.g., crosscultural and health psychology).

Additional areas will become available with the planned expansion of the faculty in coming years.

In all programs, the Department of Psychology emphasizes research and practice based on the scientific principles and methods of psychology and related disciplines. This emphasis in psychological science takes place within the context of an approach to human health and welfare, which is consistent with the institutional motto: "To Make Man Whole." Within this context a systematic attempt is made, through the wholeness

component of the curriculum, to promote an understanding of human behavior in relation to the psychological, physical, spiritual, and social/cultural aspects of being human. In this way the Department of Psychology provides, in addition to the traditional training in psychology, a positive environment for the study of cultural, social, and spiritual issues relevant to psychological research and practice in contemporary American society and around the world.

FACULTY

JAY L. BRAND, Ph.D., University of Louisville 1990
Associate Professor of Psychology
Human factors, human perception and performance, cognition

PAUL HAERICH, Ph.D., University of Florida 1989
Associate Professor of Psychology
Psychobiology, psychophysiology of cognition and emotion

JANET SONNE, Ph.D., University of California, Los Angeles, 1981
Associate Professor of Psychology
Ethical issues in clinical practice, posttraumatic-stress disorders, ego deficits in abused children

MARY-CATHERIN FREIER, Ph.D., University of Health Sciences, Chicago Medical School 1989
Assistant Professor of Psychology
Neuropsychology, health and child/pediatric psychology, in utero substance exposure, and developmental follow-up

KELLY R. MORTON, Ph.D., Bowling Green State University 1992
Assistant Professor of Psychology
Gereopsychology, death and grief work

NOTE: As part of the process of expanding its doctoral programs, the Department of Psychology is currently engaged in a search process that is expected to add at least one more full-time core faculty member this year and two more each of the two subsequent years.

ASSOCIATE FACULTY

TODD BURLEY, Ph.D., University of Tennessee 1972
Adjunct Professor of Psychology
Cognition and phenomenology, neuropsychological correlates of phenomenological processes

MARK HAVILAND, Ph.D., University of Colorado 1979
Associate Professor of Psychiatry/Psychology
Affect deficits/alexithymia, depression, psychoactive substance dependence, posttraumatic-stress disorders, measurement and statistics

HELEN HOPP, Ph.D., University of Washington 1991
Associate Professor of Public Health/Psychology
Theories of health-behavior change, attitude assessment, cognitive responses to diagnostic feedback

JERRY HOYLE, Ph.D., California School of Professional Psychology, San Diego 1980
Associate Professor of Psychiatry and Psychology
Psychological assessment and psychotherapy with children, stress management in professional training and work settings

MICHAEL GALBRAITH, Ph.D. Claremont Graduate School 1989
Associate Professor of Nursing and Psychology
Psychiatric/mental health nursing, health psychology

JERRY W. LEE, Ph.D., University of North Carolina 1978
Professor of Public Health and Psychology
Social and health psychology, smoking withdrawal, associations between religion and health

MICHAEL MASKIN, Ph.D., ABPP, Fordham University 1973
Assistant Professor of Psychiatry and Psychology
Director of Training, Psychology Service, J. L. Pettis Memorial Veterans Medical Center
Forensic psychology, group psychotherapy, multidisciplinary training and consultation

JOHNNY RAMIREZ, Ed.D. Harvard University
1993 Associate Professor of Theology, Psychology, and Culture
Theology, psychology, and culture

GENERAL REQUIREMENTS

The following requirements apply to all doctoral programs in the Department of Psychology. Note that the first three sections — foundations, methodology, and wholeness — are referred to as the core curriculum.

Core Curriculum I

Foundations of Psychological Science (27 units)

PSYC 524	History, Systems, and Philosophy of Psychology (4)
PSYC 544	Foundations of Learning and Behavior (4)
PSYC 545	Cognitive Foundations (4)
PSYC 551	Psychobiological Foundations (3)
PSYC 564	Foundations of Social Psychology and Culture (4)
PSYC 574	Foundations of Personality Theory and Research (4)
PSYC 575	Human Development (4)

Core Curriculum II

Quantitative Psychology/Research Methodology (16 units)

PSYC 501 Advanced Statistics I (4)
PSYC 502 Advanced Statistics II (4)
PSYC 503 Advanced Statistics III (2)
PSYC 505 Research Methods in Psychological Science (4)
PSYC 511 Psychometric Foundations (2)

Core Curriculum III

Wholeness (18 units)

An integral part of the mission of Loma Linda University involves meeting the academic needs of students and professionals from different cultural and social realities around the world as well as here at home. The Department of Psychology's wholeness curriculum reflects this commitment and is grounded in the University's educational philosophy and wholistic approach to human health and welfare. This approach emphasizes the importance of the physical, spiritual, and sociocultural dimensions of human existence in psychological research and practice. It implies, for instance, recognition of the importance of religion, culture, and the physical and social environment in the lives of those we pledge to serve. This aspect of the curriculum is intended to encourage tolerance for human diversity as well as a genuine interest in the understanding of psychological phenomena within the context of all aspects of being human.

PSYC 534 Culture, Psychology, and Religion (3)
PSYC 535 Psychological Study of Religion (3)
PSYC 567 Ethnic Diversity and Community Issues (2)
PSYC 566 Crosscultural Psychology (2)
PSYC 576 Sex Roles and Gender Issues (2)
Elective: Seminar in Religion and Psychology (2)
Elective: Psychology and Health (4)

Colloquia (3 units)

PSYC 591A, B, C Colloquium (1)
Students participate in a series of lectures presented by distinguished speakers in the various areas of scientific and professional psychology. Students have to attend a minimum of 90 percent of the presentations. At the end of each of the three quarters during which colloquia are scheduled, students prepare a critical report based on each of the presentations attended.

Minor concentration (12)

Students will complete 12 units in an area other than their major concentration (i.e., clinical psychology or a specific area of experimental focus) but still relevant to psychological research and/or practice. The area of concentration and the courses to be included must be approved by the department.

Examples of possible areas of minor concentration are health psychology (or related areas, such as preventive care or health promotion and education), psychology and religion, psychology and culture/ethnic diversity, psychology and biology, family studies/therapy, psychopharmacology, chemical dependency/drug abuse, etc.

Comprehensive examination

A comprehensive examination must be taken after completion of the core curriculum and minimum specialty area course work. This examination, which will normally occur during the third year of study, is intended to evaluate the candidate's general knowledge and understanding of the various areas of psychological science as well as the ability to integrate and use such knowledge for the purposes of developing research and applications.

Computer proficiency

Students are required to demonstrate proficiency using a computer operating system and at least one of the packages for statistical analysis (e.g., SPSS, BMDP).

Language requirement

Students are required to demonstrate proficiency in a language other than English. This language should be relevant to psychological research or the practice of psychology, particularly with underserved populations. This requirement is normally satisfied by demonstrating the ability to read or converse at the AFMLT Low-Intermediate level (e.g., through traditional classroom courses). Alternative methods of satisfying this requirement (e.g., spending significant time in another culture actively involved in activities relevant to academic or professional psychology) must be approved by the faculty of the Department of Psychology.

SPECIALTY CURRICULUM: CLINICAL

The requirements of the clinical curriculum apply to all students enrolled in the Psy.D. program, the Psy.D./Dr.P.H. combined-degrees program, and the Ph.D. degree program in clinical psychology.

Clinical Psychology: General (16 units)

PSYC 525 Introduction to Clinical Psychology (2)
PSYC 526 Ethics and Legal Issues (2)
PSYC 571 Psychopathology (3)
PSYC 572 Child Psychopathology (2)
PSYC 555 Psychopharmacology (4)
PSYC 552 Brain and Behavior (3)

Psychological Assessment (12 units)

PSYC 512 Assessment I (2) and Laboratory (1)
PSYC 513 Assessment II (2) and Prepracticum (1)
PSYC 514 Assessment III (2) and Prepracticum (1)
PSYC 515 Assessment IV (2) and Prepracticum (1)

Psychological Treatment (21 units)

PSYC 581 Introduction to Practice: Theory and Research (2)
PSYC 582, 582L Behavioral Therapy and Prepracticum (4)
PSYC 583, 583L Cognitive Therapy and Prepracticum (4)
PSYC 584, 584L Psychodynamic Therapy and Prepracticum (4)
PSYC 585, 585L Humanistic/Phenomenological Therapy and Prepracticum (4)
PSYC 586, 586L Group Therapy and Prepracticum (3)

Clinical Electives (12 units)

Practica and Internship (18 units)

PSYC 781 Prepracticum (2)
PSYC 782 Practicum I (4)
PSYC 783 Practicum II (4)
PSYC 784 Practicum III (4)
PSYC 799 Internship (4)

Clinical proficiency examination

In order to be authorized to begin their internship, students must pass an examination concerning all aspects of clinical proficiency. This will include demonstrating skill in:

1) conceptualizing the presenting problem;
2) obtaining information regarding personal history, interpersonal functioning, and present status;
3) synthesizing psychodiagnostic data;
4) justifying diagnostic impressions;
5) applying relevant research to treatment planning;
6) formulating a comprehensive treatment plan;
7) engaging in effective intervention; and
8) evaluating treatment progress and outcome.

DOCTOR OF PSYCHOLOGY

Admission

Applicants must meet the requirements of the Graduate School as outlined in the current edition of the Graduate School BULLETIN. In addition to the general test of the Graduate Record Examination (GRE), the psychology subject test is also required of all applicants.

Prerequisites

Undergraduate preparation should include successful completion of: a course in history and systems of psychology; two courses from learning, physiological psychology, cognition, or sensation and perception; two courses from developmental, personality, or social; one course in biology (anatomy and physiology is recommended); one course in physics or chemistry; one course in anthropology and sociology; one course in statistics.

COURSE OF STUDY

The course of study for the Doctor of Psychology (Psy.D.) degree includes a minimum of 169 units of academic credit. In addition to the general requirements and the clinical curriculum detailed above, the student will complete the requirements indicated below:

Doctoral research

A doctoral project is required of all students in the Psy.D. program. This project involves research, generally of an applied nature, either qualitative or quantitative; and must be developed in consultation with the student's supervisory committee.

Course requirements

In preparation for their doctoral research, students must complete PSYC 507 Program Evaluation. In addition, students should complete at least 8 units of PSYC 697 and 4 units of PSYC 698 while working on their project.

Proposal

A formal proposal must be submitted to and approved by a faculty supervisory committee.

Defense

Upon completion of the doctoral project, a public defense before the supervisory committee is required.

Advancement to candidacy

Students may apply for doctoral candidacy upon (1) completion of the core curriculum and required specialty courses, (2) successful completion of the comprehensive examination, (3) acceptance of the doctoral project proposal, (4) demonstration of computer proficiency, and (5) recommendation of the faculty.

DOCTOR OF PHILOSOPHY

Admission

Applicants must meet the requirements of the Graduate School as outlined in the current edition of the Graduate School BULLETIN. In addition to the general test of the Graduate Record Examination (GRE), the psychology subject test is also required of all applicants.

Prerequisites

Undergraduate preparation should include successful completion of: a course in history and systems of psychology; two courses from learning, physiological psychology, cognition, or sensation and perception; two courses from developmental, personality, or social; one course in biology (anatomy and physiology is recommended); one course in physics or chemistry; one course in sociology or anthropology; one course in statistics.

COURSE OF STUDY

Clinical emphasis

The course of study for the Doctor of Philosophy degree with a clinical emphasis includes a minimum of 209 units of academic credit. In addition to the general requirements and the clinical curriculum detailed above, the student will complete the requirements that follow:

Doctoral dissertation

A doctoral dissertation is required of all students in the Ph.D. degree program. This project should involve an original research contribution to the field and must be developed in consultation with the student's supervisory committee.

In preparation for the doctoral dissertation, as a second-year project, students must complete 12 units of PSYC 595 Directed Research. These units normally will be completed by the beginning of the third year of study.

Advancement to candidacy

Students may apply for doctoral candidacy upon (1) completion of the core curriculum and minimum specialty course work, (2) successful completion of the comprehensive examination, (3) acceptance of the doctoral dissertation proposal, (4) demonstration of computer proficiency, and (5) recommendation of the faculty.

Course requirements

While working on the dissertation, candidates must complete 2 units of advanced statistics (e.g., courses numbered PSYC 604-609); at least 36 units of supervised research (PSYC 697); and 4 units of PSYC 699.

Qualifying examination

A proposal must be submitted to and approved by the faculty supervisory committee after a formal presentation and defense before the committee.

Defense

Upon completion of the doctoral dissertation, a public defense before the supervisory committee is required.

COURSE OF STUDY

Experimental emphasis

The course of study for the Doctor of Philosophy degree with an experimental emphasis includes a minimum of 154 units of academic credit, including the foregoing general requirements. The Ph.D. degree with an experimental emphasis will include the following:

Advanced courses and seminars in major area of concentration (24 units).

Doctoral dissertation

A doctoral dissertation is required of all students in the Ph.D. degree program. This project should involve an original research contribution to the field and should be developed in consultation with the student's supervisory committee.

As a second-year project, students must complete 12 units of PSYC 595 Directed Research. These units normally will be completed by the end of the second year of study.

Course requirements

In preparation for doctoral research, students must complete 2 units of advanced statistics (e.g., courses numbered PSYC 604-609). In addition, students should complete at least 36 units of PSYC 697, and 4 units of PSYC 699 while working on their dissertation.

Qualifying examination

A proposal must be submitted to and approved by the faculty supervisory committee after a formal presentation and defense before the committee.

Defense

Upon completion of the doctoral dissertation, a public defense before the supervisory committee is required.

Advancement to candidacy

Students may apply for doctoral candidacy upon (1) completion of the core curriculum and minimum specialty-area course work, (2) successful completion of the comprehensive examination, (3) acceptance of the doctoral dissertation proposal, (4) demonstration of computer proficiency, and (5) recommendation of the faculty.

COMBINED-DEGREES PROGRAM

Admission

For acceptance into the Doctor of Psychology/Doctor of Public Health (Psy.D./Dr.P.H.) combined-degrees program, applicants must meet the respective requirements of both degrees as outlined in the Graduate School BULLETIN and the School of Public Health BULLETIN. Application must be made to each school and each school will process the application separately.

COURSE OF STUDY

The course of study for the Psy.D./Dr.P.H. combined-degrees program consists of a minimum of 220 units as outlined below. In addition to the general requirements (Core I, II, III) for all doctoral degree students in psychology and the specialty curriculum in clinical psychology, those in the Psy.D./Dr.P.H. combined-degrees program must complete the following requirements:

Corequisites: (16 units)

ENVN 509 Principles of Environmental Health (3)
EPDM 509 Principles of Epidemiology I (3)
HADM 509 Principles of Administration in Public Health (3)
HPRO 509 Health Behavior Change (3)
HPRO 536 Program Planning (3)
SHCJ 605 Philosophy of Public Health (1)

Biomedical Sciences: (35 units)

ANAT 501 Human Anatomy I (3)
ANAT 502 Human Anatomy II (3)
ANAT 503 Human Histology (5)
HPRO 518 Pathology of Human Systems (4)
NUTR 504 Nutritional Metabolism (5)
NUTR 517 Advanced Human Nutrition I (4)
NUTR 518 Advanced Human Nutrition II (4)
PHLS 533 Human Physiology I (4)
PHLS 534 Human Physiology II (3)

Preventive Care: (31 units)

HPRO 526 Life Style Disease Risk Reduction (3)
HPRO 527 Weight Management and Eating Disorders (3)
HPRO 553 Smoking Tobacco and Health (3)
HPRO 554 Alcohol and Drug Dependency (3)
HPRO 563 Stress and Coping Mechanisms (3)
HPRO 573 Exercise Physiology I (3)
HPRO 578 Exercise Physiology II (3)
HPRO 606 Preventive Care Seminar (2,2,2)
NUTR 545 Clinical Nutrition (4)

Practica

HPRO 704 Preliminary Clinical Experience (400 hours)

TOTAL UNITS: 220

COMBINED-DEGREES PROGRAM

Students who are interested in health psychology and areas related to healthcare promotion may choose a degree track leading to an M.P.H. degree. In this case, 24 of the units in the doctoral degree program in psychology can be applied towards the M.P.H. degree. These units for dual counting are determined by the corresponding program in the school of Public Health in conjunction with the psychology department. The remaining units for the completion of the M.P.H. degree will depend on the specific area of public health (e.g., preventive care, health promotion, or health administration) and will be decided by the corresponding program coordinators.

For course listings, see the BULLETIN of the School of Public Health in the chosen area(s) of emphasis.

COURSE NUMBERING SYSTEM

Foundation level

PSYC 501-509 Quantitative and Research Methodology
PSYC 511-519 Psychological Assessment
PSYC 521-529 Historical, Philosophical Bases
PSYC 531-539 Wholeness Curriculum
PSYC 541-549 Cognition, Learning, Perception
PSYC 551-559 Psychobiology, Psychophysiology
PSYC 561-569 Social Psychology, Culture
PSYC 571-579 Psychopathology, Individual Differences
PSYC 581-589 Psychotherapy
PSYC 591-599 Research courses and colloquia

Advanced-specialty level

PSYC 601-609 Statistical Seminars
PSYC 611-619 Special Topics in Assessment

Clinical credit

PSYC 781-789 Practica, Supervised Clinical Contact
PSYC 791-799 Internship

NOTE: Information concerning listings or descriptions of additional specialty and elective courses may be obtained by contacting the Department of Psychology.

COURSES

PSYC 501 Advanced Statistics I (4)
General introduction to statistical analysis detailing the descriptive/inferential distinction and covering sampling distributions (e.g., normal, binomial), hypothesis testing, and basic parametric and nonparametric techniques.

PSYC 502 Advanced Statistics II (4)
Thorough introduction to regression analysis and analysis of variance (ANOVA), with emphasis on hypothesis testing and the development of general models that partition overall variability. Topics covered include simple and multiple regression, one-way and factorial, repeated-measures ANOVA, and analysis of covariance. Evaluation of assumptions and nonparametric alternatives.

Prerequisite PSYC 501 or consent of the instructor.

PSYC 503 Advanced Statistics III (2)
Broad introduction using linear (matrix) algebra to maximum likelihood estimation generally, using several important multivariate statistical techniques, including, but not limited to multivariate analysis of variance, multivariate regression, path analysis and structural equations causal modeling, log-linear models, and time series analysis; alternatives to maximum likelihood estimation are also evaluated.

Prerequisite: PSYC 502 or consent of the instructor.

PSYC 505 Research Methods in Psychological Science (4)
Comprehensive examination of research methods in psychology, from the formulation of research problems to the design, execution, and report of findings. Experimental and quasi-experimental designs, as well as field and case studies included. The exploratory-confirmatory distinction in scientific epistemology and its implications for research and theory are discussed. Review and critical analysis of research literature from various areas of contemporary psychological science.
Prerequisite: PSYC 502 or consent of the instructor.

PSYC 507 Program Evaluation (2)
Covers the methodology and tools for doing qualitative research and program evaluation.
Prerequisite: PSYC 515.

PSYC 511 Psychometric Foundations (2)
Advanced orientation to psychological instruments; their theoretical derivation, construction, and use. Emphasis on reliability, validity, and factor structures.
Prerequisite: PSYC 501 or consent of the instructor.

PSYC 512 Assessment I (2)
Instruction in administering, scoring, interpretating, and report write-up of various adult and child intelligence and achievement instruments such as the Shipley, WAIS-R, WISC-II, WPPSI-R, KBIT, Stanford-Binet, WIAT, PIAT, KABC, WRAT-3, and the Woodcock-Johnson batteries. Consideration of the empirical reliability and validity data for each instrument.
Prerequisite: PSYC 511 or consent of the instructor.

PSYC 512L Assessment I Prepracticum (1)
Supervised experiences administering, scoring, interpreting, and reporting various adult and child intelligence and achievement instruments.
Prerequisite: Concurrent registration in PSYC 512.

PSYC 513 Assessment II (2)
Instruction in the administering, scoring, interpretating, and report write-up of various adult and child objective personality instruments, including the MMPI-2, MMPI-A, MACI, PIC, 16PF, CDI, BDI, and BAI. Consideration of the empirical reliability and validity data for each instrument.
Prerequisite: PSYC 512 or consent of the instructor.

PSYC 513L Assessment II Prepracticum (1)
Supervised experiences in administering, scoring interpreting, and reporting various adult and child objective personality instruments.
Concurrent: PSYC 513.

PSYC 514 Assessment II (2)
Administering, scoring, interpretating, and report write-up of various adult and child projective personality instruments; including the Rorschach, TAT, CAT, and House-Tree-Person. Consideration of the empirical reliability and validity data for each instrument.
Prerequisite: PSYC 513 or consent of the instructor.

PSYC 514L Assessment III Prepracticum (1)
Supervised experiences in administering, scoring interpreting, and reporting of various adult and child projective personality instruments.
Concurrent: PSYC 514.

PSYC 515 Assessment IV (2)
Instruction in the integration of results of intellectual, achievement, objective personality, and projective personality assessment techniques; and the composition of full-battery reports.
Prerequisite: PSYC 514 or consent of the instructor.

PSYC 515L Assessment IV Prepracticum (1)
Supervised experiences integrating the results of assessment batteries and composing full-battery reports.
Concurrent: PSYC 515.

PSYC 524 History, Systems, and Philosophy of Psychology (4)
Builds on the coverage of the history and systems of psychology provided in most undergraduate courses. Focuses on how different approaches to psychology (e.g., the schools of psychology) have defined the field, what topics and information they have considered as a part of psychology, and what mechanisms and criteria for advancing the field these approaches have considered acceptable. Examination of current trends in light of their contributions to the development of psychology as a science and as a profession.

PSYC 525 Introduction to Clinical Psychology (2)
Introduction to the development and current status of clinical psychology within the context of professional and basic psychology. Examination of the practice of clinical psychology in light of the psychological principles and scientific methods on which it is based. Surveys methods and contemporary professional and ethical issues, providing the context within which the role of the doctoral-level clinical psychologist is compared to that of other professionals and technicians. Examination of commonalities and areas of collaboration as well as differences.

PSYC 526 Ethics and Legal Issues in Clinical Psychology (2)
Overview of current ethical and legal standards for the conduct of psychology. APA Ethical Guidelines, Standards for Providers of Psychological Services, and Standards for Educational and Psychological Tests, as well as relevant California and civil licensing laws.

PSYC 534 Culture, Psychology, and Religion (3)
Introduction to the major contours of Western culture as they relate to various schools of psychological thought and the influence of religious beliefs in their inception. Theological critique of various world views that have guided psychological schools of thought. Topics include liberalism and modernism, pietism and evangelicalism, the Enlightenment and Romantic movements.

PSYC 535 Psychological Study of Religion (3)
Surveys research areas, methods, and issues in the study of religion and spirituality from a psychological perspective. Emphasizes understanding of religious phenomena relative to the scientific study of human behavior and psychological functioning. Examination of the philosophical foundations of research in psychology, sociology, and anthropology in order to provide an eclectic approach to research in this area. Topics include ethnographic approaches to religious experience, conversion, religiosity, faith and moral development, worship, rituals, and crosscultural manifestations of religion.

PSYC 544 Foundations of Learning and Behavior (4)
Surveys the major theories, methods, and applications in the psychology of learning. Includes classical, operant, and cognitive aspects, with emphasis on contemporary issues in research and applications as well as laboratory training with animals.

PSYC 545 Cognitive Foundations (4)
Reviews the major theories, methods, and findings in perception, cognition, and memory, including an introduction to contemporary cognitive science. Applications to the understanding of normal as well as abnormal behavior and psychological interventions.

PSYC 551 Psychobiological Foundations (3)
A basic course in psychobiology. Begins with basic neuroanatomy, the physiology of the neuron, and neural communication. Includes consideration of visual, auditory, and some esthetic sensation and perception of the structure and function of the motor systems and of the physiological substrates of sleep and dreams.

PSYC 552 Brain and Behavior (3)
Examines neurophysiological bases of molar behaviors. Consideration of language, learning, and memory; motivated behaviors (e.g., aggression, hunger, thirst, sex); emotion, and psychological dysfunction (e.g., schizophrenia, anxiety disorders, addictions).
Prerequisite: PSYC 551 or consent of the instructor.

PSYC 555 Psychopharmacology
Advanced coverage of neurotransmitter systems, with particular emphasis on the mechanism of action of various psychoactive substances.
Prerequisite: PSYC 551.

PSYC 564 Foundations of Social Psychology and Culture (4)
General survey of research, theory, and applications of social psychology within the context of other areas of psychology and related disciplines. Emphasizes scientific study of how people think about, influence, and relate to each other, both at the interpersonal and intergroup levels, within the context of cultural, social, and related phenomena. Applications to areas of psychology, such as clinical, health, and organizational psychology, as well as to economics, politics, and social issues.

PSYC 566 Crosscultural Psychology (2)
Crosscultural variations in psychological processes and human behavior examined in light of the role of culture and implications for the universality of psychological principles. Crosscultural research, theory, and interventions examined in terms of their implications for the understanding of crosscultural variations and the universality of psychological knowledge and the implications for the study and practice of psychology in a multicultural society and interdependent world. Includes basic areas, such as personality, developmental and social psychology, as well as clinical and other professional areas.

PSYC 567 Ethnic Diversity and Community Issues (2)
Surveys theories, research, and interventions dealing with culture and ethnicity in mental health and clinical practice. Focuses on working with ethnic minorities while emphasizing the effects of culture, ethnicity, and socioeconomic factors in the behavior of all ethnic minority as well as mainstream individuals and groups. The role of cultural and socioeconomic factors in psychological processes, psychopathology, psychological assessment and intervention is examined within the context of human diversity and community.

PSYC 571 Psychopathology (3)
Advanced overview of the major theoretical and empirical approaches to the understanding and classification of adult psychopathology in light of contemporary psychological research and the context of culture. The DSM-IV provides the basic structure for the analysis of the various major types of adult psychopathology, including schizophrenia and other psychotic disorders, mood disorders, anxiety disorders, dissociative disorders, personality disorders, adjustment disorders, and cognitive disorders

PSYC 572 Child Psychopathology (2)
Advanced overview of the major theoretical and empirical approaches to the understanding and classification of child psychopathology in light of contemporary psychological research and the context of culture. The new DSM-IV provides the basic structure for analysis of the major types of child psychopathology, including mental retardation, learning disorders, pervasive developmental disorders, conduct disorders and eating disorders.
Prerequisite: PSYC 571, PSYC 575.

PSYC 574 Foundations of Personality Theory (4)
Surveys the major theories and contemporary areas of development in the field of personality. Examines theories in light of contemporary research evidence in areas dealing with individual pattens of thinking, feeling, and acting; as well as developments in areas such as the biological, cultural, and social foundations of human behavior. Evaluates theories based on criteria such as stimulation of research and applications. Attempts to integrate knowledge from the various basic areas of scientific psychology, such as learning, motivation, and emotion, in order to advance the understanding of current issues and trends in personality theory, research, measurement, and applications.

PSYC 575 Foundations of Human Development (4)
Human development considered from conception through old age, including social, cognitive, and physiological aspects of development as well as personality. Emphasizes contemporary developments in research, theory, and applications.

PSYC 576 Sex Roles and Gender Issues (2)
Seminar covering research literature on the differences between males and females, masculinity, femininity, and androgyny; and the roles and cultural expectations of the sexes. Examines the antecedents and consequences of sex-based prejudice and discrimination within the context of contemporary social issues and culture.

PSYC 581 Psychological Treatment I: Introduction to Practice and Research (2)
Overview of general principles and theoretical orientations of individual psychotherapy. Consideration of the scientific bases of each orientation and evaluation of the research concerning its efficacy (in terms of variables affecting the quality of its process and outcome).
Prerequisite: PSYC 525.

PSYC 582 Psychological Treatment II: Behavior Therapy (3)
Basis for understanding behavior therapy, the concepts and techniques of classical conditioning and operant conditioning interventions, and the empirical data regarding the efficacy of this treatment orientation.
Prerequisite: PSYC 571 or consent of instructor.

PSYC 582L Behavior Therapy Prepracticum (1)
Supervised experience observing and/or engaging in behavior therapy with an adult or child client.
Concurrent: PSYC 572.

PSYC 583 Psychological Treatment III: Cognitive Therapy (3)
Basis for understanding of cognitive therapy, the concepts and techniques of various types of cognitive interventions, and the empirical data regarding the efficacy of this treatment orientation.
Prerequisite: PSYC 571 or consent of instructor.

PSYC 583L Cognitive Therapy Prepracticum (1)
Supervised experience observing and/or engaging in cognitive therapy with adult or child clients.
Concurrent: PSYC 573.

PSYC 584 Psychological Treatment IV: Psychodynamic Therapy (3)
Basis for understanding psychodynamic therapy (from psychoanalysis to object relations therapy to short-term psychodynamic therapy), the concepts and techniques of various types of psychodynamic interventions, and the empirical data regarding the efficacy of this treatment orientation.
Prerequisite: PSYC 571 or consent of instructor.

PSYC 584L Psychodynamic Therapy Prepracticum (1)
Supervised experience observing and/or engaging in psychodynamic therapy with adult or child clients.
Concurrent: PSYC 574.

PSYC 585 Psychological Treatment V: Humanistic/Phenomenological Approaches to Therapy (3)
Overview of the various humanistic/phenomenological approaches to therapy, including client-centered and Gestalt therapies. Student develops an understanding of concepts and techniques of the various approaches, as well as the empirical data regarding the efficacy of these treatment orientations.
Prerequisite: PSYC 571 or consent of instructor.

PSYC 585L Humanistic/Phenomenological Therapy Prepracticum (1)
Provides the student with an supervised experience observing and/or engaging in humanistic/phenomenological therapy with adult or child clients.
Concurrent: PSYC 575.

PSYC 586 Conjoint and Group Psychotherapies (2)
Provides the student with an understanding of conjoint and group psychotherapies. The concepts and techniques of conjoint and group psychotherapies presented, as well as the empirical data regarding the efficacy of these interventions.
Prerequisite: PSYC 571 or consent of instructor.

PSYC 586L Conjoint and Group Psychotherapies Prepracticum (1)
Supervised experience observing and/or engaging in conjoint or group therapy with adult or child clients.
Concurrent: PSYC 576.

PSYC 591A, B, C Colloquium (1)
Students participate in a series of lectures presented by distinguished speakers in the various areas of scientific and professional psychology. Students must attend a minimum of 90 percent of the presentations. At the end of each of the three quarters during which colloquia are scheduled, students prepare a critical report including each of the presentations attended.

PSYC 594 Specialty Seminar: Advanced Topics in Psychology(1-4)

PSYC 595 Directed Research (1-4)
Academic credit for research leading to the second-year project.

PSYC 596 Directed Study (1-4)
Academic credit for specific research projects arranged between individual students and faculty members. May include readings, literature review, and/or laboratory research. Not to be used for the second-year project.

PSYC 597 Supervised Research (1-12)
Academic credit for research for those students who have not yet advanced to doctoral candidacy. Not to be used for the second-year-project.

PSYC 604 Factor Analysis (2)
Thorough exploration of exploratory-confirmatory factor analysis.
Prerequisite: PSYC 503, 515.

PSYC 605 Causal Modeling (2)
Detailed overview of causal modeling/path analysis, providing the theoretical/conceptual foundations for the technique and its most common instantiations.
Prerequisite: PSYC 503, 515.

PSYC 606 Discriminant and Log/Linear Models (2)
Investigation of advanced categorical data analysis from theory to application.
Prerequisite: PSYC 503, 515.

PSYC 607 Multivariate Multiple Regression (2)
Advanced treatment of canonical and partial correlation.
Prerequisite: PSYC 503, 515.

PSYC 608 Multivariate Analysis of Variance (2)
Advanced course in multivariate analyses of variance (MANOVA), including analyses of covariance (MANCOVA).
Prerequisite: PSYC 503, 515.

PSYC 609 Advanced Nonparametric Methods (2)
Theoretical overview of the important nonparametric techniques and the salient considerations for their use (e.g., increasing power, sampling, assumptions).
Prerequisite: PSYC 503, 515.

PSYC 694 Readings in Psychology (1-4)

PSYC 697 Doctoral Research (1-12)
Academic credit for research, including dissertation research.
Prerequisite: Advancement to candidacy.

PSYC 698 Project (1-4)
Course credit for work on doctoral project. Students must enroll for at least 1 unit during each quarter from the acceptance of the proposal until the project is complete.

PSYC 699 Dissertation (1-4)
Course credit for work on doctoral dissertation. Students must enroll for at least 1 unit during each quarter from the acceptance of the proposal until the dissertation is complete.

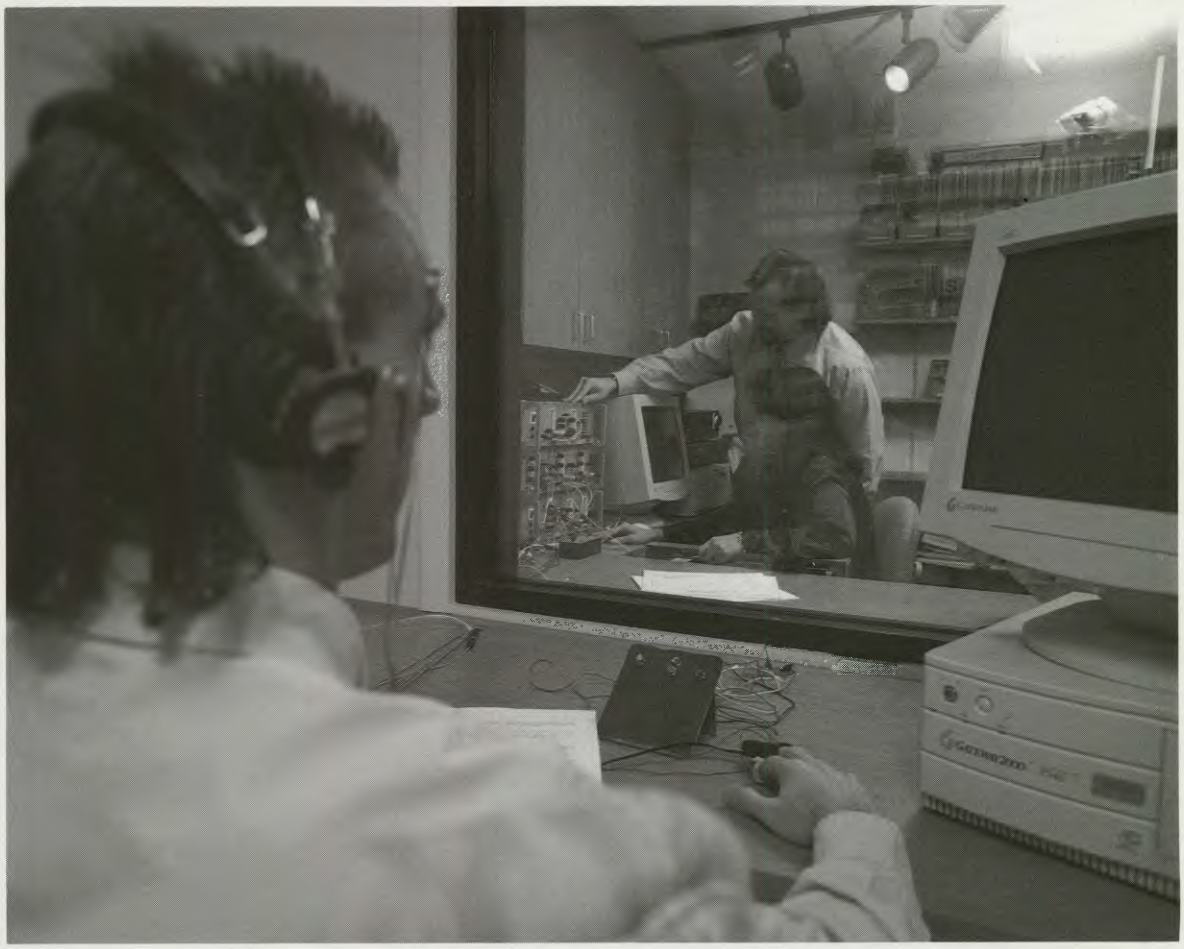
PSYC 781 Prepracticum (2)

PSYC 782 Practicum I (4)

PSYC 783 Practicum II (4)

PSYC 784 Practicum III (4)

PSYC 799 Internship (1-4)



SOCIAL WORK

BEVERLY J. BUCKLES, M.S.W. Eastern Washington University, D.S.W. Adelphi University 1989
Chair; Associate Professor of Social Work

JAMES F. DYER, Jr., M.S.W. West Virginia University 1966
Program Coordinator; Associate Professor of Social Work

The profession of social work centers on the improvement of the quality of life for people and the enhancement of human potential for full productive participation in society. With this philosophy at its foundation, the master's degree program in social work emphasizes ecological systems, a perspective that focuses on the interaction of a person or system in relation to his/her environment. Supporting this stance is Loma Linda University's philosophy "To Make Man Whole" and its heritage as an international leader in the delivery of services in healthcare and related facilities. It is the combination of these influences that has guided the development of the foundation curriculum, professional concentrations, and selection of practicum sites for the Social Work Program.

MISSION

The mission of the Master of Social Work Program at Loma Linda University is to prepare competent, ethical and compassionate social work professionals who will possess the knowledge, values, and skills to equip them for a dedicated life of advanced practice in health and mental health institutions and agencies.

GOALS

Given this stance, the social work faculty assert the following program goals:

Concentrate its resources toward the development and deployment of quality graduate social work education that supports the common knowledge, values, and skills of the profession.

Express through its curriculum and selection of faculty, respect and appreciation for the needs and concerns of diverse cultural, racial, and ethnic groups; the oppressed; and special populations.

Express through its curriculum and selection of faculty, emphasis on international and behaviorally specific programs that are part of the larger institution's orientation.

Focus its responsive efforts to meeting the educational needs of social work in health and mental health institutions and agencies in the surrounding vicinity, specifically addressing the high rates of poverty, infant mortality rates, and underutilization and access to health and mental health services.

Develop and advance its collaborative relations with practice, policy, research, and instructional health and mental healthcare institutions and agencies within the surrounding vicinity.

Dedicate its assets in faculty and facilities to foster research and knowledge development in an effort to create, examine, and diffuse information within social work and allied professions.

Dedicate its assets in faculty scholarship and practice for the creation of advanced curricula in health and mental health with concentrations in:

1) advanced clinical practice; and
2) policy, planning, and administration.

Permit programmatic change in response to information obtained through the program's avenues of continuous renewal.

FACULTY

IGNATIOUS I. YACOUB, Ph.D., Claremont Graduate School 1976
Professor of Management and Administration

HECTOR LUIS DIAZ, M.S.W., Case Western Reserve University, Ph.D. University of Illinois at Chicago 1995
Associate Professor of Social Work

CRAIG R. JACKSON, M.S.W. Wayne State University 1976; J.D., Western State University College of Law 1993
Associate Chair for Admissions; Associate Professor of Social Work

DIANNA SIMON, M.S.W. University of California at Berkeley, Ph.D. University of Southern California 1993
Associate Professor of Social Work

G. VICTORIA JACKSON, M.S.W. University of Michigan 1972
Assistant Professor of Social Work

SUSIE LORING, M.S.W., Michigan State University 1988
Director of Field Education; Assistant Professor of Social Work

MASTER OF SOCIAL WORK

Prerequisite preparation

Graduate social work education builds on a broad liberal arts (general education) foundation. Consistent with this view, the program assesses the liberal arts foundation of students applying to the M.S.W. degree program from two perspectives:

1) **Minimum course work[1] in:**
   - Human biology (3)
   - Human growth and development (3)
   - Crosscultural issues (3)
   - Computer literacy (Windows) (1.5)
   - Research methods (3)
   - Interviewing and counseling (3)

2) **A balance of course work in four liberal arts areas:**
   - 20-24 quarter units of Humanities (e.g., History, Philosophy, Literature, Art, Music, etc.)
   - 8-12 quarter units of English and communication skills (e.g., Oral and written communication media, etc.)
   - 12-16 quarter units of Mathematics and natural sciences (e.g., Mathematics, Human biology, Physiology, etc.)

12-16 quarter units of Social sciences (e.g., Psychology, Sociology, Anthropology, Human development, Ethnic studies, Economics, Political science or government, etc.)

[1] Units values represent quarter system of measurement.

Students not meeting the minimum number of units in any of the above areas are required to complete additional course work before beginning the program.

Curriculum

The 78-unit curriculum of the M.S.W. degree program provides the mix of academic, experiential, and research experiences essential for M.S.W. degree students.

General overview

The program begins with the PROFESSIONAL FOUNDATION CONTENT (first-year courses) common to all graduate social work education. Courses during this first year of study are divided into five professional areas: human behavior in a crosscultural environment, social welfare policy and services, practice theory and skills, social research, and field practicum. These five areas are strengthened by the integration of social work values and ethics, as well as knowledge of special populations (i.e., issues of gender, race, class, disability, and oppression).

The advanced curriculum of the program is divided into four subdivisions. The first of these, CONJOINING CURRICULUM AND PROCESSES, serves as an integrative bridge, furthering the infusion of the first year's foundation underpinnings with the program's advanced curriculum. Next, the ADVANCED CURRICULUM NUCLEUS, includes course work common to all second-year students. The third subdivision is represented by the core courses of two concentrations: 1) the ADVANCED CLINICAL PRACTICE CONCENTRATION; and 2) the POLICY, PLANNING, AND ADMINISTRATION CONCENTRATION. The last division of the advanced curriculum is referred to as the CULMINATING CURRICULUM AND PROCESSES. This subdivision serves as a capstone academic experience, facilitating the final stage of reflection and review in the development of a scholar-practitioner. Each of these curricular subdivisions articulates through the progressive presentation and integration of knowledge, practice roles, and intervention modes of the depth and breadth of proficiency expected in advanced practice within health and mental health.

PROFESSIONAL CONCENTRATIONS IN HEALTH AND MENTAL HEALTH

The Social Work Program offers two concentrations for professional practice, which are the focus of the second-year study: advanced clinical practice; and policy, planning, and administration:

Advanced clinical practice concentration

The clinical practice concentration requires mastery of advanced practice roles, modes of intervention, and methods used in clinical health and mental health settings. Study is required regarding the integration of clinical practice theories, diagnostic assessment, problem-solving skills and techniques; as well as the impact of policy upon the availability of treatment, treatment modalities, and expectation of outcomes.

Students' experiences and knowledge are expanded through the selection of practicum sites and electives concerning special population and problem areas. These include, but are not limited to, children-at-risk, geriatric dilemmas, mental disorders, substance abuse, and family conflict. The integration of cultural diversity as a factor guiding the analysis and intervention with clinical populations is incorporated in the totality of the concentration.

Policy, planning, and administration concentration

The policy, planning, and administration concentration represents a specialized study designed to prepare students for management roles in health and mental healthcare organizations. As such, this concentration focuses on providing students with an understanding of and the skills for: 1) interdisciplinary practice; 2) systems establishment and maintenance to assist individuals, families, and groups managing health and illness in context of the life cycle; 3) social change promotion in health and mental healthcare organizations; and 4) health and mental health policy analysis. In this way, students have an opportunity to integrate and explore health and mental health practices and policies from their underlying value base, and to explore the impact of cultural definitions on health, illness, and systems designs.

CENTRAL ACADEMIC EXPERIENCES AND PROCESSES

Field practicum

Field practicum is regarded as an integral part of the M.S.W. degree program because it offers an opportunity for students to integrate and apply theoretical and research knowledge with social work practice and intervention skills in institutional or agency settings. Practica are designed (and selected) to provide maximum learning opportunities under the supervision of a qualified field instructor. As such, experiences are patterned to build upon one another, presenting the increasing challenges present in the continuum of generic to advanced social work practice.

Emphasis during the foundation practicum (480 hours) is placed on achieving generic social work knowledge, values, and skills, including developing rapport with agency personnel and clients, acquiring interviewing skills, and obtain-

ing beginning-level psychosocial assessment and intervention capabilities. Content of the concurrent seminar further supports this perspective as it provides students with opportunities to integrate their practicum experiences with their developing professional identity.

Second-year practica reflect students' choice of concentration and provide the depth and breadth of learning opportunities underpinning the acquisition of advanced practice capabilities. More specifically, advanced practicum experiences are expected to promote increased insight and understanding of agency and/or client systems as they build on the professional foundation skills achieved during the student's first year of study.

Research

The M.S.W. degree program includes completion of an individually authored thesis or completion of course work in applied research. These study options aim to develop knowledge for the advancement of social work practice and to provide guided experiences in the conduct of research applicable to a variety of professional and academic settings. Guidelines for these options are provided by the Graduate School and the department.

Academic review process

At the end of the first full year, students are required to participate in a candidacy review process. The intents of this process are to: 1) assist faculty and students in assessment of strengths and areas for improvement, 2) provide feedback, 3) foster an environment of self-evaluation, and 4) heighten participation in individualized academic development. When all but 12 units of core course work are completed, students are eligible to take the program's culminating final review. This oral presentation of the students' individualized objectives and professional development during their second year of study is seen as the capstone of their academic experience, facilitating the final stage of reflection and review in the development of a scholar-practitioner.

PROGRAM OPTIONS (full- and part-time models)

Alternate program options have been designed to increase scheduling flexibility and address the varying economic and social needs of students. As such, the program offers a two-year, full-time option, as well as three-year and four-year, part-time options.

Advanced standing

Students are not admitted into the M.S.W. degree program with advanced standing. Rather, the advanced standing option has been developed to recognize the accomplishments in knowledge and skills of individuals receiving a baccalaureate degree from an accredited social work program within the last five years. This recognition assumes that advanced standing candidates have the possibility of meeting the proficiency outcomes expected of M.S.W. degree students completing the foundation curriculum. As such, advanced standing candidates are eligible for waiver of up to 28 course units of first-year course work and 280 hours of first-year field practicum. The curriculum for students who receive advanced standing spreads across two academic years. This allows students an appropriate time frame for completion of the thesis or applied research option and for socialization into the profession, as well as affords the opportunity to take advantage of the rich interdisciplinary options available at Loma Linda University.

Transfer students

Students transferring from other accredited M.S.W. degree programs may transfer units in accordance with University policy. Course work completed more than five years prior to admission will not be accepted for transfer.

ACCREDITATION

The Master of Social Work Program has received candidacy from the Council on Social Work Education and continues, with positive feedback, in the process of initial accreditation. Information concerning the status of accreditation is readily available through the department. Questions should be directed to the chair of the department.

PROGRAM OF STUDY

PROFESSIONAL FOUNDATION (required of all students)

Sequence I – Human Behavior and Cross-cultural Environment

SOWK 511 Human Behavior in a Crosscultural Environment I (3)
SOWK 512 Human Behavior in a Crosscultural Environment II (3)

Sequence II – Social Welfare Policy and Services

SOWK 515 Social Policy I (3)
SOWK 615 Social Policy II (3)

Sequence III – Social Research

SOWK 547 Research Methods I (2)
SOWK 549 Research Methods II (2)
SOWK 597 Research Seminar A, B (1, 1)

Sequence IV – Practice

SOWK 517 Foundation Practice I: Individuals (3)
SOWK 518 Foundation Practice II: Groups (3)
SOWK 519 Foundation Practice III: Organizations and Communities (3)
SOWK 520 Foundation Practice IV: Families (3)

Sequence V – Field Practicum

SOWK 500	Professional Colloquium (10 hours)
SOWK 578	Field Orientation (1)
SOWK 586A, B, C	Field Seminar (1, 1, 1)
SOWK 587A, B, C	Field Practicum (160, 160, 160=480 total practicum hours; required for all students)

CANDIDACY REVIEW PROCESS

CONJOINING CURRICULUM AND PROCESSES (required of all students)

SOWK 613	Human Behavior in a Cross-cultural Environment III (3)
SOWK 660	Advanced Theory and Practice for Working with Ethnically Diverse Clients (2)
SOWK 682	Legal and Ethical Aspects of Health and Mental Health (2)

ADVANCED CURRICULUM NUCLEUS (required of all students)

SOWK 600	Advanced Professional Colloquium (10 hours)
SOWK 686A, B, C	Advanced Seminar (2, 2, 2)
SOWK 687A, B, C	Advanced Practicum (200, 200, 200=600 total practicum hours; required for all students)
SOWK 697A, B	Applied Research (1, 1)
SOWK 697C	Advanced Applications of Research in Practice (1)
	OR
SOWK 698	Thesis (1)

CONCENTRATION CORES (students take courses in one of the following concentrations)

Advanced Clinical Practice

SOWK 661	Time-Limited Services and Interventions (3)
SOWK 663	Advanced Social Work Practice with Individuals (3)
SOWK 665	Advanced Social Work Practice with Groups (3)
SOWK 667	Advanced Integrative Practice (3)

Policy, planning, and administration

SOWK 671	Social Work Administration (3)
SOWK 672	Advanced Practice in Organizations and Systems (3)
SOWK 673	Program Planning and Evaluation (3)
SOWK 683	Advanced Policy Analysis (3)

CULMINATING CURRICULUM AND PROCESSES (required of all students)

SOWK 675	Supervision and Program Development (2)

CULMINATING REVIEW

ELECTIVE COURSES (10 elective units required)

Population groups

SOWK 650	Treatment with Children and Adolescents in Trauma (2)
SOWK 652	Social Problems within Minority Populations (2)
SOWK 653	Interventions with Special-Needs Children (2)
SOWK 654	Therapeutic Interventions with Older Adults (2)
SOWK 658	Children's Psychotherapy (2)
SOWK 659	Interventions with the Chronically Mentally Ill (2)
SOWK 666	Women's Clinical Issues and Treatment (2)
SOWK 668	Men's Clinical Issues and Treatment (2)
SOWK 669	Child and Adolescent Clinical Issues and Treatment (2)

Problem areas

SOWK 649	Social Work and Healthcare (2)
SOWK 651	Healthcare Interventions with High-Risk Families and Communities (2)
SOWK 656	Religion and Spirituality in Direct Practice (2)
SOWK 680	Children and Families Policies and Services (2)
SOWK 681	Health and Mental Health Policies and Services (2)
SOWK 684	Advanced Policy Project (2)
RELE 522	Bioethics for Social Work (4)

TOTAL DEGREE UNITS: 78
PRACTICUM HOURS: 1080
COLLOQUIUM HOURS: 20

COURSES

SOWK 500 Colloquium (1)
Seminar of selected topics on contemporary social work issues and social issues affecting the delivery of social work services. Required of all students each quarter of enrollmemt in the program.

SOWK 511 Human Behavior and Crosscultural Environment I (3)
The first of a three-part sequence which provides the basis for understanding human development and life transitions throughout the life span within an ecological perspective. Orients the student to the

generalistic, social work approach to understanding human behavior in a crosscultural context. Focuses on normal behavior from birth through adolescence.

Prerequisite: Life-span development; human biology; cultural anthropology course or equivalent.

SOWK 512 Human Behavior and Crosscultural Environment II (3)
The second course in the three-part sequence. Explores the dynamic of human behavior from young adulthood to senescence as affected by and expressed in a crosscultural context. Provides a foundation of knowledge on which to build social work practice skills.

Prerequisite: Life-span development; human biology; cultural anthropology or equivalent.

SOWK 515 Social Policy I (3)
Orientation to the beliefs, values, and historical foundations of the social work profession. Emphasis placed on examining societal, professional, and crosscultural perspectives and contradictions as these have influenced the development of contemporary social policies and services.

SOWK 517 Foundation Practice I: Individuals (3)
The first of the practice sequences. Provides the foundation for generic social work practice as it emphasizes an ecological systems approach within a crosscultural context. Students must take this course before or concurrent with social work practicum. Provides knowledge of social work principles, ethics, and values that assure a professional approach to individual client needs arising from an assessment of personal and social issues and problems.

Prerequisite: PSYC 414.

SOWK 518 Foundation Practice II: Groups (3)
The second of the practice sequence. Focuses on introducing the student to group work methods. Emphasizes differentiation among the types of individuals, situations, and presenting problems best served by group interviews.

Prerequisite: PSYC 414.

SOWK 519 Foundation Practice III: Organizations and Communities (3)
The third of the practice sequence. Incorporates generic concepts of the generalists' approach in organizational and community settings; provides knowledge and understanding concerning group formation and empowerment; and assists the student in understanding himself/herself as a member of, and an active participant in, community organizations and institutions.

Prerequisite: PSYC 414.

SOWK 520 Foundation Practice IV: Families (3)
The fourth class of the practice sequence. Provides students with an introduction to family interventions. Examines views and issues regarding contemporary family structure and function, and focuses on concepts and techniques used to promote change in family functioning.

Prerequisite: PSYC 414.

SOWK 547 Research Methods I (2)
Reviews the methodological techniques used in designing and analyzing social work research and practice. Primary emphasis placed on preparing students for independent research through practice in the formulation of testable hypotheses, solution of sampling problems, and interpretation of results. The end product of this is the first draft of the thesis proposal.

Prerequisite: Introduction to computing, introduction to statistics, and an undergraduate research methods class.

SOWK 549 Research Methods II (2)
Provides students with a didactic laboratory exploration of computer-based statistical analysis. Includes review of statistical techniques such as correlation, chi-square, analysis of variance, and multiple regression. Primary emphasis placed on using and interpreting statistics most common to research designs employed in social work research and practice evaluation.

Prerequisite: Introduction to computing, introduction to statistics, and SOWK 547.

SOWK 578 Field Orientation (1)
Begins the process of examining social work values and ethics as students are introduced to the NASW code of ethics and fundamental principles of professional behavior prior to beginning their field practicum.

Prerequisite: PSYC 414.

SOWK 586A, B, C Field Seminar (1, 1, 1)
Provides an opportunity for students to understand their professional roles, dynamics of personal change, and integration of professional values. Attention placed on understanding professional responsibilities, identity, and commitment to social work values. Utilizes the experiential learning from SOWK 587A, B, C as the foundation for class discussions.

Prerequisite: PSYC 414 and field orientation.

SOWK 587A, B, C Field Practicum (160, 160, 160)
Provides students with experiential learning opportunities in foundation social work practice. Students are placed at practicum social work sites, as determined by the program's director of field education, and complete 160 hours for each of three consecutive quarters.

Concurrent: Registration with the parallel quarter of SOWK 586.

SOWK 597A Research Seminar A (1)
Provides a forum for continuation of the foundation content provided in SOWK 547. Here students receive increased understanding of the application of behavioral science research methods to social work practice.

Prerequisite: SOWK 547.

SOWK 597B Research Seminar B (1)
Continues the content of SOWK 597A Research Seminar A in preparation for student's completion of either the thesis or course work in applied research.

Prerequisite SOWK 547, SOWK 597A.

Concurrent: SOWK 549.

SOWK 600 Advanced Colloquium (1)
Advanced seminar on contemporary topics in social work affecting the delivery of services. Second-year students select colloquia to attend related to their designated concentration and research topic.

SOWK 613 Human Behavior and Crosscultural Environment III (3)
Third course in this three-part sequence. Presents more complex definitions of dysfunction. Encourages appreciation for sensitivity to the associated needs and issues of affected populations; facilitates increased application and respect for social work values, policies, and ethics.
Prerequisite: SOWK 511, 512.

SOWK 615 Social Policy II (3)
Second course of the social policy sequence. Designed to teach students methodologies for the analysis and development of social policies as applied to social welfare programs. A major portion of the course deals with the professional values and ethics of social change through political and social action. Students select specific social issues and propose and defend policy alternatives which are consistent with social work values and ethics.
Prerequisite: SOWK 515.

SOWK 649 Social Work and Healthcare (2)
Considers the physiological, psychological, and social components of various illnesses/conditions encountered in healthcare settings. Themes include the common psychological reactions of people to medical treatment; the effect on social functioning or rehabilitative and habilitative processes; the medical team's respective roles and value orientation, and the impact of these on the patient and his/her family; and issues of loss and death. Special attention given to interventions specific to healthcare settings vis-a-vis those of traditional agencies, and to methods appropriate to interdisciplinary practice.

SOWK 650 Children and Adolescents in Trauma (2)
Provides students with a comprehensive understanding of assessing, intervening with, and treating children and adolescents experiencing trauma. Most common traumatic events to be examined are those associated with sexual abuse, life threatening conditions, and severe familial disruption. Examined are the processes of assessing and diagnosing the source and severity of commonly associated behaviors, conduct, and mood disorders. Exploration of a variety of intervention and treatment strategies.

SOWK 651 Healthcare Interventions with High-Risk Families and Communities (2)
Designed to help students appreciate the special healthcare needs of high-risk populations (including the poor, ethnic and racial minorities, recent immigrants, and children in high-risk environments). Examination of some of the causes of poor health among these groups and development of realistic goals and strategies for healthcare delivery. Social work's role in the development of interdisciplinary community healthcare systems.

SOWK 652 Social Problems within Racial and Ethnic Minority Populations (2)
Provides an overview of the most significant social problems affecting racial and ethnic minority populations. Focuses initially on examining the interactive nature of environmental stresses and chemical dependency. Further emphasis placed on the unique practice role of social work in the prevention/intervention and treatment of substance abuse problems within specific ethnic and racial minorities.

SOWK 653 Interventions with Special-Needs Children (2)
Focuses on practice with children and families in relationship to environmental stability. Attention given to examining how the physical and mental health of children are directly associated with family and environmental permanency. Emphasizes development of parental and social support capacities, as well as the requisite professional knowledge and skills to help children deal with identity issues and concerns of joining a new family. Addresses the impacts of race, ethnicity, gender, economic deprivation, physical illness, and disability.

SOWK 654 Therapeutic Interventions with Older Adults (2)
Designed to integrate the theories and practice skills needed for effective practice with older adults and their families. Issues of the developmental process of aging, fostering an alliance, overcoming resistance, social worker's use of self as a therapeutic too, therapeutic bias, and ethical dilemmas with this population. Focuses both on the significance of the older client's history as well as understanding race, ethnicity, and gender behavior within his/her environmental context. Students helped to develop appropriate assessment and intervention skills with the elderly, which bridge health and mental heath services. Reviews similarities and differences in assessment and practice techniques with other age groups. Identifies generic principles. Addresses concrete service delivery and case management as well as individual, family, and small-group intervention approaches.

SOWK 656 Religion and Spirituality in Direct Practice (2)
Acquaints students with predominant theories regarding religion and spirituality from the "person-in-the-situation" perspective. Theoretical orientations include psychodynamic, philosophical, and sociocultural. Examines the implications of these theories in terms of their impact on social work practice.

SOWK 658 Children's Psychotherapy (2)
Considers treatment techniques appropriate for young children with a wide range of diagnoses and behavior problems. Emphasizes the integration of theory and practice of psychotherapy with the ecological perspective of social work practice. Discussion of diagnosis, phases of treatment, and special communication issues. Research, ethical, and value issues addressed.

SOWK 659 Interventions with the Chronically Mentally Ill (2)
Provides students with an understanding of theories and techniques of direct interventions useful in helping those with major mental disorders to cope with their illnesses and aspects of their life situations. Emphasis on concepts and techniques for establishing and maintaining helping relationships. Topics include dangerous behavior, acute psychotic episodes, definitions of long-term chronic disability, enhancing social skills and social support systems, case management, and the interaction of medication and social functioning.

SOWK 660 Advanced Theory and Practice with Ethnically Diverse Clients (2)
Theories and concepts of ethnicity explored, with particular focus on their usefulness for understanding ethnic diversity in psychosocial functioning. Examines norms, values, and adaptive coping styles; generational and gender issues in the formation of ethnic identity; the impact of social, political, and economic deprivation on development; attitudes toward health and mental health; degrees of acculturation; styles in the use of help; and other patterns. Students explore their own ethnicity-related styles and identities as well as the potential "fit" between worker and client values and beliefs. Students learn how to apply ethnicity concepts in case situations, including the exploration of ethnic factors in the assessment of functioning and in the development of the therapeutic relationship. Particular attention given to clinical practice with people of color and recent immigrants. Finally, prevailing models of social work practice critically examined in terms of their sensitivity to issues of ethnic diversity.

SOWK 661 Time-Limited Services and Interventions (3)
Examines the rationales and assumptions of brief treatment, presenting the techniques and strategies of time-limited services as compared with extended models of treatment. Examines the nature and characteristics of crisis versus traumatic events for their long-term affects on psychosocial functioning. Continuum also examined as it guides assessment, treatment modalities and settings, and interdisciplinary interactions.

SOWK 663 Advanced Social Work Practice with Individuals (3)
Focuses on developing students' knowledge and skills in advanced clinical social work with individuals. Classification, evaluation, and diagnosis of the psychiatric disorders described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). How to conduct a diagnostic and psychosocial evaluation, psychiatric epidemiology, genetic factors in mental illness, and discussion of the major categories of drugs used in treating psychiatric disorders.

SOWK 665 Advanced Social Work Practice with Groups (3)
Deepens knowledge of group processes for treatment purposes. Through lecture, discussion, use of case material, and experiential learning in the classroom, the group is examined for its therapeutic impact on individual members. Emphasizes a ssessment and interventional skills in relation to the development of the group and to the ego functioning of individuals in therapeutic groups.

SOWK 666 Women's Clinical Issues and Treatment (2)
Presents students with the major psychosocial considerations and modalities when working with women in clinical settings. Racial, ethnic, and political-economic issues addressed.

SOWK 667 Advanced Integrative Practice (2)
Designed to provide students in the clinical concentration an opportunity to deepen their knowledge and integration of advanced theories and treatment modalities covered in other clinical concentration courses. Emphasis placed on developing students' skill in selecting practice methods appropriate for working with client populations presenting complex, multidimensional considerations for diagnosis and treatment. Special attention given to furthering students' incorporation of practice evaluation and appreciation of interdisciplinary interactions as driven by an "autonomy in collegiality" perspective. Underscores students' responsibility as advanced clinical social workers to anticipate and respond to social, political, and other environmental factors changing the nature and availability of services.

SOWK 668 Men's Clinical Interventions and Treatment (2)
Focuses on psychosocial issues faced by men which have implications for clinical interventions. Attention given to appreciating the influence of life stage, role definitions, race, ethnicity, and gender orientation. Focuses on the psychosocial, emotional, economic, and familial impact of health-status change (including chronic illness, disability, and AIDS).

SOWK 669 Child and Adolescent Clinical Issues and Treatment (2)
Explores the use of creative and expressive techniques as alternatives to traditional assessment and intervention methods used with children and adolescents in medical, mental health, and other community-intervention settings. Students gain knowledge and skill in the use of play therapy, art therapy, programmed writing, and other expressive intervention techniques.

SOWK 671 Social Work Administration (3)
Provides students with knowledge, skills, and perspectives to assist them in building administrative practices with which to develop, support, and maintain effective service delivery in health and mental health agencies and institutions. Topics include role identification and development, situational leadership, strategic planning, levels and types of decision making, management of organizational behavior, use of information systems, budgeting, documentation and reporting, resource development and utilization, and networking.

SOWK 672 Advanced Practice in Organizations and Systems (3)
Explores the complexities of large organizations and bureaucratic systems. Examines formal and informal structures, communication patterns, and philosophical approaches as these affect the effectiveness and efficiency of services delivery, worker motivation, resource procurement and allocation. Accomplishes the objectives of the course through the application of diverse organizational and diffusion theories and perspectives to understand students' actual field practicum experiences.

SOWK 673 Program Planning and Evaluation (3)
Introduces students to the range of issues, knowledge, and skills required in the design, planning, implementation, monitoring, and evaluation of programs. Students build on knowledge obtained in other concentration courses. Integration of the course focus takes place through the development of a comprehensive program proposal (grant) for the students' practicum agency or other identified community group.

SOWK 675 Supervision (2)
Examines the supervisory process in relation to clinical, administrative, educational, and supportive functions. Emphasizes supervisory skills necessary for the development of staff capable of functioning creatively and independently. Discusses principles and techniques of staff development. Explores a variety of approaches.

SOWK 676 Integrative Seminar (2)
For students who have advanced standing, designed to be a bridge quarter to integrate their undergraduate social work education into the second year of the M.S.W. degree program. Emphasizes reviewing the knowledge, values, and skills of generic social work practice; then defines the additional competencies required for advanced practice. Assists instructor and students in identifying and addressing individualized needs for further development, including application of professional ethics and judgment, use of self as a therapeutic tool, and self-awareness. At the culmination of this course, students also formulate conceptual and experiential learning objectives for their second year of study.

SOWK 677 Integrative Practicum (200 hours)
Provides the parallel practicum experience for SOWK 676. Students placed at practicum sites, as determined by the program director of field education. Students' successful completion of this one quarter (220 hours) of integrative practicum experience is viewed as further evidence of their appropriateness to receive the advanced standing designation and to progress to SOWK 686 and 687.

SOWK 680 Children and Families Policies and Services (2)
Designed to provide students with an understanding of the major social policy issues affecting the current organization and delivery of human services for children and families. Analysis of current debates about the tensions between social policy and the doctrine of family privacy, with attention to the legal basis of state interventions and judicial decisions affecting family relationships, including parent to parent and child to parent.

SOWK 681 Health and Mental Health Policy and Services (2)
Provides a conceptual understanding of the development and organization of the health and mental health systems within institutional and community-based settings as they stem from national and local policy perspectives. Consideration of major issues dealing with the economics of health, health planning, and health legislation. Evaluation of health and mental health programs based on selected cross-national comparisons.

SOWK 682 Legal/Ethical Aspects in Health/Mental Health (2)
Designed to focus on those instances when legal mandates or concerns interact with and affect the practice of social work. Overview of the sources of legal authority, the judicial system, and the legal standards applicable to particular proceedings. Examines the legal implications of the social worker/client relationship. Specific emphasis placed on consent to treatment; examination of the statutes and judicial decisions that govern the confidentiality implicit in a social worker/client relationship; examination of the statutes and judicial decisions which permit or place an obligation on social workers to breach client confidentiality. Explored in the context of common and high-risk situations.

SOWK 683 Advanced Policy Analysis (3)
Deepens students' understanding of both the conceptual and analytical requirements of policy analysis through the integration of behavioral, political, economic, and sociometric frameworks for understanding human conditions. Students gain experience in structuring and defining policy problems, establishing criteria for policy choices, mapping alternative strategies, and applying appropriate analytical and research methods to policy questions. Use of cost-benefit analysis, cost-effectiveness analysis, and decision analysis as means toward developing formal augmentation toward sustained change.

SOWK 684 Advanced Policy Projects (2)
Students may choose to further their appreciation and understanding of the interconnections between politics, policy-making, and policy analysis through first-hand participation in a political action campaign. Choices for projects may focus on local initiatives or those coordinated annually through the California Chapter of NASW.

SOWK 686A, B, C Advanced Seminar (2, 2, 2)
Designed to assist second-year students to build on the generic practice experiences and foundation curriculum of the first year, as well as to intergrate the advanced practice experiences and course work of their selected concentration. Both the advanced practicum and the seminar have a developmental emphasis which moves the student to consider competency for advanced intrapersonal issues, interdisciplinary and peer collegial interactions, as well as formation of mechanisms assuring sustained professional commitment.

SOWK 687A, B, C Advanced Practicum (200, 200, 200)
Provides students with advanced social work experience in their selected concentration. Advanced practica are assigned by the program's director of field education. Students complete 200 hours for each of three consecutive quarters.

Prerequisite: Successful completion of SOWK 578; SOWK 586A, B, C (SOWK 676, 677 for advanced-standing students).

Concurrent: Registration for the parallel quarter of SOWK 686.

SOWK 697A Applied Research (1)
Course is divided into two sections to support students' choices to complete either course work in applied research methods or the thesis option.

Section 1: Supports students choosing to advance their research knowledge through the examination and application of a broad spectrum of evaluation techniques used in professional practice settings. Format combines didactic course work with laboratory experiences in which students make application of the identified techniques. The results of this work provide the beginning content of an applied research portfolio completed by all students choosing the applied research option.

Section 2: Solely for students choosing to complete a thesis. As such, it provides research matriculation in the collection and analysis of data for the thesis. Students registered for this section are not required to complete the course or laboratory work of Section 1.

Prerequisite: SOWK 547, 549, 597A, 597B.

SOWK 697B Applied Research (1)
Continuation of SOWK 697A Applied Research.

Prerequisite: SOWK 547, 549, 597A, 597B, 697A.

SOWK 697C Advanced Applications of Research in Practice (1)
Represents the culminating work of students choosing the applied research option. Students explore and apply, through course and laboratory work, advanced applications of research methods in social work practice. Emphasis placed on students developing their own research agendas for continued scholarly practice. Students complete and submit their applied research portfolios as a part of the requirements for this option.

Prerequisite: SOWK 547, 549, 597A, 597B, 697B.

SOWK 698 Thesis (1)
Thesis represents the culminating work of the students' independent research. As such, students register for thesis during the quarter in which they defend their research and submit their final document to the department and Graduate School. As with all other components of the research process, students receive direction through this process from their research adviser.

SPEECH-LANGUAGE PATHOLOGY

JEAN B. LOWRY, Ph.D. Kent State University 1973
Chair and Program Coordinator; Professor of Speech-Language Pathology and Audiology
Phonology, fluency disorders

The purposes of this graduate program are to offer preparation for careers in the professional practice of speech-language pathology, to provide a basis for graduate study and research at a more advanced level, and to encourage the development of capacity for independent growth. The courses are designed to increase understanding in the basic sciences of communication; to develop competence in the practice of speech-language pathology and audiology; and to promote a sense of responsibility toward the speech, language, and hearing handicapped and toward the community.

The clinical services of the Department of Speech-Language Pathology and Audiology, the Loma Linda University Medical Center, and affiliated facilities provide opportunity to obtain breadth of experience in a variety of settings. Study in related disciplines at the advanced level is available through course offerings in the professional schools of the University and in the Graduate School.

FACULTY

KEIKO I. KHOO, M.S., M.A. Loma Linda University GS 1979
Associate Professor of Speech-Language Pathology and Audiology
Diagnostic and rehabilitative audiology

JEAN E. MAKI, Ph.D. Michigan State University 1975
Associate Professor of Speech-Language Pathology and Audiology
Speech and hearing science, deafness

MARCIA C. HILL, M.A. Western Michigan University 1984
Assistant Professor of Speech-Language Pathology and Audiology
Stroke, traumatic brain injury

PAIGE S. SHAUGHNESSY, Ph.D. University of Utah 1985
Assistant Professor of Speech-Language Pathology and Audiology
Aphasia, traumatic brain injury, multicultural studies

LISA R. STERLING, M.S. University of Wisconsin-Madison 1988
Assistant Professor of Speech-Language Pathology and Audiology
Child language disorders, diagnostics

CLINICAL FACULTY

MELISSA K. BACKSTROM, M.S. University of Redlands 1987
Clinical Instructor in Speech-Language Pathology and Audiology
Stroke, dysphagia

JULI A. BAER, M.S. University of Redlands 1976
Clinical Instructor in Speech-Language Pathology and Audiology
Stroke, traumatic brain injury, laryngectomy

LINDA M. DYE, M.A. Ohio University 1984
Clinical Instructor in Speech-Language Pathology and Audiology
Diagnostic audiology, aural rehabilitation, cochlear implants

SHARON I. FRASER, M.S.Loma Linda University GS 1991
Clinical Instructor in Speech-Language Pathology and Audiology

GARY A. LUCAS, M.S. Vanderbilt University 1974
Clinical Instructor in Speech-Language Pathology and Audiology
Traumatic brain injury, voice

DAVID G. MCGANN, M.S. Colarado State University 1973
Clinical Instructor in Speech-Language Pathology and Audiology
Diagnostic audiology

ELIZABETH A. PIOLI, M.A. Indiana University 1973
Clinical Instructor in Speech-Language Pathology and Audiology
Stroke, traumatic brain injury

SPEECH-LANGUAGE PATHOLOGY

Admission

Acceptable undergraduate preparation includes a bachelor's degree in speech-language pathology and audiology or in communicative disorders. Applicants having an undergraduate degree in another discipline are admitted for the first year of prerequisites through the School of Allied Health Professions.

Graduate study in speech-language pathology leads to the Master of Science degree. The program provides opportunity for the graduate (a) to satisfy all academic and clinical requirements for the Certificate of Clinical Competence and the California License in Speech-Language Pathology, or (b) to prepare for doctoral study or careers in related fields.

The program does not offer a master's degree in audiology. Courses and clinical practica are available for students wishing to increase their breadth of knowledge and experience in audiology.

The speech-language pathology program is accredited by the Educational Standards Board of The American Speech-Language and Hearing Association. The program is approved by the Commission for Teacher Credentialing to prepare students for a California Clinical Rehabilitative Services Credential in Language, Speech, and Hearing. This credential is a requirement for working as a speech, language, and hearing specialist in California public schools. Course requirements for the credential vary from those listed for the degree. Credential requirements may be obtained by contacting the department. The student's undergraduate course work must be evaluated in accordance with state of California credential requirements.

The program of study consists of completing (a) required graduate-level courses, (b) supervised clinical practice, and (c) research or comprehensive examinations.

Students completing both the degree and requirements for the California Clinical Rehabilitative Services Credential will complete 45 academic units and 6 units of student teaching.

DEGREE REQUIREMENTS

The following are requirements for the Master of Science degree specific to this program:

1. A minimum of one quarter in residence as a graduate student.

2. A minimum of 48 quarter units of graduate credit, including: SPPA 524, 535, 544, 564, 576, 577, 585, 586, 587, 598, 684, 685, 687, 688, religion (one course for a minimum of 3 units).

3. Evidence that the student has completed 350 clock hours of supervised clinical practice, including 250 clock hours at the graduate level. Transfer students who have met the clinical experience requirements for certification must complete an additional 50 clock hours of practicum.

4. Master's thesis/project or comprehensive examinations.

5. Students who choose to do a thesis or project must demonstrate a working knowledge of statistics or pass a graduate statistics course.

Option A: Research

Option A requires completion of 1-6 units of SPPA 698 Thesis and an oral examination; or completion of 2-4 units of SPPA 697 Research and an oral presentation of research. Typically a student will complete a total of 6 units of thesis and/or research.

Option B: Comprehensive examinations

Option B requires completion of written comprehensive examinations.

GENERAL REQUIREMENTS

For information about requirements and practices to which all graduate students are subject, the student should consult the Policies and General Regulations section of the Graduate School BULLETIN.

COURSES

GRADUATE COURSES

SPPA 524 Language Disorders of Children, Advanced (3)
Lectures and discussions dealing with assessment and management of the preschool, primary, and adolescent school-age child with language disabilities. A study of the classic and contemporary literature relating to differential diagnosis and therapeutic procedures. Consideration given to language disabilities of childhood, learning disabilities, autism, and mental retardation.

SPAA 535 Voice Disorders (3)
Discussion of diagnosis and intervention techniques used with children and adults displaying a variety of voice disorders. Includes demonstration and operation of instrumentation used for physiological and acoustic analysis of abnormal voice production.

SPAA 544 Cleft Palate (2)
Focuses primarily on diagnostic and intervention techniques used by the speech language pathologist. Emphasizes functioning of a craniofacial team; and the interaction of professionals in the areas of medicine, surgery, orthodontia, prosthetics, genetics, dentistry, social work, psychology, and speech-language pathology.

SPPA 554 Swallowing Disorders (3)
Lecture and discussion of the speech-language pathologist's role in the diagnosis and treatment of swallowing disorders in children and adults. Ethical and cultural issues also addressed. Emphasis on analysis of current literature and clinical applications. Selected laboratory experiences.

SPPA 564 Aural Rehabilitation and Hearing Aids (3)
Study of the mechanisms for achieving hearing rehabilitation, including amplification, speech reading, auditory training, hearing-aid orientation, and speech conservation. Consideration given to hearing aid function and philosophies of rehabilitation for the hearing impaired (e.g., auditory, aural, manual, and total communication).

SPPA 567 Clinical Practice in Speech-Language Pathology/Audiology, Advanced (1-6)
Supervised practice in diagnosis and therapy. Thirty clock hours required for each unit of credit. Maximum of 6 units of clinical practicum apply toward a major in speech-language pathology and audiology.
Prerequisite: Consent of the supervisor.

SPAA 568 Clinical Practice in Speech-Language Pathology Diagnostics (1-3)
Supervised practice in diagnostics; study of the principles of diagnostics applicable to communication.

SPPA 576 Instrumentation in Communication Disorders (4)
Lecture, discussion, and laboratory experience in the areas of speech acoustics, speech production and perception, psychoacoustics, and speech and hearing physiology.

SPPA 577 Applied Psycholinguistics (3)
Mental processes underlying the acquisition and use of language; structure and meaning of language; perception and cognition.

SPPA 585 Professional Aspects of Speech-Language Pathology and Audiology (3)
Study of the ethical, business, and legal considerations in organizing and administering programs: accountability, record keeping, case selection, case load, supervision, staffing, budgeting, and interagency cooperation in schools, clinics, and private practice.

SPPA 586 Advanced Diagnostics in Speech-Language Pathology (3)
Exploration of the theory underlying clinical evaluation and diagnosis of speech-language pathology. Issues regarding formal/informal evaluation measures, observations, and test interpretation addressed.

SPPA 587 Counseling in Communication Disorders (3)
Explores the counseling role of the speech-language pathologist and identifies clinician responsibilities in working with individuals of different cultures, ethnicity, gender, age, and belief systems.

SPPA 588 Directed Teaching in Speech-Language Pathology (3-6)
Supervised therapy on the elementary and/or secondary level and/or in a classroom for the severely language-handicapped child. No more than 6 units of clinical practicum applicable toward the master's degree. This includes directed teaching.

SPPA 596 Workshop in Speech-Language Pathology/Audiology (1-4)
May be repeated with new content for additional credit.

SPPA 598 Research Methods and Professional Literature in Speech-Language Pathology (3)
Lecture and discussion designed to facilitate the student's ability to read and interpret professional literature, develop research ideas, and develop professional writing skills.

SEMINARS

The following seminars will analyze the current literature relating to theory, research, and applications within the area of consideration.
Prerequisite: A content course in which the area of consideration has been studied, or consent of the instructor.

SPPA 684 Seminar: Adult Language Disorders (3)

SPPA 685 Seminar: Stuttering (3)

SPPA 687 Seminar: Open Seminar (2-3)

SPPA 688 Seminar: Articulation (3)

SPPA 697 Research (2-4)

SPPA 698 Thesis (1-6)

SPPA 699 Directed Study (1-3)
Independent study on a research project selected in consultation with the adviser. For advanced students. May be repeated once. The student's transcript will show specific area of study: for example, SPPA 699 Directed Study — Adult Language Disorders.

IV

DIVISION OF GENERAL STUDIES

Loma Linda University Philosophy of General Education
General Education Requirements
Courses

Division of General Studies

The Division of General Studies, directed by the dean of the Graduate School, coordinates the offering of courses that apply to the Associate in Arts and Bachelor of Science degree programs in nursing, dentistry, and allied health professions. These courses contribute to the fulfillment of general education requirements as revised by Loma Linda University in 1995.

LOMA LINDA UNIVERSITY PHILOSOPHY OF GENERAL EDUCATION

As a Seventh-day Adventist health-sciences institution, Loma Linda University seeks to exemplify a life of service and sensitivity beyond the requirements of academic excellence within a professional discipline. With its rich spiritual heritage, the University places special importance upon educating its students for a life of service in a multicultural world.

General education at Loma Linda University is therefore unique. In addition to the basics of cultural heritage and diversity, scientific inquiry and analysis, communication, and wellness, the curriculum emphasizes the University's spiritual heritage as well as moral and ethical decision making which is grounded in Christian principles. Thus general education is considered to be the cornerstone upon which students begin cultivating their abilities to:

1. Understand the fundamental Christian principles and Adventist heritage that undergird Loma Linda University.
2. Make informed moral and ethical decisions.
3. Incorporate critical thinking skills into personal and professional experience.
4. Value individuals with diverse capabilities and ideological, ethnic, gender, and generational perspectives.
5. Communicate effectively.
6. Undertake scientific inquiry and analysis.
7. Appreciate the contributions of the arts and humanities to society.
8. Examine the historical basis of the health sciences professions.
9. Develop self-awareness through balance of mental, physical, social, and spiritual aspects of daily living.
10. Model servant-leadership in healthcare as exemplified by Jesus of Nazareth.

Loma Linda University's philosophy of general education creates a unique learning environment committed to the concept of human wholeness. Faculty are selected who embrace the spirit as well as the specifics of general education and who purpose to extend its goals into all aspects of university life — from the residence hall programs to the core of professional studies — thus adding an invisible curriculum to the required course offerings. It is this spirit in tandem with the specifics of a liberal arts education that inspires students to achieve academic excellence, value diversity, pursue lifelong learning, and live to bless others.

GENERAL EDUCATION REQUIREMENTS (68 quarter credits)

In harmony with its commitment to wholeness, Loma Linda University requires all students graduating with a baccalaureate degree to complete a minimum of 68 quarter credits of general education, which are integrated with the entire undergraduate program. Requirements are organized into five domains, as outlined below.

DOMAIN 1: SPIRITUAL AND CULTURAL HERITAGE (28-32 quarter credits)

Study of spiritual heritage must include a minimum of 4 credits in religious studies per year of full-time course work or the equivalent while attending a Seventh-day Adventist college or university and must include the specific RELE/HUMN course, Mission of Loma Linda Healthcare. Four of the units in religious studies may include a course dealing specifically with the religious, moral, and ethical questions of healthcare. Other courses may be selected from such content areas as Christian ethics, clinical ministry, comparative religions, doctrinal, historical, and systematic theology. Required credits in spiritual heritage must be earned from a Seventh-day Adventist institution.

The study of cultural heritage must include a minimum of 12 credits and must include one course dealing specifically with issues of human diversity among peers, not simply cultural differences between health professionals and their patients. The remainder of credits in cultural heritage may be selected from the following content areas: civilization/history, fine arts, literature, modern language, performing/visual arts (not to exceed 2 quarter credits), or philosophy.

DOMAIN 2: SCIENTIFIC INQUIRY AND ANALYSIS (24-32 quarter credits)

Scientific inquiry and analysis encompasses both the natural and social sciences. Content areas from which students must choose 12-16 credits within the natural sciences include biology, chemistry, geology, mathematics, physics, and statistics. No more than 6 credits in any one area may count toward the natural sciences requirements.

Study of social sciences must include 12-16 credits in two or more of the following content areas: anthropology, economics, geography, political science, psychology, and sociology.

DOMAIN 3: COMMUNICATION (9-13 quarter credits)

Course work in communication must include a complete sequence in freshman English which meets the baccalaureate degree requirements of a four-year college or university. Other areas of study in communication may include courses in computer information systems, critical thinking, and public speaking.

DOMAIN 4: HEALTH AND WELLNESS (2-6 quarter credits)

To encourage the pursuit of lifelong leisure activities and wellness, the study of health and wellness must include at least two physical activities totalling a minimum of 1 quarter credit, and one course in personal health or nutrition. Additional credits may include other areas of health, nutrition, and physical fitness.

DOMAIN 5: ELECTIVES

Electives from the above-listed domains may be selected to complete the general education minimum requirements of 68 quarter credits.

COURSES

ACCT 221 Principles of Accounting (4)
Modern accounting and analysis. Business transactions and accounting analysis.

ACCT 507 Financial Accounting (4)
Accounting for business organization entities. Analysis of business transactions and preparation of financial statements.

ANTH 315 Cultural Anthropology (4)
Advanced course in ethnology and social organization.

ANTH 436 Cultural Context of Religion (4)
Religion and belief in the supernatural as integrative forces in culture; religious behavior and experience in different cultures; myth and ritual; religion and healing; psychosocial perspectives on witchcraft, sorcery, exorcism and magic; ghosts, souls, ancestors, and the power of the dead; old and new religions and cults; the occult and paths to the unknown; a brief review of the "great world religions."

ANTH 448 Medical Anthropology (4)
Sickness and health as universal factors in the human condition. World view as an explanatory system for behavior; ethnographic examples of curing systems and coping mechanisms; crosscultural communication of health principles and practices.

ARTA 205 The Language of Art (2-4)
Basic concepts, materials, and history of the visual arts, which will enable the nonart major to develop an art vocabulary and gain insight into the creative process.

BIOL 107 Human Biology (4)
Man as an integrated organism; systems of the body; the basis of healthful living. Four class hours per week.

ENGL 206 Introduction to Literature (4)
Introduction to the reading and analysis of the major literary genres: poetry, drama, short story, and essay.

CPTG 115 Introduction to PC Operating Systems and Environments (1)
Introduction to the internal/external commands of the latest version of DOS. The essential processes for using microcomputers, protecting data, and storing/retrieving data. Windows 3.1x and the file manager, program manager, print manager, and task-list features covered in depth. Students expected to be able to customize Windows to suit particular environments.

CPTG 125 Word Processing Essentials (2)
Essential word processing tasks and principles presented. Students expected to demonstrate competence in preparing a variety of documents using the latest version of one of the following software packages: Word Perfect for DOS, Word Perfect for Windows, Word for Windows, Ami Pro for Windows.

Prerequisite: CPTG 115 or consent of instructor.

CPTG 215 Spreadsheet Essentials (2)
Essential spreadsheet tasks and principles covered in detail. Students expected to demonstrate competence with the latest version of one of the following software packages: Lotus for DOS, Lotus for Windows, Excel for Windows, Quattro Pro for Windows.

Prerequisite: CPTG 115 or consent of instructor.

CPTG 216 Database Essentials (2)
Essential database tasks and principles covered in detail. Students expected to demonstrate competence with the latest version of one of the following software packages: dBase for DOS, dBase for Windows, Paradox for Windows, Access for Windows, FoxPro for Windows.

Prerequisite: CPTG 115 or consent of instructor.

CPTG 217 Presentation Graphics (1)
Essential presentation graphics tasks and principles covered in detail. Students expected to demonstrate competence with the latest version of one of the following software packages: Harvard Graphics for DOS, Harvard Graphics for Windows, PowerPoint for Windows, WordPerfect Presentations for Windows.

Prerequisite: CPTG 115 or consent of instructor.

ENGL 246 Literary Forms and Ideas (4)
Varied content from quarter to quarter, with specific areas listed in the class schedule (such as drama, the short story, contemporary literature, women in literature, C. S. Lewis). Offered primarily for general students, but applies toward a major in English. May be repeated with new content for additional credit.

ENGL 478 Theory and Application of Linguistics (4)
The study of the English language and the process of writing effectively. The study of language, its acquisition and usage, and its application to speech problems and to professional writing in all disciplines.

ENGL 499 Directed Study (1-4)

ENSL 077 English as a Second Language
Designed to teach American English to speakers of other languages so that they may use this language for whatever purposes they choose. Even though the course is designed to meet the needs of English for academic purposes, it is open and adaptable to students with a variety of language needs. Students can progress at their own rate; and individual language needs in areas such as pronunciation, reading, writing, grammar, and conversation may be met. Students expected to have fifteeen contact hours for each unit of registration.

ENSL 177 English as a Second Language (2)
Designed to aid university students in improving their proficiency in speaking and in understanding spoken academic American English. Special emphasis placed on appropriate listening and conversation skills, as well as attention to problems arising from the student's native language.

MUHL 205 Introduction to Music (4)
Basic music literature, with some attention to other arts.

PSYC 224 Developmental Psychology: Childhood and Adolescence (3-4)
The physical, mental, emotional, social, and religious/moral development occurring within the family context from conception through adolescence. Observations and/or laboratory experience. Not open to students who have taken PSYC 324.

PSYC 225 Developmental Psychology: Adulthood and Aging (3-4)
The physical, mental, emotional, social, and religious/moral development of adults occurring within the family and social context. Changes which occur from young adulthood through middle age, old age, and death. Observations and/or laboratory experience.

PSYC 226 Life-Span Development (4)
A life-span course emphasizing the physical, mental, emotional, social, and religious/moral development from conception through adulthood, aging, and death.

PSYC 305 Psychological Foundations of Education (4)
Study of psychological development as it relates to the learning process and evaluation techniques for learners in the elementary and secondary schools.
Prerequisite: General psychology.

PSYC 404 Psychological Tests and Measurements (3)
Development of competencies and understandings for selecting, administering, and interpreting the major types of standardized tests and inventories used in psychology and education. Theoretical principles and issues presented together with hands-on applications. Practicum required.

PSYC 405 Psychology of Human Relations (3)
Designed in human relations for career and personal success. Topics include the effective use of human resources, communication, leadership skills, decision making, stress management, assertiveness training, managing conflicts, career development, and achieving balance.

PSYC 414 Interviewing and Counseling (4)
Procedures, methods, and problems in the collection of personal data in a professional interview situation. Theories and techniques of academic, vocational, and therapeutic counseling in various settings designed to improve intra- and interpersonal behavioral patterns for more effective living. Consideration given to clinical, educational, and crisis-intervention counseling applications.

PSYC 460 The Exceptional Individual (3)
A study of the determinants, characteristics, problems, and adjustments of individuals who deviate markedly from the norm in their mental, physical, emotional, or social aptitudes, traits, and tendencies. Emphasis on education and career planning. Open to upper-division graduate and postgraduate students only.

PSYC 479 Human Neuropsychology (4)
Introduction to brain behavior relationships, including cerebral asymmetry, disconnection syndromes, disorders of memory and language, biological substrates of affective behavior, motor and perceptual dysfunction, and drug actions.
Prerequisite: BIOL 114 or 131 or consent of the instructor.

PSYC 499 Directed Study (1-4)

RDNG 077 Introduction to Reading Techniques (2)
Designed to develop study skills and habits of skillful reading. Includes vocabulary development; improving decoding skills, with special emphasis on oral expression; techniques to enhance thinking and comprehension skills; and methods to increase reading speed.

RDNG 177 Reading Techniques (2)
Designed to develop rapid reading, previewing, skimming, and scanning. It includes skills that foster efficient reading comprehension and concentration, vocabulary development, and study skill strategies.

RDNG 277 Advanced Reading and Comprehension Skills (2)
Designed to develop cognitive organizational strategies while increasing the student's rate of reading. Previewing, skimming, and scanning techniques developed to increase reading speed. Includes efficient memory techniques and test-taking skills.

STAT 251 Introduction to Statistics (4)
Basic concepts of probability, descriptive statistics, normal distribution, hypothesis testing applied to means, power, chi-square, introduction to correlation and regression, and simple analysis of variance.
Prerequisite: Secondary school algebra.

SOCI 104 Introduction to Sociology (4)
The science of society: social norms, social processes, social change, and social structure.

SOCI 414 Sociology of the Family (4)
Study of the structure, function, and changing patterns of families in society; the relationships between family problems and changes in society, and their impact on children.

SOCI 444 Family Resource Management (4)
Principles of home management in relation to needs and resources of individuals and families.

SOCI 513 Human Resource Management (4)
Basic course relating to managerial decision making with respect to the acquisition, development, reward, and maintenance of human resources.

WRIT 077 Basic Writing I
Basic course including instruction in grammar, sentence structure, and vocabulary usage.

WRIT 277 Writing II
Instruction in academic and research writing, formatting, fluency with styles.

ADDITIONAL COURSES

Additional courses may be taken at La Sierra University through the affiliation agreement. Descriptions for these courses appear in the catalog of La Sierra University and will appear on the transcript as Loma Linda University courses taken in affiliation with La Sierra University.

V

THE DIRECTORY

OFFICERS OF THE BOARD OF TRUSTEES

Chair	Calvin B. Rock
Vice Chair	Alfred C. McClure
Secretary	Richard A. James

UNIVERSITY ADMINISTRATION

President		B. Lyn Behrens, M.B., B.S.
Vice President	Academic and Research Affairs	Ian M. Fraser, Ph.D
Vice President	Advancement	———
Vice President	Clinical Faculty	Brian S. Bull, M.D.
Vice President	Financial Affairs	Donald G. Pursley, D.B.A.
Vice President	Medical Affairs	J. David Moorhead, M.D.
Vice President	Public Affairs	W. Augustus Cheatham, M.S.W.
Special Assistant to President	Diversity	Delbert W. Baker, Ph.D.
Special Assistant to President	International Affairs	C. Joan Coggin, M.D.
Special Assistant to President	Spiritual Life and Wholeness	Wil Alexander, Ph.D.
Dean	Student Affairs	Ralph W. Perrin, Dr.P.H.
Director	Library and Information Services	David W. Rios, M.L.S.

BOARD OF TRUSTEES

Calvin B. Rock, *Chair*
B. Lyn Behrens
Alden Chase
Vivien Dee
Grace Emori
Robert S. Folkenberg
Gwen Foster
Malcolm D. Gordon
T. Milford Harrison
Theodore T. Jones
Alfred C. McClure
J. David Moorhead
Thomas J. Mostert, Jr.
Orville D. Parchment
Ted L. Ramirez
Humberto Rasi
Robert L. Rawson
Leroy A. Reese
G. Ralph Thompson
Hubert Watkins
Neal C. Wilson
Patrick Y. Wong
Tom Zapara

THE GRADUATE SCHOOL

W. Barton Rippon, Ph.D., Dean

The dean, the chief administrative officer of the Graduate School, presides over the Graduate School faculty and the Graduate Council.

The Graduate Council gives continuing study to the effectiveness of graduate programs in the departments and divisions; ways to strengthen the offerings and curriculums; maintaining standards; evaluating and initiating, when advisable, appropriate action on such items or proposals as occur to them or as may be referred to them; and bringing to the dean items that involve organization and expansion or addition to the faculty, with recommendation for action. Proposals that affect budgets or overall University policy are subject to review by the Administrative Committee.

GRADUATE SCHOOL COUNCIL

Leif K. Bakland
Hector Betancourt
Antonius D. Brandon
H. Paul Buchheim
Lucille J. Chilson
David L. Cowles
Ramon Gonzales
Daila S. Gridley
Ronald G. Huston
Craig R. Jackson
Patricia K. Johnston
James D. Kettering
Keiko I. Khoo
John Leonora
Jean B. Lowry
Paul J. McMillan
Marvin A. Peters
John E. Peterson
Janelle Pyke
Charles W. Slattery
Lois Van Cleve
Gerald Winslow
Anthony J. Zuccarelli

THE FACULTY, ASSOCIATE FACULTY, AND CLINICAL FACULTY

Faculty, associate faculty, and clinical faculty are listed below. Code letters are shown after each name, indicating program(s) of appointment.

ANAT	Anatomy
BCHM	Biochemistry
BIOL	Biology
BMCE	Biomedical and Clinical Ethics
DACC	Drug and Alcohol Counseling Certificate
DENT	Dentistry
FMST	Family Studies
GEOL	Geology
MFAM	Marriage and Family Therapy
MICR	Microbiology
MSTP	Medical Scientist Training Program
NRSG	Nursing
NUTR	Nutrition
PHRM	Pharmacology
PHSL	Physiology
PSYC	Psychology
SOWK	Social Work
SPPA	Speech-Language Pathology

Adey, W. Ross PHSL
Aloia, Roland C. BCHM, BIOL
Anderson, David DENT
Archambeau, John ANAT
Austin, Kenneth M. MFAM, DACC

Backstrom, Melissa K. SPPA
Baer, Juli A. SPPA
Baker, Delbert FMST
Bakland, Leif K. DENT
Barnard, Logan W. DENT
Barrett, Mac MFAM
Bass, Robert L. DENT
Baugh, Wilson B. DENT
Bawin, Suzanne M. PHSL
Baylink, David J. BCHM
Beltz, Richard E. BCHM
Betancourt, Hector PSYC
Blaseio, Gunther DENT
Blazen, Ivan BMCE
Bonyanpoor, Shahnaz DENT
Boskovic, Milos DENT
Bossert, Elizabeth A. NRSG
Boyne, Philip J. DENT
Brand, Jay L. PSYC
Brand, Leonard R. BIOL, GEOL
Brandon, Antonius D. FMST, MFAM
Brandstater, Murray E. PHSL
Branson, Roy BMCE
Buchheim, H. Paul BIOL, GEOL
Buchholz, John PHRM
Buckles, Beverly J. SOWK
Bullas, Leonard R. BIOL, MICR
Burke, Kenneth I. NUTR
Burns, Margaret A. NRSG
Byrd, Bernard C. DENT

Cantin, Edouard MICR
Carter, Norman S. DENT
Carter, Ronald L. BIOL
Caruso, Joseph M. DENT
Chamberlain, A. Durwin H. DENT
Chand, Ian P. FMST, MFAM, DACC
Clausen, Benjamin L. GEOL
Clem, Donald S. DENT
Connell, Bertrum C. NUTR
Connors, Dianna L. MFAM
Cordero-MacIntyre, Zaida NUTR
Corselli, Johannah ANAT
Cowles, David L. BIOL
Crane, Earl R. DENT
Cress, C. Raymond PHRM
Cushman, Robert A. GEOL
Cutler, Ralph E. PHRM

Davis, M. Jerry MFAM
Davis, W. Howard DENT
De León, Daisy PHSL
De León, Marino PHSL
deLeón, Dennis BMCE
DeVincenzo, John P. DENT
Diaz, Hector SOWK
Ducsay, Charles A. PHSL
Dye, Linda M. SPPA
Dyer, Jim SOWK

Ehrler, Clelan G. DENT
Engen, Paul C. ANAT
Escher, Alan MICR

Fantazia, Douglas J. NRSG
Farley, John R. BCHM
Ferguson, Daniel MFAM
Fleming, Elaine NUTR
Fletcher, William H. ANAT, PHSL
Fox, Michael E. DENT
Frank, Alfred L. DENT
Frank, Robert J. DENT
Fraser, Ian M. PHRM
Fraser, Sharon SPPA
Fry, Barbara DACC
Fuentes, Paul J. DENT
Fujita-Yamaguchi, Yoko MICR

Galbraith, Michael E. NRSG
Gauntt, Lloyd E. DENT
Gilbert, Raymond D. PHSL
Gonzalez, Ramon R., Jr. PHRM, PHSL
Goodacre, Charles DENT
Goodwin, H. Thomas BIOL, GEOL
Green, Lora MICR, PHSL
Gridley, Daila S. MICR

Haddad, Ella NUTR
Haerich, Paul PSYC
Haggren, Wendy MICR
Hall, Raymond G. PHSL
Hardin, Steven B. BMCE
Haviland, Mark PSYC
Henken, Herbert W. ANAT
Herrmann, E. Clifford BCHM

Hessinger, David A.	BCHM, BIOL, PHRM, PHSL
Hill, Kelvin A. W.	BCHM
Hill, Marcia C.	SPPA
Hodgkin, Georgia	NUTR
Hoffman, Keith D.	DENT, ANAT
Hooker, William M.	ANAT
Hopp, Helen	PSYC
Hoyle, Jerry	PSYC
Hubbard, Richard W.	BCHM, NUTR
Hunt, Guy M.	ANAT
Huston, Ronald G.	FMST, MFAM, DACC
Itakura, Keiichi	MICR
Jackson, Craig R.	SOWK
Jackson, Victoria	SOWK
Javor, George T.	BCHM, MICR
Jeiroudi, M. Toufic	DENT
Johnson, Mark S.	MICR
Johnston, Patricia K.	NUTR
Jones, Patricia S.	NRSG
Jung, Marshall	MFAM
Kaminishi, Ronald M.	DENT
Kettering, James D.	MICR
Khoo, Keiko I.	SPPA
Kim, Edward I.	DENT
King, Helen Emori	NRSG
Kirby, Michael A.	ANAT
Kosch, Cindy	NUTR
Kunihara, Daniel	DENT
Lambden, Craig	MFAM
Langridge, William H. R.	MICR
Larson, David R.	BMCE
Lau, Benjamin H. S.	BIOL, MICR
Lau, Kin-Hing W.	BCHM
Leonora, John	PHSL
Lessard, George M.	BCHM
Lewis, John E.	MICR
Lier, Anthony B.	DENT
Linkhart, Thomas A.	BCHM
Liwnicz, Boleslaw H.	ANAT
Longo, Lawrence D.	PHSL
Loring, Susie	SOWK
Lowry, Jean B.	SPPA
Lozada, Jaime L.	DENT
Lucas, Gary A.	SPPA
Maeda, George	PHSL
Maki, Jean E.	SPPA
McCluskey, Elwood S.	BIOL, PHSL
McEwen, Lawrence E.	DENT
McGann, David G.	SPPA
McKendry, Douglas	DENT
McMillan, Paul J.	ANAT
Mihram, William L.	DENT
Miller, Eva G.	NRSG
Miller, Frances P.	NRSG
Mitchell, Daniel A., Jr.	ANAT
Mitchell, Robert D.	DENT
Mohan, Subburaman	BCHM, PHSL
Molinaro, Guiseppe A.	MICR
Morgan, Arthur J.	DENT
Morrow, Steve G.	DENT
Nation, Wilfred	DENT
Nava, P. Benigno	ANAT
Nehlsen-Cannarella, Sandra L.	MICR, PHSL
Nordland, W. Peter	DENT
Orr, Robert D.	BMCE
Ottoson, Dianne	NRSG
Paggenkamper, Joni	NUTR
Pearce, William J.	PHRM, PHSL
Pearson, John K.	DENT
Perkin, Ronald M.	NRSG
Peters, Marvin A.	BIOL, PHRM
Peterson, John E.	DENT
Pioli, Elizabeth A.	SPPA
Power, Gordon G.	PHSL
Provonsha, Jack W.	BMCE
Rajaram, Sujatha	NUTR
Ramirez, Johnny	PSYC
Register, U. D.	BCHM, NUTR
Reiss, Gunter	DACC
Rick, Gordon M.	DENT
Ricketts, Robert M.	DENT
Rippon, W. Barton	BCHM, MSTP
Roberts, Walter H. B.	ANAT
Robertson, Thomas L.	DENT
Roos, Philip J.	PHSL
Rosenberg, Jeffrey I.	DENT
Rossi, John	BCHM, MICR
Roth, Ariel A.	BIOL, GEOL
Roy, Ira	MICR
Rynearson, R. David	DENT
Ryu, Jun-ichi	BIOL, MICR
Sabate, Joan	NUTR
Saha, Subrata	ANAT
Salomone, Marc P.	DENT
Sandberg, Lawrence B.	BCHM
Sands, John	MICR
Schlenker, Willis L.	DENT
Schultz, Robert L.	ANAT
Scott, Garland E.	DENT
Selvig, Knut A.	DENT
Shaughnessy, Paige S.	SPPA
Sigurdsson, Thorarinn J.	DENT
Simms, Richard A.	DENT
Simon, Dianne	SOWK
Simon, James	DENT
Simpson, Cheryl J.	FMST, MFAM
Slattery, Charles W.	BCHM
Sonne, Janet	PSYC
Sood, Satish M.	BCHM
Sterling, Lisa R.	SPPA
Straatmeyer, Alvin	PSYC
Strong, Donna D.	BCHM, MICR
Strother, Allen	PHRM
Sugiyama, Raymond M.	DENT
Szalay, Aladar A.	MICR

Tatakis, Dimitris N.	DENT
Taylor, Barry L.	BCHM, MICR
Taylor, Guy D.	DENT
Teel, Charles W.	BMCE
Teel, Robert W.	BIOL, PHRM, PHSL
Tieche, Jean-Marc	PHSL
Tomlinson, John L.	DENT
Torabinejad, Mahmoud	DENT
Tosk, Jeffrey M.	PHSL
Van Cleve, Lois	BMCE, NRSG
VanGent, Conrad	BCHM
van Stralen, Daved W.	NRSG
Wagner, William	ANAT
Walters, James W.	BMCE
Walters, Roland D.	DENT
Weber, Ruth S.	NRSG
Webster, Clyde L.	GEOL
Wergedal, Jon E.	BCHM
Whittaker, John	DENT
Whitten, Crystal	NUTR
Wikesjo, Ulf	DENT
Wilcox, R. Bruce	BCHM, BIOL
Williams, Robin	NRSG
Winslow, Gerald R.	BMCE
Wise, James R.	DENT
Wohrle, Peter S.	DENT
Wong, Antoinette	MFAM
Wyatt, Melva S.	DENT
Yacoub, Ignatious I.	SOWK
Yellon, Steven M.	ANAT, PHSL
Zalsman, Harvey	DENT
Zhang, Lubo	PHRM
Zolber, Kathleen K.	NUTR
Zuccarelli, Anthony	BCHM, BIOL, MICR, MSTP

ALUMNI FEDERATION

The Alumni Federation was organized in 1958. This organization provides an avenue by which the several alumni associations, distinctive of emphases represented by curricula of the University, join their common concern for the continued welfare of the institution. In turn, through the Alumni Federation, the University demonstrates its interest in the continued general and professional development of the alumni, whom it regards as the ultimate and true expression of its accomplishments.

By united and reciprocal interaction, the federation and the University seek to ensure a growing community of scholars, practitioners, and citizens dedicated to excellence. Vitally concerned with excellence in education, the federation lends itself to enlarging the sphere of influence for good envisioned by the founders of the University.

The federation seeks to foster unity and loyalty and to promote the growth of the total institution and at the same time the best interests of each part. The federation endeavors to:

1. Foster the natural bond among alumni of each individual school, maintaining the right of alumni to direct their own group activities.

2. Assist the University and its schools in their duty to provide for the continuing general welfare of all students, faculty, and alumni.

3. Encourage alumni through constituent associations to assist in providing adequate and dependable financial support both for the University and for alumni activities.

INSTRUCTIONAL RESOURCES

THE LIBRARY

The Del E. Webb Memorial Library is the central library of Loma Linda University. Its historical roots go back to 1907, when a small library collection was started in a room of the old Loma Linda sanitarium. In 1953 the growing collection was moved to its own building and a new structure was added in 1981. Currently the total library space is 87,670 square feet. As of February 1994, the Library housed 293,409 volumes, including 183,668 books and 111,076 bound journals. The collection also contains 71,423 audiovisual items and 2,775 current periodical subscriptions.

The purpose of the Library is to stimulate and support the informational needs of the University's instructional, research, and service programs. To this end the Library provides a full range of information support services including, but not limited to, reference, circulation, reserve, access through on-line searches to hundreds of computerized data-bases, access to databases available locally in the library network, course-related bibliographic instruction, library orientations, interlibrary loans, photocopy services, a microcomputer laboratory, a learning resource center, library research classes, and support for off-campus academic programs.

The Library provides access to other collections nationwide through computerized telecommunications. It also participates in national and regional networks. One of these is the National Network of the Libraries of Medicine, founded by the National Library of Medicine. This structure is divided into eight regional sections. The Del E. Webb Memorial Library belongs to region seven and is the designated medical resource library for San Bernardino and Riverside counties. Local library cooperatives include the IEALC (Inland Empire Academic Library Cooperative) and SIRCULS (San Bernardino, Inyo, Riverside Counties United Library Services). Membership in these cooperatives gives our students, faculty, and staff access to other library collections.

The Department of Archives and Special Collections holds information on the history of Loma Linda University and the history of the health sciences, and contains a major collection on Adventism. In addition to print materials which include rare books, theses, and dissertations, there

are microforms, sound recordings, and several thousand photographs; plus 14,000 linear feet of archival materials, which include papers of various denominational and University officials, as well as the congressional papers of the Honorable Jerry and Shirley Pettis. Also located in the department is the Ellen G. White Estate Branch Office. It contains some 60,000 typewritten pages of Ellen White's letters and manuscripts; 4,600 of her published articles; and several different files of materials pertaining to various aspects of the life and ministry of Ellen White. A computerized concordance to her published writings is available to researchers.

ACCREDITATION

THE UNIVERSITY

Founded as College of Evangelists 1905-06. Chartered as College of Medical Evangelists by the state of California December 13, 1909. Accredited by Northwest Association of Secondary and Higher Schools April 7, 1937. Accredited by Western Association of Schools and Colleges (prior to January 1962, Western College Association) February 24, 1960. Became Loma Linda University July 1, 1961. Professional curricula started and approved as indicated.

THE GRADUATE SCHOOL: Started in 1954. Accredited through University accreditation.

THE PROFESSIONS

CYTOTECHNOLOGY: Started in 1982. Initial approval by the Committee on Allied Health Education and Accreditation in collaboration with the Cytotechnology Programs Review Committee January 20, 1983.

DENTAL HYGIENE: Started in 1959. Approved by the Council on Dental Education of the American Dental Association since September 7, 1961.

DENTISTRY: Started in 1953. Approved by the Council on Dental Education of the American Dental Association since May 23, 1957.

HEALTH: Started in 1948; reorganized in 1964. Approved by the American Public Health Association June 23, 1967.

HEALTH INFORMATION ADMINISTRATION: Started as medical record administration in 1963. Approved by the Council on Medical Education of the American Medical Association since December 1, 1963. Currently approved by the Committee on Allied Health Education and Accreditation in collaboration with the American Medical Record Association.

MEDICAL RADIOGRAPHY: Started in 1941 as radiological technology. Approved by the Council on Medical Education of the American Medical Association November 19, 1944. Currently approved by the Committee on Allied Health Education and Accreditation in collaboration with the Joint Review Committee on Education in Radiologic Technology.

MEDICAL SONOGRAPHY: Started in 1976 as diagnostic medical sonography. Approved by the Committee on Allied Health Education and Accreditation in collaboration with the Joint Review Committee on Education in Diagnostic Medical Sonography October 24, 1985.

MEDICAL TECHNOLOGY: Started in 1937. Approved by the Council on Medical Education of the American Medical Association since August 28, 1937. Currently approved by the Committee on Allied Health Education and Accreditation in collaboration with the National Accrediting Agency for Clinical Laboratory Sciences.

MEDICINE: Started in 1909. Approved by the Association of American Medical Colleges and the Council on Medical Education of the American Medical Association since November 16, 1922.

NUCLEAR MEDICINE: Approved by the Council on Medical Education of the American Medical Association June 23, 1973. Currently approved by the Committee on Allied Health Education and Accreditation in collaboration with the Joint Review Committee on Educational Programs in Nuclear Medicine Technology.

NURSING: Hospital school started at Loma Linda in 1905. Hospital school added at Los Angeles in 1924. Degree school organized in 1948. Accredited by the National Nursing Accrediting Service December 10, 1951, with approval continuing under the National League for Nursing. Initial 1917 approval of the California State Board of Health extended until college program approved July 1, 1952, by the California Board of Registered Nursing. California Board of Registered Nursing approval since 1952. Public Health Nursing preparation recognized 1959.

NUTRITION AND DIETETICS: Started in 1922 as a certificate program; baccalaureate degree conferred 1932-54; graduate program offered since 1954. Internship program continuously approved by The American Dietetic Association from 1957 through 1974; reestablishment of baccalaureate program authorized October 1971. Coordinated undergraduate program accredited by The American Dietetic Association since 1974.

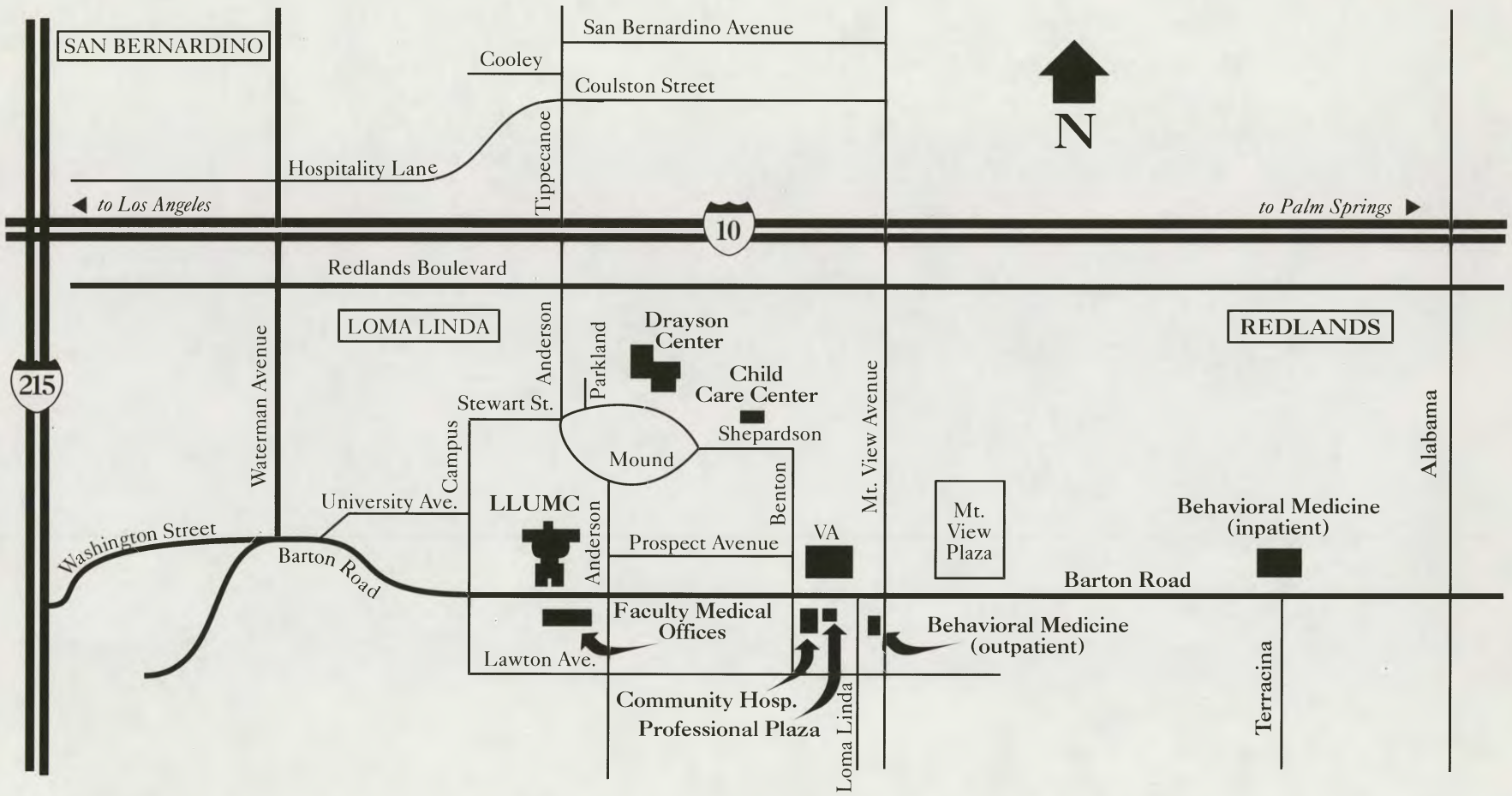
OCCUPATIONAL THERAPY: Started in 1959. Initial approval by the Council on Medical Education of the American Medical Association June 10, 1960. Full approval March 30, 1962. Currently approved by the Committee on Allied Health Education and Accreditation in collaboration with the American Occupational Therapy Association.

PHYSICAL THERAPY: Started in 1941. Initial approval by the Council on Medical Education of the American Medical Association June 6, 1942. Currently approved by the American Physical Therapy Association.

RADIATION THERAPY: Approved by the Council on Medical Education of the American Medical Association December 1, 1974. Currently approved by the Committee on Allied Health Education and Accreditation in collaboration with the Joint Review Committee on Education in Radiologic Technology.

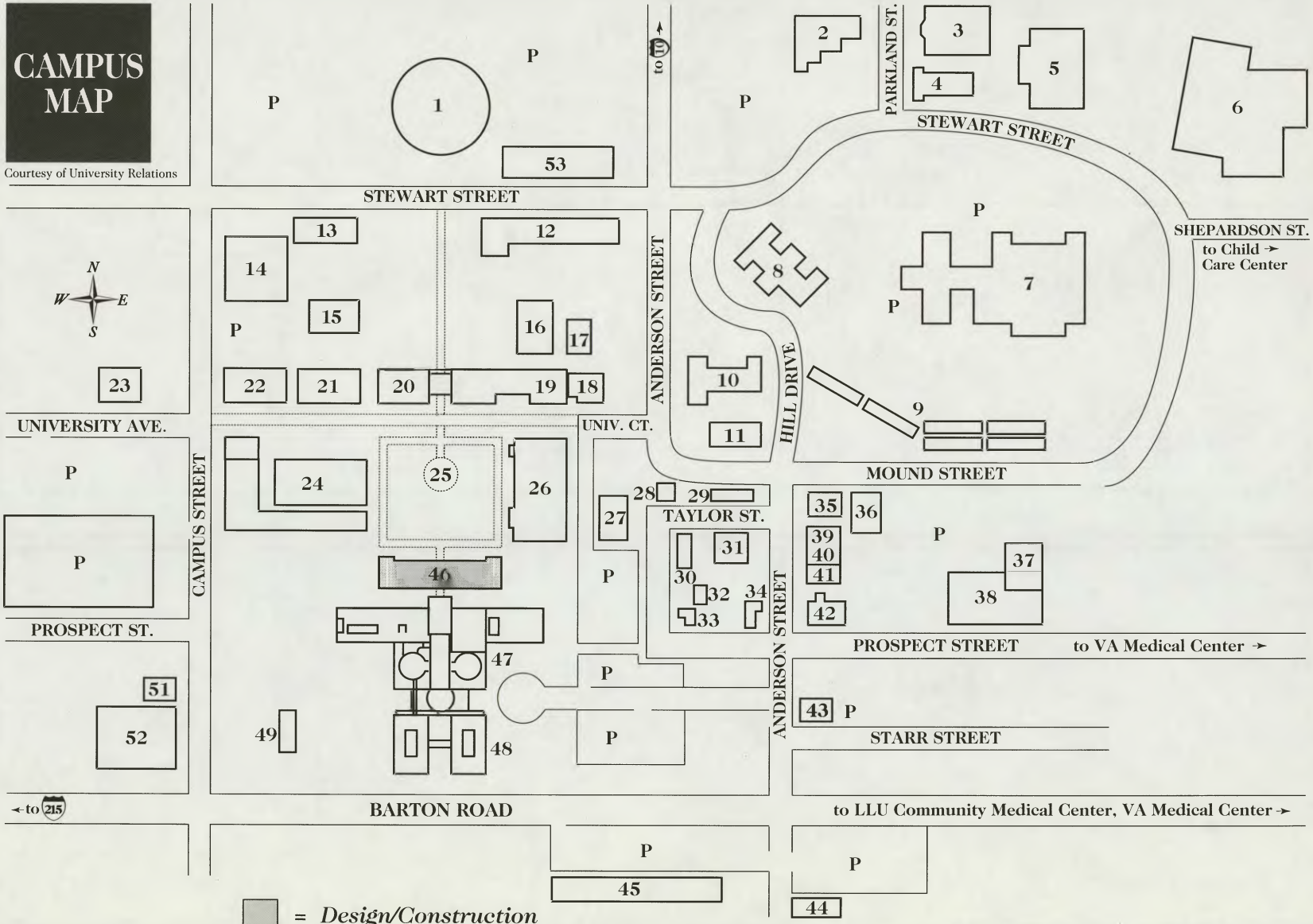
RESPIRATORY THERAPY: Started in 1971. Initial approval by the Council on Medical Education of the American Medical Association September 1972. Full approval June 1973. Currently approved by the Committee on Allied Health Education and Accreditation in collaboration with the Joint Review Committee for Respiratory Therapy Education.

Area Map


SAN BERNARDINO
Cooley
San Bernardino Avenue
Coulston Street
N
Hospitality Lane
Tippecanoe
◀ to Los Angeles
to Palm Springs ▶
10
Redlands Boulevard
LOMA LINDA
REDLANDS
215
Waterman Avenue
Anderson
Parkland
Drayson Center
Child Care Center
Stewart St.
Shepardson
Mound
Campus
Benton
Mt. View Avenue
Alabama
University Ave.
LLUMC
Anderson
Prospect Avenue
VA
Mt. View Plaza
Behavioral Medicine (inpatient)
Washington Street
Barton Road
Barton Road
Faculty Medical Offices
Behavioral Medicine (outpatient)
Lawton Ave.
Community Hosp. Professional Plaza
Loma Linda
Terracina

CAMPUS MAP

Courtesy of University Relations



1. Gentry Gymnasium
2. Construction; Geoscience; Housekeeping
3. Campus Engineering; Housekeeping
4. University Purchasing
5. Warehouse
6. Drayson Center
7. Nichol Hall: Schools of Allied Health Professions and Public Health
8. Lindsay Hall (women's residence)
9. Daniells Residence
10. Campus Hill Seventh-day Adventist Church
11. Linda Hall: Welfare Center, of Campus Hill SDA Church
12. Evans Hall: Center for Health Promotion; Cutler Amphitheater
13. Shryock Hall: Anatomy
14. Alumni Hall for Basic Sciences: Pathology; Microbiology
15. Risley Hall: Physiology; Pharmacology
16. Burden Hall: Academic Publications; University Relations
17. Orthopedics Research Laboratory
18. Randall Visitors Center: Jorgensen Learning Resource Center
19. University Library
20. Magan Hall: University Administration
21. Griggs Hall: Biology; Faculty of Religion; Graduate School
22. Mortensen Hall: Biochemistry/LLU Center for Molecular Biology and Gene Therapy
23. Campus Security
24. University Church of Seventh-day Adventists: Campus Chapel/ Fellowship Hall
25. Good Samaritan Sculpture
26. Prince Hall: School of Dentistry
27. Power Plant
28. Dentistry Faculty Endodontics
29. Central Building: Psychology
30. Dentistry Faculty Offices
31. University Arts Building: Design Center/Medical Center Payroll/ Medical Center Personnel/Medical Center Purchasing/University Personnel/University Printing Services
32. General Conference Auditors
33. Medical Center Collections
34. Office of Sponsored Research
35. La Loma Credit Union
36. Campus Cafeteria
37. Risk Management
38. Campus Store/Loma Linda Market/ Patio Pantry
39. Student Services: Admissions and Records; International Student Services; Student Accounting; Student Life; Student Financial Aid; Payroll
41. U.S. Post Office
42. Bank of America
43. Alumni Center: Nursing Staff
44. University Kidney Center (dialysis)
45. Faculty Medical Offices
46. Research Center, School of Medicine (under construction)
47. Loma Linda University Medical Center
48. Loma Linda University Children's Hospital
49. Employee/Student Health Services
51. Parent-Child Education Center
52. West Hall: School of Nursing; Pediatrics (School of Medicine)
53. Media Services

ALPHABETICAL LEGEND

INDEX

UNIVERSITY TELEPHONE DIRECTORY

MAIL:
Loma Linda University
Loma Linda, California 92350

PHONE – For information about LLU: 1/800-422-4LLU
...dialing from Canada: 1/800-548-7114

AREA CODE: 909 /

SWITCHBOARD: 824-0800

To dial an extension through the switchboard or from inside the University, dial the last 5 digits only (e.g., Student Affairs, 4-4510).

From an outside line, dial the number below:

	PHONE	FAX
President	824-4540	824-4577
Diversity	824-4787	824-4577
Student Affairs	824-4510	824-4879
Student welfare, housing, visas, etc.		
Student Finance	824-4520	824-4879
Student Financial Aid	824-4509	824-4879
University Records	824-4508	824-4879
Faculty of Religion	824-4536	824-4856

The Schools:

Allied Health Professions		
Admissions	824-4599	824-4291
Dean	824-4545	824-4291
Cardiopulmonary Sciences	824-4932	
Clinical Laboratory Science	824-4966	
Health Information Administration	824-4976	
Nutrition and Dietetics	824-4593	
Occupational Therapy	824-4628	
Occupational Therapy Assistant	824-4948	
Physical Therapy	824-4632	
Physical Therapy Assistant	824-4634	
Radiation Technology	824-4931	
Speech-Language Pathology/Audiology	824-4998	
Dentistry	824-4222	
Admissions	824-4621	824-4211
Dean	824-4683	824-4211
Dentistry Academic Program	824-4600	
Dental Hygiene Academic Program	824-4631	
Graduate		
Admissions	824-4529	824-4859
Dean	824-4528	824-4859
Medicine	824-4462	824-4146
Admissions	824-4467	824-4146
Dean	824-4462	
Nursing	824-4360	824-4134
Admissions	824-4923	824-4134
Graduate	824-4360, x42139	
Undergraduate	824-4360, x42116	
Public Health	824-4546	
Admissions	824-4694	824-4087


LOMA·LINDA·UNIVERSITY
TO MAKE MAN WHOLE