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1984 - 1986 Bulletin

Loma Linda University

Graduate School

Loma Linda University

1984-86 Bulletin

Bulletin of LOMA LINDA UNIVERSITY
Graduate School 1984-86

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.

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graduate school

This is a *two-year* BULLETIN

LOMA LINDA UNIVERSITY

1984-86

CONTENTS

LOMA LINDA UNIVERSITY is a two-campus Seventh-day Adventist coeducational institution located in inland southern California and is part of the Seventh-day Adventist system of higher education.

On the La Sierra campus, at the west edge of Riverside, curriculums in applied and liberal arts and sciences, preprofessional programs for the health-related professions, and programs in graduate professional education are offered by the College of Arts and Sciences and the School of Education. On the Loma Linda campus, in the San Bernardino-Redlands area, professional curriculums are offered by the Schools of Allied Health Professions, Dentistry, Health, Medicine, and Nursing. Graduate programs of the departments of the schools are offered from both campuses through the Graduate School. The Division of Religion also offers courses on both campuses.

Accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges, and the North American Division Commission on Accreditation of the Board of Regents of the General Conference of Seventh-day Adventists, Loma Linda University is a member of the American Council on Education and the Association of American Colleges. The professional curriculums of the University are approved by their respective professional organizations.

Curriculums are offered leading to the Associate in Arts, Associate in Science, Bachelor of Arts, Bachelor of Business Administration, Bachelor of Fine Arts, Bachelor of Music, Bachelor of Science, Bachelor of Social Work, Master of Arts, Master of Business Administration, Master of Health Administration, Master of Public Health, Master of Science, Master of Science in Public Health, Specialist in Education, Doctor of Dental Surgery, Doctor of Education, Doctor of Health Science, Doctor of Medicine, Doctor of Philosophy, and Doctor of Public Health degrees.

The core of the combined faculties consists of approximately 721 full-time teachers. Part-time and voluntary teachers, especially clinicians in the professional curriculums, bring the total past 1,800. Men and women from as many as 100 nations are represented in the annual enrollment of nearly 5,000 students.

The University is committed to equal opportunity and does not discriminate against qualified persons on the basis of handicap, sex, race, color, or national and ethnic origin in its educational and admissions policies, financial affairs, employment programs, student life and services, or any University-administered program. It does, however, retain the right to give preference in student admissions to qualified Seventh-day Adventist students. While this right is retained, it is emphasized that the admission of students is not limited only to Seventh-day Adventist applicants.

1984 CALENDAR

June

S	M	T	W	T	F	S
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July

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August

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SUMMER QUARTER 1984

Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in the Graduate School

18 Registration (both campuses)

18 Instruction begins LL

19 Instruction begins LS

25/26 Last day to enter a course, change status, or withdraw with no transcript record

4 Independence Day recess

20 Last day to withdraw from six-week session with a W grade

27 Instruction ends (six-week session)

3 Last day to withdraw from eight-week session with a W grade

9 Last day to submit final copy of thesis, publishable paper, or dissertation, including signed approvals and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for summer completion

10 Instruction ends (eight-week session)

17 Last day to submit Petition for Admission to Candidacy (Form A) if this is student's third quarter of study in a master's degree program

23 Last day to withdraw from eleven-week session with a W grade

30 Instruction ends (eleven-week session)

30 Summer graduation

POSTSUMMER SESSION

30 Instruction begins

1984

CALENDAR

September

S	M	T	W	T	F	S
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9	10	11	12	13	14	15
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23	24	25	26	27	28	29
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3	Labor Day recess
28	Instruction ends

October

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FALL QUARTER 1984

	Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in the Graduate School
1/2	Registration (both campuses)
3	Instruction begins (both campuses)
15	Last day to submit Petition for Graduation (Form C) for fall completion
16	Last day to enter a course, change status, or withdraw with no transcript record
22-27	Week of Devotion (both campuses)

November

S	M	T	W	T	F	S
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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	

21-25	Thanksgiving recess
26	Instruction resumes
30	Last day to petition doctoral degree candidacy (Form A) for spring completion

1984 CALENDAR

December

S	M	T	W	T	F	S
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23	24	25	26	27	28	29
30	31					

3	Last day to withdraw with a W grade
13	Last day to submit final copy of thesis, publishable paper, or dissertation, including signed approvals and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for fall completion
14	Last day to submit Petition for Admission to Candidacy (Form A) if this is student's third quarter of study in a master's degree program
17-20	Final examinations
20	Last day to submit Petition for Graduation (Form C) for winter completion
21	Christmas recess begins

1985 CALENDAR

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
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27	28	29	30	31		

WINTER QUARTER 1985

	Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in Graduate School
7	Registration (both campuses)
7/8	Instruction begins
21	Last day to enter a course, change status, or withdraw with no transcript record
23-26	Mission Emphasis Week LL
28-FEB 1	Mission Emphasis Week LS

February

S	M	T	W	T	F	S
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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		

18	Presidents' Day recess

1985

CALENDAR

March

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24	25	26	27	28	29	30
31						

4	Last day to withdraw from a course with a W grade
7	Last day to submit final copy of thesis, publishable paper, or dissertation, including signed approvals and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for winter completion
8	Last day to submit Petition for Admission to Candidacy (Form A) if this is student's third quarter of study in a master's degree program
8	Last day to petition doctoral degree candidacy (Form A) for summer completion
18	Last day to submit Petition for Graduation (Form C) for spring completion
18-21	Final examinations
22-31	Spring recess

April

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

SPRING QUARTER 1985

Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in the Graduate School

1	Registration
1/2	Instruction begins
12-14	Graduate School retreat
15	Last day to enter a course, change status, or withdraw with no transcript record
22-27	Week of Devotion (both campuses)

May

S	M	T	W	T	F	S
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

1-5	Fine Arts Festival LL
9	Last day to submit final copy of thesis, publishable paper, or dissertation, including signed approvals and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for spring completion
10	Last day to submit Petition for Admission to Candidacy (Form A) if this is student's third quarter of study in a master's degree program
20	Last day to submit Petition for Graduation (Form C) for summer completion
27	Memorial Day recess
28	Last day to withdraw with a W grade

1985 CALENDAR

June

S	M	T	W	T	F	S
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9	10	11	12	13	14	15
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23	24	25	26	27	28	29
30						

10-13	Final examinations
13	Spring graduation
	SUMMER QUARTER 1985
	Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in the Graduate School
24	Registration (both campuses)
24/25	Instruction begins

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			

1/2	Last day to enter a course, change status, or withdraw with no transcript record
4	Independence Day recess
26	Last day to withdraw from six-week session with a W grade

August

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

2	Instruction ends (six-week session)
9	Last day to withdraw from eight-week session with a W grade
15	Last day to submit final copy of thesis, publishable paper, or dissertation, including signed approvals and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for summer completion
16	Instruction ends (eight-week session)
23	Last day to submit Petition for Admission to Candidacy (Form A) if this is student's third quarter of study in a master's degree program
29	Last day to withdraw from eleven-week session with a W grade

1985

CALENDAR

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					

2	Labor Day recess
5	Instruction ends (eleven-week session)
5	Summer graduation
	POSTSUMMER SESSION
5	Instruction begins
27	Instruction ends
	FALL QUARTER 1985
	Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in the Graduate School
30-OCT 1	Registration (both campuses)

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	Instruction begins (both campuses)
14	Last day to submit Petition for Graduation (Form C) for fall completion
15	Last day to enter a course, change status, or 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

22	Last day to petition doctoral degree candidacy for spring completion
27-DEC 1	Thanksgiving recess

1985

CALENDAR

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	Last day to withdraw with a W grade
12	Last day to submit final copy of thesis, publishable paper, or dissertation, including signed approvals and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for fall completion
13	Last day to submit Petition for Admission to Candidacy (Form A) if this is the student's third quarter of study in a master's degree program
16-19	Final examinations
19	Last day to submit Petition for Graduation (Form C) for winter completion
20	Christmas recess begins

1986

CALENDAR

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 1986

	Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in the Graduate School
6	Registration (both campuses)
6/7	Instruction begins
20	Last day to enter a course, change status, or withdraw with no transcript record

February

S	M	T	W	T	F	S
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

17	Presidents' Day recess

1986

CALENDAR

March

S	M	T	W	T	F	S
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16	17	18	19	20	21	22
22	24	25	26	27	28	29
30	31					

3	Last day to withdraw from a course with a W grade
6	Last day to submit copy of thesis, publishable paper, or dissertation, including signed approvals and Certification of Completion of Requirements for Degree (Form D) to the Graduate School for winter completion
7	Last day to submit Petition for Admission to Candidacy (Form A) if this is the student's third quarter of study in a master's degree program
7	Last day to petition doctoral candidacy for summer completion
17	Last day to submit Petition for Graduation (Form C) for spring completion
17-20	Final examinations
21-30	Spring recess
	SPRING QUARTER 1986
	Master's degree students initiate a Petition for Admission to Candidacy (Form A) in the third quarter after beginning study in the Graduate School
31	Registration
31/APR 1	Instruction begins

April

S	M	T	W	T	F	S
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6	7	8	9	10	11	12
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20	21	22	23	24	25	26
27	28	29	30			

11-13	Graduate School retreat
14	Last day to enter a course, change status, or withdraw with not transcript record

1986 CALENDAR

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

8	Last day to submit final copy of thesis, publishable paper, or dissertation, including signed approvals, and Certification of
9	Last day to submit Petition for Admission to Candidacy (Form A) if this is student's third quarter of study in a master's degree program
19	Last day to submit Petition for Graduation (Form C) for summer completion
26	Memorial Day recess
27	Last day to withdraw with a W grade

June

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29	30					

9-12	Final examinations
12	Spring graduation

STATEMENT OF PURPOSE

The fundamental purpose of Loma Linda University is stated in its motto To Make Man Whole. As an institution of higher learning established and operated by Seventh-day Adventists, the University is dedicated to helping its teachers and students — as individuals and as a community — to reach their highest potential in education, in research, and in service. As a community of both faith and learning, the University is founded on the conviction that religious commitment invigorates the disciplined use of all of a person's mental abilities, and that all knowledge is ultimately derived from — and related to — one transcendent Source. The University also believes that education "to make man whole" is concerned with attitudes, goals, and values as well as with information and ideas.

Accordingly, the University's first function is to provide education that is comprehensive and integrative, including for every student (1) a mature understanding of oneself as a person in relation to God and to other persons; (2) an awareness and appreciation of the nature of ultimate reality, of the created universe, and of human existence; (3) a mastery of the basic knowledge and skills necessary for professional success or for advanced study in a particular discipline or vocation; (4) a commitment to personal integrity and generous service; (5) an attitude of continuing curiosity and inquiry, and a sense of the excitement of discovery; and (6) a lifestyle that facilitates the maximum usefulness of a person's abilities.

The University's second function is to enable and encourage its teachers and students to be creative and constructive members of the Seventh-day Adventist church and of society. This means that the University is involved in (1) expanding human knowledge through competent and responsible research, (2) serving as a major resource of information and personnel for the church as it endeavors to fulfill its mission around the world, and (3) responding to the needs of the surrounding communities. Thus the University's intention "to make man whole" refers not only to the education it offers to its students but also to the contribution both it and they can make, personally and professionally, to the church and to the contemporary world.

In the achievement of its fundamental purpose, each part of the University has its own distinctive role. The Board of Trustees and the administration provide the appropriate environment — the physical facilities, the personnel, and the intellectual and spiritual atmosphere. The members of all faculties serve both as educational guides and as role models for their students. The College and the Graduate School provide both general and specialized education in the liberal arts and sciences. The professional schools provide training for the major health professions and for careers in education. All of this occurs in the context, and as a consequence, of personal and collective religious commitment.

ADOPTED BY THE PRESIDENT'S COMMITTEE
March 16, 1976

I

Admission Information
Financial Information
Programs and Degrees
Academic Practices

In the Graduate School of Loma Linda University the essential concern of both faculty and students is the quest for meaning. Because that quest is served by knowledge, graduate students are obliged to achieve both broad and detailed mastery of their field of study, and also to 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 arts and sciences and in the health professions.
2. Encouraging the development of independent judgment and mastery of the techniques of research and the arts of expression.
3. Relating intellectual achievement to the service of mankind.

ADMISSION INFORMATION

The admissions committees of the University put forth considerable effort to be assured that an applicant to any of the schools is qualified for the proposed curriculum and seems likely to profit from educational experience in this University. The admissions committees of the Graduate School examine evidence, derived from the usual sources consulted by colleges and universities, of scholastic competence, moral and ethical standards, and significant qualities of character and personality. Evidence predictive of the ability to do a high quality of graduate work and of the intention to use wisely the competence developed is sought. Applicants are considered for admission only on the recommendation of the program in which study is desired.

APPLICATION AND ACCEPTANCE

Where to write Inquiry about admission and application should be addressed to:

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

Procedure 1. Application forms are available from the Graduate School office. Two copies should be filled out and mailed, together with the application fee, to Graduate School Admissions. Applications and all supporting information — transcripts, test results, references — must be in the office of the Graduate School at least two months before the beginning of the term for which admission is sought.

2. Two complete official transcripts of all academic records from colleges, universities, or professional and technical schools should be provided. It is the applicant's responsibility to arrange to have the transcripts sent directly by the registrar of each school attended to Graduate School Admissions.

3. A personal interview is desirable and should be arranged with the chairman of the department in which the student wishes to work.

4. When the program in which the student wishes to study has evaluated the application and made its recommendation, the Graduate School dean takes official action and the dean notifies the applicant. The formal notice of admission should be presented at registration time as evidence of eligibility to register in the Graduate School. No action can be taken before the application is complete; after that, about a month is needed before the student is advised of the action taken.

5. Students accepted may be asked to file a medical history with Student Health Service as part of registration.

6. Transcripts of records and all other application documents are retained permanently by the University for students enrolled after acceptance, and may not be withdrawn and used by students for any purpose. Records that do not result in enrollment are destroyed two years from the date of arrival in the Graduate School.

ADMISSION REQUIREMENTS

A baccalaureate degree (or its equivalent) from an accredited college or university is prerequisite to 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 program descriptions.

Scholarship Applicants are expected to present an undergraduate record with a grade 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. Applicants to the Business Administration Program should consult page 70.

Examinations Scores on the aptitude test of the Graduate Record Examination (GRE) are required with applications for admission. Students may address inquiries about these examinations to Graduate School Admissions, 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.

Applicants for the Master of Business Administration (M.B.A.) degree must submit results from the Graduate Management Aptitude Test (GMAT). They also, if above average, may be provisionally admitted when pressure of time makes it impossible to secure GMAT results. Such are subject to review when the required test results are received. Test results are to be submitted within the first quarter of attendance.

Veterans A student who is eligible to have veteran's benefits 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. Further information may be requested from the Office of University Admissions and Records. For advance payments, the student must contact the Office of University Admissions and Records at least forty-five days prior to enrollment.

Reentrance A student who discontinues studies at the University must meet the entrance requirements in force at the time of reentrance, unless a leave of absence has been granted. Fees are paid for reentrance application. Supplementary documents may be required.

International students The admission of students from countries other than the United States or Canada 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), if English is not the student's native tongue; 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 paragraph "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. A person entering on an exchange visitor visa (J-1) is subject to the same regulations on study load and work as is the F-1 student. 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 after acceptance and after financial arrangements have been made with that office.

Student visa A person entering the United States on a student visa (F-1) must carry successfully a full study load during each quarter of each academic year. For a graduate student, eight units meet this requirement. 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 (and those who do not have a sufficient score on TOEFL or MTELP or other evidence of English proficiency are required) to attend the Intensive American Language Institute offered during the five weeks before the beginning of the fall quarter. Further information can be obtained from the University's Student Affairs Office. 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 and provisional status, applicants must be approved for acceptance by the program in which they propose to study. Others may be accepted, subject to availability of facilities, and classified as nondegree students.

Regular A student who meets the scholarship and examinations requirements for admission to the graduate program chosen, has all prerequisites, and who has no undergraduate deficiencies is classified as a *regular* student.

Provisional A student (*a*) whose scholarship does not reach the level for regular graduate standing but who shows strong promise of success in graduate studies, or (*b*) who has the prerequisites but whose undergraduate sequence is inadequate for the chosen graduate program, or (c) whose admissions documentation is incomplete at the time of notification of acceptance may be classified as a *provisional* student. To continue eligibility for graduate study, a student admitted on provisional status must achieve a grade point average of 3.00 quarter by quarter.

Nondegree Students who wish to enroll for graduate courses for personal or professional benefit but who are not seeking a graduate degree may be classified as *nondegree* students. Such applicants complete a specially designed application form.

In deference to some aspects of the University employee benefits provisions and the Clinical Pastoral Education Program of the University Medical Center, initial enrollment may be expedited but still requires documentary proof of a bachelor's degree from an accredited institution and/or current admission to an accredited postbaccalaureate institution other than Loma Linda University. Complete evidence of previous academic achievement is expected during the first quarter of enrollment.

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 postdoctoral 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 pays tuition and attends at least 80 percent of course lectures.

College senior A senior who otherwise meets all requirements for graduate standing may be allowed to take graduate courses simultaneously with courses that complete bachelor's degree requirements if this does not constitute an overload, a quarter's load of more than 12 academic units. Registration requires instructor and Graduate School dean approval.

FROM MASTER'S TO PH.D. DEGREE

Bypassing master's A graduate student at this University usually proceeds 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 decides to go on to the doctoral degree, written application should be made to the adviser and 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 desires to bypass the master's degree may do so on recommendation of the guidance committee and with the consent of the dean, on these grounds: courses and research have been completed in the appropriate field equivalent in quality and scope to the master's degree requirements, a substantial part of the credits being from this University.

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. Some work applied toward the first master's degree may be counted toward both degrees.

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 in Biomedical Science and Medical Scientist Programs.

Combined degrees The Graduate School provides for concurrent registration for two degrees only in its combined science/professional degree programs — M.D./PH.D., M.D./M.S., D.D.S./PH.D., and D.D.S./M.S. — all in biomedical sciences. Concurrent application is required in some but not all of these. See page 38 of this BULLETIN; see also "Becoming a Medical Scientist at Loma Linda University," a brochure obtained from the dean's office.

FINANCIAL INFORMATION

GENERAL PRACTICES

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 with this University must have been settled.

Advance payment *Tuition and fees are charged and payable in full in advance of each term.* If the student withdraws from a course or courses during the first two weeks of the quarter, tuition is refundable. If withdrawal occurs after the second week, but before the midpoint of the quarter, a fourth of the tuition charged is refundable. Tuition is not refundable if withdrawal occurs after the midpoint of the term.

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 (ten percent per year). Failure to pay scheduled charges or to make proper arrangements, which is reported to the Office of University Admissions and Records and the dean, may cause 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 and 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. For advance payments, the student must contact the Office of University Records at least forty-five days in advance of enrollment.

Student health reimbursement plan The Student Reimbursement Plan complements the University Health Service Plan by reimbursing students referred by Health Service for expenses of costly illness and injuries in excess

of any benefits to which students may be entitled under any medical protection or personal insurance policy, or membership in any hospital association.

All Loma Linda University students for whom full graduate or undergraduate tuition is being received or who are enrolled for seven units or more per quarter are automatically covered by both the Student Health Service and the Student Reimbursement Plans.

The student must have paid full tuition for at least seven units during the current quarter. "In progress" units do not count toward the seven-unit minimum, since tuition for in progress units was paid in a previous quarter. Students enrolled for fewer than seven units per quarter but who desire coverage should contact the Department of Risk Management. No coverage will apply until financial arrangements have been completed.

All students may secure family coverage for both plans. Eligible dependents are the spouse (residing with the insured student) and unmarried children over fourteen days old and under nineteen years of age, who are not self-supporting and reside with the student.

The individual student's coverage will become effective on the date of registration or three days prior to registration if oncampus. Dependents' coverage will be effective on the date application and premium are received by the Department of Risk Management.

For further information, contact the Department of Risk Management, Convenience Center.

SCHEDULE OF CHARGES

TUITION, GRADUATE SCHOOL PROGRAMS IN GENERAL

Graduate students pay the unit and package tuition rates of the school in which their program is located. For 1984-85, these rates are:

College of Arts and Sciences: $162 per unit; $1925 for 12-16 units, MFAM ONLY.
Division of Religion: $162 per unit.
School of Health: $150 per unit.
School of Medicine: $162 per unit.
School of Nursing: $161 per unit.

TUITION, GRADUATE DENTISTRY PROGRAM

$12,435	Total for twenty-two month certificate program; $500 for 1984 postsummer session; $1705 per quarter, effective autumn term 1984.
13,640	Total for twenty-four month certificate and/or degree program; $1705 per quarter, effective autumn term 1984.
12,300	Total for thirty-six month oral and maxillofacial program; $1025 per quarter, effective autumn term 1984.

Students should plan on an annual increase consistent with inflation.

SPECIAL CHARGES

$	25	Application fee.
	25	Continuous registration fee for each quarter in which no tuition is paid.
	10	Late registration, first day; $3 per additional day.

Tuition and fees are subject to change without notice.

FINANCIAL AID

University fellowships Fellowships are awarded annually to students of outstanding performance and promise. University fellowships carry stipends and remission of tuition.

Assistantships A limited number of teaching and research assistantships, with stipends, are provided from operating and grant funds.

Tuition waiver Program chairmen and coordinators recommend partial- or full-tuition waivers for students of demonstrated achievement.

Application An application for fellowship or 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 on either campus.

Closing date An application involving a request for financial aid of any kind should be made as early as possible but never 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 of Student Financial Aid.

PROGRAMS and DEGREES

The Graduate School offers programs leading to the degrees Master of Business Administration, Master of Science, Master of Arts, and Doctor of Philosophy as listed below. The campus on which registration is conducted is indicated by the designation LS (La Sierra) or LL (Loma Linda).

Master of Business Administration LS

Master of Science

Anatomy LL
Biochemistry LL
Geological Sciences LS
Marriage and Family Therapy LL
Microbiology LL
Nursing LL
Nutrition LL
Pharmacology LL
Physical Education and Health LS
Physiology LL
Speech-Language Pathology LS
Dentistry LL:
Endodontics
Oral and Maxillofacial Surgery
Orthodontics
Periodontics

Master of Arts

Biology LL
English LS
History LS
Religion LL
Sociology LL

Doctor of Philosophy

Anatomy LL
Biochemistry LL
Biology LS
Microbiology LL
Pharmacology LL
Physiology LL

Other graduate programs Other graduate degrees are offered in the University by the School of Health (Master of Science in Public Health, Master of Public Health, Master of Health Administration, Doctor of Health Science, and Doctor of Public Health) and the School of Education (Master of Arts, Specialist in Education, and Doctor of Education).

Teacher preparation Students planning to qualify for teaching credentials, should consult the credentials adviser in the School of Education, La Sierra campus.

MASTER OF BUSINESS ADMINISTRATION

Adviser Each student upon acceptance is assigned an adviser, who helps to arrange the study program. This adviser provides continual guidance at quarterly registration and throughout the student's stay in the Graduate School.

Subject prerequisites and deficiencies Applicants lacking a bachelor's degree in business are admitted to Phase I of the 88-quarter unit program. In this phase, up to 40 quarter units may be waived if there has been adequate undergraduate credit or experience.

Time limits 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.

Residence The last 36 quarter units of the degree must be taken in residence, with a minimum quarterly enrollment of 8 units.

Grade achievement Students continue toward the degree as they maintain a B (3.0) average with no grade below C (2.0). A grade average of less than 3.0 allows one quarter of probation, during which the overall and quarter averages must reach or surpass 3.0. Failure to achieve this improvement will result in dismissal from the program.

Candidacy Admission to the Graduate School or the designation of regular graduate standing does not constitute admission of the student to candidacy for a graduate degree. Admission to candidacy is initiated by a written petition from the student to the dean, on recommendation of the program coordinator. Graduate School Form A is required.

Petition for candidacy for the master's degree must present a satisfactory grade record, including at least one quarter of full-time work at this University; note any qualification prescribed by the department. A student must be advanced to candidacy no later than the fourth quarter after entry upon study toward the Master of Business Administration (MBA) degree.

Religion requirement All students in the MBA program complete one graduate-level course in religion of at least 3 quarter units. Courses (numbered between 500 and 699) in social ethics are especially appropriate. Choices are guided by the student's background and the adviser's knowledge.

MASTER OF ARTS / SCIENCE

Adviser and guidance committee Each student accepted into a degree program is given 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, arranging for final written and/or oral examinations, evaluating the thesis 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 subject and classified either as prerequisites or as subject deficiencies. Applicants lacking subject or program prerequisites are not admitted to the master's degree program until the prerequisites are completed (at Loma Linda University or elsewhere), with acceptable grades reported. Subject deficiencies do not exclude an applicant from admission or enrollment but must be removed as specified by the adviser or dean, almost always at the outset of the graduate experience at this University.

Study plan The student's adviser develops with the student a written outline of the complete graduate experience, with time and activity specified as fully as possible. This is shared, serving as a guide to both and to members of the guidance committee when selected. The study plan is changed only after careful consultation.

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.

Residence Students must meet residence requirements indicated for particular degrees, 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 twelve units each quarter are ordinarily considered a full graduate study load, a student is in full-time residence if registered for at least eight units.

Grade achievement The required minimum grade average is B (3.00) with no course below C (2.00) 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 taken at this University.

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

Comprehensive and final examinations The student takes 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.

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.

Instructions for the preparation and format of the publishable paper or thesis are in the *Handbook for Graduate Students*, available at the Graduate School Admissions Office. The last day for submitting copies in final, approved form to the Graduate School office is published in the Calendar in this BULLETIN. Tuition covers the cost of binding four copies, to be distributed among the University library, the appropriate department or school collection, and the adviser. Personal copies are bound at the student's expense.

The student registers and pays tuition for the thesis whether the work is done in residence or in absentia. If the student has been adanced to candidacy, has completed all course requirements, and has registered for but not completed the research and thesis, continuous registration is maintained until the manuscript has been accepted. This involves a quarterly fee of $25.00 (1984-85) paid during registration each quarter.

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. Admission to candidacy is initiated by a written petition from the student to the dean, on recommendation of the program coordinator and department chairman.

Petition for candidacy for the master's degree must present a satisfactory grade record, including at least one quarter of full-time coursework at the University; 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. A student must be advanced to candidacy not later than the fourth quarter after entry upon 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 degree programs: M.D./M.S. and D.D.S./M.S. Two combined degree 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 38 of this BULLETIN.

Religion requirement All master's degree students take at least one religion course. Courses (numbered between 500 and 600) in social ethics, and bioethics and in philosophy of religion are often appropriate to meet this requirement. Choices, however, take account of student preparation and adviser's knowledge.

THE DOCTOR OF PHILOSOPHY DEGREE

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 on acceptance into a degree program is given 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. This 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, arranging for written and oral examinations, evaluating the dissertation 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. 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 must be removed as specified by the adviser or dean, almost always at the outset of the graduate experience at this University.

Study plan The student's adviser develops with the student a written outline of the complete graduate experience, with time and activity specified as fully as possible. This is shared, serving as a guide to both and to members of the guidance committee when selected. The study plan is changed only after careful consultation.

Time limit The graduate experience intends completion that 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. 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, and always an examination to assure currency in the content.

Residence Residence requirement is three academic years, at least two of which must be on the Loma Linda campus after acceptance for a specific Doctor of Philosophy degree curriculum. On recommendation of the student's guidance committee and department chairman, one of the three years may be accounted for by a master's degree program in the same or a supporting field. In order to obtain full residence credit for any term, students must devote their full time and energy to graduate activity, ordinarily with the equivalent of 9-12 units per quarter in courses, seminars, or research.

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 is the basis determining the awarding of the degree.

Grade achievement Students continue toward the doctorate as they achieve a grade average of B (3.0) or better in courses and research, computed separately. Courses in which a student earns a grade between C (2.0) and B (3.0) may or may not apply on the degree, at the discretion of the guidance committee. A student submitting transfer credits must earn a B average for all registrations at this University.

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 p. 37).

Students cannot be admitted to the examination until the following requirements have been met: (*a*) demonstrated reading knowledge of one foreign language, where applicable; (*b*) completion of 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.

Dissertation All doctoral students must register for at least one unit of dissertation credit. This may 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.

Instructions for the preparation and format of the dissertation are in the *Handbook for Graduate Students,* available at the Graduate School Admissions Office. The dates for submitting copies to the Graduate School office in final approved form are published in the Calendar of this BULLETIN. Consultation with Graduate School Admissions and Records can preserve the student from embarrassing errors of format that require retyping large sections of manuscript.

Tuition covers the cost of binding the four copies, distributed among the University library, the appropriate department or school, and the guidance committee chairman. Personal copies are bound at the student's expense.

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 $25.00 (1984-85) 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 or designation of the status regular graduate standing 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 intermediate recommendation of the student's adviser and the program chairman.

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 must have achieved candidacy not 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.

Combined degree programs: M.D./PH.D. and D.D.S./PH.D. Two combined degree programs are offered, each intended to provide preparation in clinical medicine 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 below and on pages 39 and 40 of this BULLETIN.

Religion requirement All doctoral students take at least one religion course. Courses (numbered between 500 and 600) in social ethics and bioethics and in philosophy of religion often appropriately meet this requirement. Choices, however, take account of the student's preparation and the adviser's knowledge.

COMBINED 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. — and 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 and one 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.

Biomedical Science Program (BSP) The Biomedical Science 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 Biomedical Science 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 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 named previously.

Students interrupt their professional study for two, perhaps 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 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 similar degree and career objectives to the Biomedical Science 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 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.

ACADEMIC PRACTICES

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. 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 major department chairman 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 at the University or perform the thesis research work at the University. Although twelve units are ordinarily considered a full graduate study load, a student is in full-time residence if registered for at least eight units.

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 department chairman and the dean. In such instances, the student must arrange with the chairman of the department for evaluation of the study and, at its completion, recommendation as to credit and grade.

Handbook The student is required to follow the procedures outlined in the *Handbook for Graduate Students,* which can be obtained on either campus from the Office of the Dean.

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.

Readmission A student who interrupts graduate study without arranging for a leave of absence is administratively withdrawn from the Graduate School. Resumption of work toward a graduate degree requires reapplication 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 $25.00 (1984-85) is charged.

Withdrawal Formal withdrawal must be arranged at Graduate School Admissions and at the Office of University Records.

Transfer credits A transfer student who has done acceptable graduate study in an approved institution may transfer credit up to 9 quarter units toward the master's degree, but may not transfer excess grade points to offset less than a B average at the University.

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 chairman 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 enrolled students are expected to attend.

Grievance or dismissal Students who are involved in dismissal proceedings or who wish to express a grievance may obtain from the Office of the Dean a copy of guidelines governing dismissal or presenting a grievance.

Adviser and guidance committee Each student is assigned an adviser and, except for the M.B.A. degree, 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. 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 Health bulletin, fulfills the prerequisite requirement; other requirements are specified by program. The course STAT 698 Research Consultation, described in the School of Health bulletin, provides professional guidance as the individual student initiates and progresses with research projects, thesis, or dissertation.

GRADUATION ATTENDANCE

A candidate for a graduate degree 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 be granted only by the president.

SCHOLASTIC STANDING

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

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

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. The last day for submitting copies to the Graduate School office in final approved form is published in the calendar.

Binding Tuition covers the cost of binding four copies of thesis or dissertation to be deposited in the University library and the appropriate department or school collection. Personal copies are bound at the student's expense.

II

Anatomy
Biochemistry
Biology
Business Administration
Dentistry
English
Geological Sciences
History
Marriage and Family Therapy
Medical Scientist Program
Microbiology
Nursing
Nutrition
Pharmacology
Physical Education and Health
Physiology
Religion
Sociology
Speech-Language Pathology

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 599 are graduate courses; and from 601 to 699, graduate seminar, research, and thesis or dissertation courses.

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
BUAD	Business Administration
CHEM	Chemistry
EDCI	Curriculum and Instruction
EDFO	Educational Foundations
ENDN	Endodontics
ENGL	English
ENVH	Environmental Health
EPDM	Epidemiology
GEOL	Geology
GRAD	Graduate
GRDN	Graduate Dentistry
HADM	Health Administration
HLED	Health Education
HLSC	Health Science
HLSR	Health Services
HIST	History
MFAM	Marriage and Family
MICR	Microbiology
NRSG	Nursing
NUTR	Nutrition and Dietetics
ORBI	Oral Biology
ORDN	Orthodontics
ORMD	Oral Medicine
ORPA	Oral Pathology
ORSR	Oral Surgery
PATH	Pathology
PERI	Periodontics
PHRM	Pharmacology
PETH	Physical Education and Health
PHYS	Physics
PHSL	Physiology and Biophysics
PSYC	Psychology
RELB	Religion, Biblical Studies
RELH	Religion, Historical Studies
RELP	Religion, Professional Studies
RELE	Religion, Theological and Ethical Studies
RELM	Religion, Mission Studies
RELT	Religion, Theological Studies
RLGN	Religion, General
SOCI	Sociology
SPPA	Speech-Language Pathology
STAT	Biostatistics

ANATOMY

FACULTY

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

GUY M. HUNT, M.D. Loma Linda University SM 1942; M.S.-MED. GS 1959
Professor of Anatomy and Neurology
Neuroanatomy

PAUL J. MCMILLAN, PH.D. Loma Linda University GS 1960
Professor of Anatomy
Neuroendocrine systems, control of hormone storage, histochemistry and image analysis

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

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

C. DOUGLAS EDDLEMAN, PH.D. University of Texas at Austin 1973
Associate Professor of Anatomy
Histology, electron microscopy, cytomorphology of animal systems

ARTHUR E. DALGLEISH, PH.D. Stanford University 1964
Associate Professor of Anatomy
Embryology, histology

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

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

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

CURTIS J. BAIRD, PH.D. University of Illinois at Urbana 1972
Assistant Professor of Anatomy
Embryology, histology, pineal and neuroendocrinology

P. BENIGNO NAVA, JR., PH.D. Loma Linda University GS 1974
Assistant Professor of Anatomy
Gross anatomy, effects of age and diabetes on PNS, taste receptors

JOHN W. PATRICKSON, PH.D., Howard University 1978
Assistant Professor of Anatomy
Neuroanatomy, integrative processes of CNS

WILLIAM WAGNER, M.D. Loma Linda University SM 1944
Clinical Assistant Professor of Anatomy
Gross anatomy, applied anatomy

ASSOCIATE FACULTY

HAROLD SHRYOCK, M.D. Loma Linda University SM 1934
Emeritus Professor of Anatomy
Embryology, cytology, neuroanatomy

WM. HOLMES TAYLOR, M.D. Loma Linda University SM 1947
Clinical Professor of Anatomy
Gross anatomy, applied anatomy

CHARLES W. HARRISON, M.D. Loma Linda University SM 1915
Emeritus Associate Professor of Anatomy
Gross anatomy, applied anatomy

The Department of 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. These 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 requirements include a year each of physics, general chemistry, and organic chemistry. A foreign language and courses in statistics and computer science are encouraged.

Anatomy, the study of structure as it relates to function, is a major component of cell biology, and is therefore at the heart of all biomedical sciences. In addition to the study of gross anatomy, histology, and neuroanatomy, the anatomy graduate student at Loma Linda University will learn to analyze cells utilizing electron microscopy, histochemistry, immunohistochemistry, and quantitative image analysis on *in vivo* and *in vitro* systems. Actively investigated are the central and peripheral nervous systems and the endocrine system, especially the pineal, pituitary, hypothalamus, and thyroid. Recent theses and publications have dealt with the development, ultrastructure, and immunohistology of the pineal gland, age- and diabetes-related changes in sensory nerve endings, and quantitation of immunohistochemically stained endocrine cells. At the doctoral level, teaching experience is required in both undergraduate and professional courses. Details of the program requirements are provided in the "Anatomy Program Guide." The following is a summary of these requirements.

MASTER OF SCIENCE

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 writing by reporting the results of the effort either in thesis form or as a publishable paper.

Courses To qualify for this degree, the student must complete a minimum of 27 quarter units in anatomy, including ANAT 541, 542, 543, 544 and 1 unit of Seminar (ANAT 604) for each year in residence; 9 units in anatomy research; 9 units in other basic science courses; and pass a comprehensive examination in these areas. It is recommended that the student demonstrate competence in a foreign language and biostatistics.

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. A student is usually considered for admission to this program after completing the Master of Science degree (or its equivalent).

Residence A minimum of two full-time academic years (60 units) is required beyond the master's degree level. Four consecutive quarters as a full-time registrant are required in the program.

Courses For the Doctor of Philosophy degree, the student is expected to complete at least 26 units of didactic courses beyond the master's degree requirement.

Comprehensive examination The comprehensive examination, which consists of oral and written parts, covers courses both in anatomy and the cognates. The student is also expected to show familiarity with literature in these fields.

Foreign language Reading knowledge of two languages other than English is required. A synthetic (FORTRAN or BASIC) language can be substituted for one language at the discretion of the student's guidance committee.

Advancement to candidacy The student may apply for admission to doctoral candidacy after (*a*) meeting the language requirement, (*b*) passing the comprehensive examination, and (*c*) passing any other examinations required by the department.

Dissertation The candidate's capacity for independent investigation and scholarly achievement must be demonstrated by the presentation and oral defense of an acceptable dissertation.

Combined M.D./PH.D. or D.D.S./PH.D. 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.*

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

ANAT 504 Oral Histology and Embryology SD (2)

Study of development, eruption, and microanatomy of the odontogenic apparatus. Fall.
Engen.

ANAT 526 Head and Neck Anatomy DN (surgical) (2)

Detailed dissection of the head and neck. Demonstration and lecture.
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.
Eddleman.

ANAT 541 Gross Anatomy (12)

Anatomy of the head, neck, locomotor system, thorax, abdomen, pelvis and perineum. Correlated with radiology, applied features, and embryological development. Summer, 4 units; fall, 8 units.
Staff.

ANAT 542 Histology (6)

The microscopic structure of cells, tissues, and organs of the human body. Summer, 2 units; fall, 4 units.
Staff.

ANAT 543 Neuroanatomy (6)

Structure and function of the human nervous system. Summer, 2 units; fall, 4 units.
Staff.

ANAT 544 Human Embryology (3)

The plan of development as it pertains to the human. Consideration of principles. Laboratory work involving the use of both human and comparative materials.
Prerequisite: A course in vertebrate embryology. Fall.
Dalgleish.

ANAT 545 Advanced Neuroanatomy (2-3)

Detailed study and dissection of the human nervous system.
Prerequisite: ANAT 543.
Staff.

ANAT 546 Electron Microscopy (3)

Designed to train the student to use the electron microscope. Basic theory, operational techniques, and tissue preparation. Summer-odd years.
Prerequisite: Histotechnique or equivalent.
Staff.

ANAT 547 Histochemistry (3)

The 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)

A study of the ultrastructural and cytochemical analysis of a variety of differentiated cells. Winter-even years.
Prerequisite: ANAT 542 or equivalent.

ANAT 549 Seminar: Topographical Chemistry (2)

The qualitative and quantitative distribution of enzymes and other chemically defined components of organs. Students will be responsible for two oral and two written reports. Winter-odd years.

McMillan.

ANAT 554 Techniques in Experimental Morphology (2)

An introduction to selected methods used in the morphological analysis of organ and cellular function. Spring-odd years.

Staff.

ANAT 594 Special Topics in Anatomy (arranged)

Intensive study of a selected topic approved by the chairman of the department. Individual guidance by a staff member.

Staff.

ANAT 604 Seminar in Anatomy (1)

Review of literature. Presentation and discussion of the results of individual investigations.

Staff.

ANAT 697 Research (1-25)

ANAT 698 Thesis (1-3)

ANAT 699 Dissertation (1-5)

BIOCHEMISTRY

FACULTY

CHARLES W. SLATTERY, PH.D. University of Nebraska 1965
Chairman; Professor of Biochemistry
Physical chemistry of macromolecules

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

W. BARTON RIPPON, PH.D. Newcastle University 1969
Professor of Biochemistry
Physical biochemistry of macromolecular structure and function, estrogen receptor protein, vitamin K-dependent serine proteases

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

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

RENE EVARD, PH.D. Michigan State University 1959
Associate Professor of Biochemistry
Enzymology

E. CLIFFORD HERRMANN, PH.D. Virginia Polytechnic Institute 1970
Associate Professor of Biochemisty
Tumor-associated changes in tissue enzymes, blood coagulation

GEORGE M. LESSARD, PH.D. University of California at Riverside 1973
Associate Professor of Biochemistry
Regulation of hormone synthesis, salivary proteins

TERRY D. SCHULTZ, PH.D. Oregon State University 1980
Assistant Professor of Biochemistry
Vitamins, nutritional biochemistry

RAYMOND A. MORTENSEN, PH.D. Stanford University 1933
Distinguished Service Professor of Biochemistry
Rates of metabolism, metabolic pathways

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

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

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

RICHARD W. HUBBARD, PH.D. Purdue University 1961
Associate Professor of Biochemistry
Clinical chemistry, amino acid metabolism

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

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

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

Programs 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 pursuing careers as research technicians. The Doctor of Philosophy program is designed to prepare the graduate for a career in independent research and teaching. In addition to these programs, combined M.S./M.D., M.S./D.D.S., PH.D./M.D., and PH.D./D.D.S. degrees are offered. 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.

M.S. program A Under this plan the student completes 20 units of courses in biochemistry beyond the introductory course and carries out research leading to the preparation and successful defense of a thesis or publishable paper reporting on the research.

M.S. program B Under this plan the student completes 20 units of courses in biochemistry beyond the introductory course and additional courses in related fields to complete 44 quarter units. The student must also pass a comprehensive examination over the major and minor fields.

PH.D. program For the Doctor of Philosophy degree, students must complete at least 30 units of courses in biochemistry beyond the introductory course and 20 units in related fields. Candidates for the PH.D. degree are assigned to laboratories and are expected to participate in research during the first year of their graduate program. They must pass both written and oral comprehensive examinations over the core courses and other areas deemed appropriate by their guidance committee. Opportunity is given to acquire teaching experience. A minimum of one quarter of teaching experience is required of each student. Finally, PH.D. candidates must present and defend a research proposal and carry out research leading to the preparation and successful defense of a dissertation.

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

Biochemistry minor A minor in the department consists of biochemistry of gene expression, metabolic interrelationships and control (BCHM 524, 525), two advanced topics courses (BCHM 544), and one quarter of seminar (BCHM 604).

Combined program A combination of academic and professional degrees is described on page 38 of this BULLETIN.

Prerequisites The following courses or their equivalents are prerequisites to the department courses.

Differential and integral calculus (8)
General physics (12)
Organic chemistry (12)
Physical chemistry (8)
General biology (12)
Upper division biology (4)

In addition, applicants must pass the American Chemical Society (ACS) standardized examination in organic and physical chemistry. These examinations must be taken within one year of entering the biochemistry program.

The department reserves the right to decide on the equivalence of courses presented by the applicant. Applicants who lack minor aspects of the prerequisites may be provisionally accepted. Prerequisites must be completed before the applicant is accepted into regular status and before (s)he takes departmental advanced topics courses.

General information For provisions applicable to the basic sciences, the student should consult Specific Requirements for Basic Science Programs in the *Programs and Degrees* section of division I of this BULLETIN.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

COURSES

BCHM 483 Introduction to the Biochemical Laboratory (2)
Modern techniques for the isolation, characterization, and quantification of biomolecules. Prerequisite: CHEM 481, 482; or BCHM 515, 516.

BCHM 501 Introduction to Biochemistry (5)
Chemistry and metabolism of carbohydrates, lipids, nucleic acids, and proteins. Special topics in biochemistry related to the practice of dentistry. Lecture and demonstration.

BCHM 514 Applications of Medical Biochemistry (1)
Laboratory to accompany BCHM 515. Acid-base equilibria. Enzyme behavior, and cellular oxidations. Quantitative analysis of blood and urine.

BCHM 515, 516 Principles of Medical Biochemistry (5, 5)
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 524 Biochemistry of Gene Expression (4)

Nucleic acids and nucleoproteins. DNA and RNA metabolism. Protein synthesis, control of gene expression, and genetic engineering.

Prerequisites: BCHM 516 or CHEM 482.

BCHM 525 Metabolic Interrelationships and Control (4)

Structure, function, and control of enzymes. Control of energy metabolism. Cellular mechanisms of hormone action.

Prerequisite: BCHM 516 or CHEM 482.

BCHM 534 Techniques of Biochemistry (5)

Intensive integrated laboratory experience in protein chemistry, and the physical characterization of macromolecules. Writing scientific papers.

BCHM 544 Advanced Topics in Biochemistry (1-3)

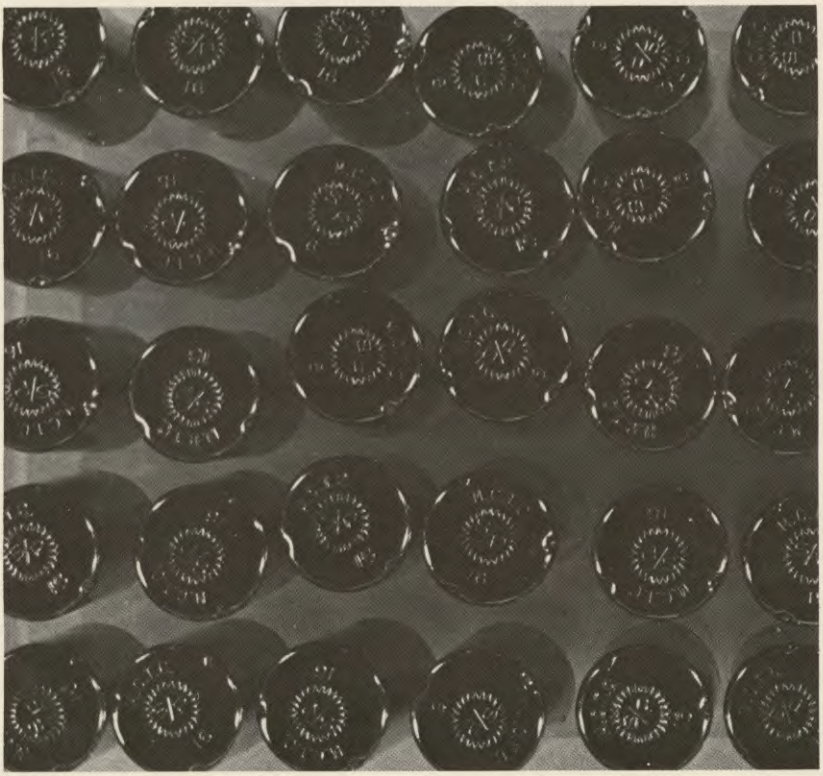
Examples: membrane biochemistry, transport and bioenergetics, physical methods in biochemistry, metabolic regulation, protein structure, hormonal regulation of metabolism.

BCHM 604 Seminar in Biochemistry (1)

BCHM 697 Research (arranged)

BCHM 698 Thesis (arranged)

BCHM 699 Dissertation (arranged)



BIOLOGY

FACULTY

LEONARD R. BRAND, PH.D. Cornell University 1970
Chairman; Professor of Biology
Animal behavior, mammalogy

HAROLD G. COFFIN, PH.D. University of Southern California 1955
Professor of Biology
Paleontology

EARL W. LATHROP, PH.D. University of Kansas 1957
Professor of Biology
Floristics, plant ecology

NORMAN L. MITCHELL, PH.D. University of Western Ontario 1967
Professor of Biology
Plant pathology

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

RICHARD D. TKACHUCK, PH.D. University of California at Los Angeles 1970
Professor of Biology
Comparative physiology, vitamin metabolism

KNUT ANDERSSON, PH.D. University of Wyoming 1978
Associate Professor of Geology
Micropaleontology, invertebrate paleontology

GARY L. BRADLEY, PH.D. University of California at Davis 1982
Associate Professor of Biology
Population genetics

ROBERT A. CHILSON, PH.D. University of Wisconsin 1975
Associate Professor of Biology
Electrophysiology

CONRAD D. CLAUSEN, PH.D. Loma Linda University GS 1972
Associate Professor of Biology
Invertebrate zoology

LANNY FISK, PH.D. Loma Linda University 1976
Associate Professor of Geology
Paleobotany, palynology, biostratigraphy

ELWOOD S. MC CLUSKEY, PH.D. Stanford University 1959
Associate Professor of Physiology
Comparative physiology, entomology

PAUL H. BUCHHEIM, PH.D. University of Wyoming 1978
Assistant Professor of Geology
Geology, paleontology

ASSOCIATE FACULTY

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

ROBERT L. NUTTER, PH.D. Iowa State University 1957
Professor of Microbiology
Molecular biophysics, virology

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

RAYMOND E. RYCKMAN, PH.D. University of California at Berkeley 1960
Professor of Microbiology
Entomology, parasitology, systematics

PAUL Y. YAHIKU, PH.D. University of California at Los Angeles 1967
Professor of Biostatistics
Statistical methodology

ARTHUR E. DALGLEISH, PH.D. Stanford University 1964
Associate Professor of Anatomy
Embryology

C. DOUGLAS EDDLEMAN, PH.D. University of Texas at Austin 1973
Associate Professor of Anatomy
Cytomorphology of reproductive systems

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

T. JOE WILLEY, PH.D. University of California at Berkeley 1969
Associate Professor of Physiology and Pharmacology
Neurophysiology

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

DONALD D. RAFUSE, PH.D. Washington State University 1973
Assistant Professor of Physiology and Pharmacology
Neural aspects of behavior

The Department of Biology offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. The programs of study have been planned to provide a broader and more unified approach to the life sciences than is often customary.

Nevertheless, a considerable degree of specialization must be undertaken, particularly in relation to the conduct of original and significant research. The planning of individual student programs provides for an appropriate degree of specialization in the selection of courses related to the area of research interest. Some areas of specialization are: animal behavior; animal physiology; ecology; entomology; genetics; histology and cytology; mammalogy; cell biology; virology; parasitology; paleobiology; and plant science, particularly plant ecology. Study in various areas, ranging from molecular biology to natural history, is available to the student seeking to prepare himself for teaching or for research in modern biology.

Facilities Research and teaching laboratories and museum facilities for the use of graduate students in biology are located in Griggs Hall and adjacent buildings on the Loma Linda campus, and in Palmer Hall on the La Sierra campus. A wide variety of research equipment is available for research in the areas of specialization listed above.

Field stations Through the cooperation of Pacific Union College and Walla Walla College, the marine field stations operated by these institutions at Albion, California, and at Anacortes, Washington, are available for courses and research by graduate students of this University. The department operates a field station in the Galapagos Islands, with facilities for research and courses.

Student aid Fellowships offered by agencies such as the National Science Foundation and the National Institutes of Health are tenable at this University. A limited number of fellowships and scholarships are available from University funds. Research assistantships and teaching assistantships are also available from the department. Further information can be obtained from the chairman of the department.

Dr. Edmund C. Jaeger has provided a perpetual endowment fund that permits the yearly awarding of the *Edmund C. Jaeger Fellowship in Biology* to meritorious students.

Requirements For information about requirements and practices to which all graduate students are subject, the student should consult division I of this BULLETIN.

MASTER OF ARTS

Admission Applicants must meet the general Graduate School admission requirements. Expected undergraduate preparation includes a Bachelor of Arts degree from an accredited college, with a biology major or equivalent; one year each of college mathematics and of general chemistry; and at least 20 quarter units from two or more of the following: organic chemistry, biochemistry, general physics, geology, physical chemistry.

Curriculum The following constitute the curriculum for the Master of Arts degree.

During either undergraduate or graduate years, a course in research techniques.

Reading knowledge of one foreign language recommended for students planning to enter a Doctor of Philosophy program.

A minimum of 48 quarter units of graduate work; 30 units in biology, including 15 units at or above the 500 level (exclusive of research). A course in paleontology or speciation or history and philosophy of biology, such as BIOL 489, 544, 558, or GEOL 548, or other paleontology during residence. Seminar in biology, 1 unit; attendance required at all general departmental seminars.

Teaching experience (laboratory teaching during at least one quarter meets this requirement): BIOL 604 recommended.

Research and thesis.

Final oral examination.

DOCTOR OF PHILOSOPHY

Admission The applicant must meet the general Graduate School admission requirements. Expected undergraduate preparation in biology includes general biology (or the equivalent) and at least one course each in botany, zoology, cell biology (or one year of biochemistry), and genetics. Expected undergraduate preparation in cognate subjects includes one year of col-

lege mathematics (calculus recommended); one year of general physics; chemistry through organic; and at least one of the following: biochemistry, calculus, geology. One year of undergraduate foreign language study is expected.

Residence A minimum of two academic years of work is required beyond the master's level. This is interpreted as registration in courses, seminars, or research for a total of 72 quarter units beyond the master's level (or 120 units beyond the baccalaureate degree). At least one of these years (three consecutive quarters, with eight to twelve units per quarter) must be in residence on campus at Loma Linda University.

Required courses Since the basic preparation for the degree represents the field of biology rather than one of its subsections, no minor is required. However, up to 15 units of work in cognate fields, such as biochemistry or biophysics, may be applied toward the major with the approval of the student's guidance committee.

The following courses are required at some time in the student's career, during either the undergraduate or the graduate program:

biostatistics
broad biology of at least one particular taxon
advanced genetics
advanced botany

paleontology (at this University)
developmental biology
animal physiology

two of the following:
- additional paleontology
- biogeography
- advanced philosophy of science

Two units of seminar are required beyond the master's level. Attendance at all general departmental seminars is required of the biology graduate student while in residence at Loma Linda University.

During residence the student is required to take a 3-unit course in religion (beyond the master's level). Additional courses in biology or cognate fields are normally desirable as chosen by the student or suggested by the adviser or guidance committee.

Teaching is required during at least two quarters. It may be done in the laboratory, or it may involve presenting part of the lectures for a course. Registration in BIOL 604 is recommended.

Marine or tropical study Since the majority of life forms are best represented in the ocean and certain phenomena of biology are best demonstrated in the tropics, a field course or research (at least 4 units) is required in either a tropical or marine environment during either undergraduate or graduate years.

Comprehensive examination The student is expected to have a sufficient knowledge of the various fields of biology to serve as a broad basis for a sound philosophy of biology as well as to give perspective and background for future specialization and research. The comprehensive examination will assume a knowledge of the major groups of plants and animals and microorganisms and an understanding of such fields as are listed in the preceding paragraphs. It is designed to test the breadth and depth of the student's thinking and philosophy rather than the mere memorization of facts. Wide reading is expected, since it will aid in the student's preparation in areas not covered specifically by courses.

Computer proficiency The student must demonstrate, according to department guidelines, proficiency in the use of a computer and computer language.

Advancement to candidacy The student may apply for admission to doctoral candidacy after (1) meeting the computer proficiency requirement, (2) passing the comprehensive examination, and (3) passing any other examinations required by the department. The department bases its recommendation to the dean of the Graduate School on the student's performance in the comprehensive examination, on previous coursework in residence, and on other qualifications for further pursuit of doctoral work.

Dissertation The candidate's capacity must be demonstrated by a dissertation based on independent work and original research.

Oral examination The oral examination is taken when the dissertation content and organization are in final form. The examination emphasizes the dissertation research, but it may cover the relationship of the research to fundamental principles in other fields of biology also.

Biology minor A biology minor for students majoring in other departments may include any courses listed under the Department of Biology except those 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 Biology: BIOL 515, 519, 524, 544, 558.

In addition to the primary offerings of the department, the course listing includes a number of other courses that are of potential interest to graduate students in biology. The student may take courses in other departments as part of the graduate work, according to special interests and needs. See the Departments of Microbiology, Physiology, Anatomy, Biochemistry, and Geological Science.

MASTER OF SCIENCE — Paleobiology

An interdisciplinary Master of Science degree is offered by the biology and geology departments. See the Geological Sciences section of this BULLETIN for a description of the program.

DOCTOR OF PHILOSOPHY — Biology with Paleontology Emphasis

Requirements are the same as for the Doctor of Philosophy degree in biology without the paleontology emphasis, with the exceptions noted in the following.

Admission Expected undergraduate preparation in biology includes general biology (or the equivalent), genetics, botany, and two additional courses in biology. Expected undergraduate preparation in cognate subjects and geology includes one year of college mathematics (calculus recommended), one year of general physics, general chemistry, one quarter of organic chemistry (additional organic chemistry recommended), physical geology, historical geology, and general paleontology. One year of undergraduate foreign language study is expected.

Required courses The following courses are required at some time during either the undergraduate or the graduate program:

biostatistics
broad biology of at least two taxa (phylum or class)
two of the following—
  advanced genetics
  animal physiology
  cell physiology *or*
  cell and molecular biology *or*
  one year of biochemistry
stratigraphy
sedimentology
three advanced paleontology courses (two at this University)
three of the following —
  biogeography
  biosystems and speciation
field interpretations in historical geology
  advanced philosophy of science

Seminar, teaching, and field station requirements are the same as for the biology degree without the paleontology emphasis.

Comprehensive examination The comprehensive examination is defined and administered as in the regular biology doctoral program, except that the list of subjects to be covered will be oriented toward the integration of biological and geological phenomena for the interpretation of earth history. It assumes a knowledge and an understanding of such fields as are listed in the preceding paragraphs.

Combined M.D./PH.D. or D.D.S./PH.D. For students electing a combined 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. earned in biology, the following adaptations of the biology PH.D. requirements apply:

1. Up to 30 units of credit for basic science courses and up to 30 units of research and/or graduate courses done as part of the electives of the professional curriculum, but not more than a total of 48 units, may be applied to the PH.D. program.
2. The "plant or animal physiology" and the "biostatistics" requirements would be met by the professional curriculum.

Combined M.D./M.A. or D.D.S./M.A. For students electing a combined program with the Master of Arts earned in biology, 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 program.

COURSES

UPPER DIVISION COURSES APPLICABLE TO GRADUATE PROGRAM

BIOL 315 Biological Techniques (4)
BIOL 404 Cellular and Molecular Biology (4)
BIOL 406 Introduction to Marine Biology (4)
BIOL 408 Biology of Marine Invertebrates (4)
BIOL 414 General Ecology (4)
BIOL 415 Biological Instrumentation (4)
BIOL 418 Biology of Lower Plants (4)
BIOL 419 Biology of Higher Plants (4)
BIOL 424 Wilderness Ecology (3)
BIOL 425 Limnology (4)
BIOL 427 Human Ecology (2)
BIOL 434 Histology (4)
BIOL 435 Medical Parasitology (4)
BIOL 436 Immunology (4)
BIOL 438 Mammalogy (4)
BIOL 446 Mammalian Anatomy (5)
BIOL 447 Genetics (4)
BIOL 449 Population Biology (4)
BIOL 456 Plant Pathology (4)
BIOL 465 Ornithology (4)
BIOL 466 Vertebrate Physiology (4)
BIOL 467 Herpetology (4)
BIOL 468 Plant Anatomy (4)
BIOL 469 Animal Behavior (4)
BIOL 470 Protozoology (4)
BIOL 474 Microbiology (5)
BIOL 475 General Entomology (4)
BIOL 476 Biostatistics (4)
BIOL 478 Plant Physiology (4)
BIOL 485 Systematic Botany (4)

BIOL 486 Current Topics in Biology (1-4)

BIOL 487 Biology of the Galapagos Islands (8)

BIOL 488 Paleobiology (4)

BIOL 489 Philosophy of Science (4)

BIOL 499 Directed Study (1-4)

Rosario Beach summer courses — see College of Arts and Sciences CATALOG for listings

GRADUATE COURSES

BIOL 515 Biogeography (3)

Present distribution and past migrations of the natural populations of organisms. Offered alternate years; 1985-86.

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

Lathrop.

BIOL 518 Readings in Ecology (2)

Study, analysis, and discussion of current and classic papers. Offered on demand.

Prerequisite: Ecology or consent of the instructor.

Lathrop.

BIOL 519 Methods of Plant Ecology (3)

Analysis and interpretation of natural communities. Includes fieldwork, with emphasis on physical and biotic measurements. Especially useful for students needing to relate habitat and environmental factors to their special field projects. Offered alternate years; 1984-85.

Prerequisite: Field biology or general ecology.

Lathrop.

BIOL 524 Advanced Invertebrate Biology (3)

Critical investigation of contemporary invertebrate phylogenetic schemes. Analysis of pertinent information from morphology, embryology, physiology, biochemistry, and paleontology. Three class hours. Offered alternate years; 1983-84.

Prerequisite: A course in invertebrate zoology or consent of the instructor.

Clausen.

BIOL 525 Selected Topics in Marine Biology (2)

Topics selected either for their importance in current marine biology research or for their philosophical significance: coral reef biology, deep-sea biology, marine biogeography, paleoecology of marine organisms. Concentration on the invertebrates. Offered alternate years; 1984-85.

Prerequisite: Marine biology or invertebrate zoology or consent of the instructor.

Clausen.

BIOL 536 Seminar 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. Offered on demand.

Brand.

BIOL 544 Biosystematics and Speciation (4)

Dynamic processes of biological systems as revealed by genetics, distribution, isolation, natural selection, and morphology. Lectures, discussions, field trips, research reports. Offered alternate years; 1985-86.

Prerequisite: Coursework in one or more taxa.

Ryckman.

BIOL 546 Advances in Molecular Genetics (3-4)

Selected topics in molecular aspects of genetics, including mechanisms of recombination, the nature of mutations, the organization of eucaryotic chromosomes, split genes, overlapping genes, transposable genetic elements, and techniques in genetic engineering.

Prerequisite: A course in genetics or consent of the instructor.

Zuccarelli.

BIOL 558 History and 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.
Brand.

BIOL 564 Biochemistry and Physiology of Symbiotic Organisms (4)

Examination of the interface between host and symbiont at the biochemical and physiological levels. Emphasis placed on the analysis of current research literature. Lecture two units, laboratory two units.
Tkachuck.

BIOL 586 Current Topics in Biology (1-4)

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 604 College Biology Teaching (2-4)

Discussion of distinctive teaching methods. Registration is normally for three or four units. The third (and fourth) unit involves responsibility for one (or two) laboratory sections or selected class sessions of an undergraduate class.
McCluskey

BIOL 605 Seminar in Biology (1)

Selected topics dealing with recent developments.
Staff.

BIOL 606 Special Projects in Biology (1-4)

Responsibility for a special research project in the field, laboratory, museum, or library. Registration must designate one of the following specific fields: ecology, animal physiology, parasitology, mammalogy, ornithology, entomology, plant physiology, mycology, systematics, biogeography, animal behavior, genetics, history and philosophy of biology, invertebrate zoology, or cytology. May be repeated for additional credit.
Staff.

BIOL 615 Concepts and Methods of Research in Biology (2)

Concepts and methods used in biological research, including scientific writing and literature.
Clausen.

BIOL 697 Research (1-18; 1-25)

BIOL 698 Thesis (1-3)

Registration for the terminal part of the master's thesis should be under this number.

BIOL 699 Dissertation (1-3)

Registration for at least the terminal part of the doctoral dissertation research should be under this number.

GEOLOGY AND PALEONTOLOGY COURSES

See Department of Geological Sciences for course listings.

BASIC MEDICAL SCIENCE COURSES

The following basic medical science courses are available to biology graduate students.

ANAT 546 **Electron Microscopy (3)**
ANAT 548 **Advanced and Molecular Cytology (3)**
ANAT 554 **Techniques in Experimental Morphology (3)**
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 531, 532 **Fundamentals of Microbiology (5, 4)**
MICR 534 **Microbial Physiology (4)**
MICR 555 **Microbial Genetics (3-4)**
MICR 556 **Microbial Genetics Laboratory (2)**
MICR 565 **Virology (3)**
MICR 566 **Cell Culture (3)**
MICR 574 **Arthropod Vectors of Infectious Agents (4)**
MICR 575 **Arthropod Vectors Laboratory (1-2)**
MICR 576 **Field Medical Entomology (3)**
MICR 585 **Helminthology (4)**
PHSL 535 **Comparative Physiology (5)**
PHSL 541, 542 **Cell and Molecular Biology I, II (4, 4)**
PHSL 596 **Readings in Comparative Physiology (1)**
PHSL 597 **Great Books in Physiology (1)**
STAT 509 **General Statistics (3)**
STAT 521 **Biostatistics I (4)**
STAT 522 **Biostatistics II (4)**
STAT 523 **Biostatistics III (4)**
STAT 568 **Data Analysis (2-3)**
STAT 698 **Research Consultation (1-4)**

BUSINESS ADMINISTRATION

FACULTY

IGNATIUS YACOUB, PH.D. Claremont Graduate School 1976
Chairman; Professor of Management
Management

ARTHUR KLEIN, M.A. Michigan State University 1958
Professor of Accounting and Finance
Accounting, finance

GEORGE A. SELIVANOFF, PH.D. The American University 1964
Professor of Business Administration
Business administration, economics

JOSEPH R. ROCHA, PH.D. Claremont Graduate School 1975
Assistant Professor of Management
Management, industrial relations

DANA G. THOMPSON, M.B.A. West Virginia University 1975
Assistant Professor of Economics and Industrial Relations
Economics, industrial relations

ASSOCIATE FACULTY

PAUL R. CONE, PH.D. University of California, Los Angeles 1964
Professor of Management and Finance
Management, finance

ROBERT KAPPEL, M.B.A. University of Washington 1971
Certified Public Accountant
Associate Professor of Accounting
Accounting

LEE REYNOLDS, PH.D. University of Nebraska 1979
Professor of Economics and Finance
Economics, finance

PETER STRUTZ, PH.D. University of Alberta 1966
Professor of Psychology
Psychology

ROBERT FORD, M.B.A. Andrews University 1969
Associate Professor of Business Administration
Business administration

LINVOL G. HENRY, M.S. Long Island University 1973
Certified Public Accountant
Associate Professor of Accounting
Accounting

This is a graduate professional program leading to the degree Master of Business Administration (M.B.A.) for persons pursuing administrative careers. It is designed to enhance and develop the knowledge and skills of those interested in nonprofit as well as commercial organizations.

Three areas of concentration are provided: marketing, human resources, and financial management. Each area of concentration consists of three courses (12 quarter units) in addition to core courses.

Admission Intellectual capacity and ability appropriate to admission are judged from transcripts, record of experience, recommendations, and the applicant's score on the Graduate Management Admission Test (GMAT).

Admission is considered on the basis of (1) either a grade point average (GPA) of 2.75 (on a 4.0 scale) and a GMAT score of 500 or better; or a combination of GPA or GMAT of 1100 or better, calculated as GPA x 200 + GMAT; (2) acceptable academic, employer, and character recommendations; possession of a baccalaureate degree from an accredited college or university; and, for applicants whose native language is other than English, a score of 92 or above on the Michigan Test of English Language Proficiency (MTELP).

Degree requirements The full program comprises the following requirements:

1. Completion of the two phases of 22 courses totaling 88 quarter units. Up to 10 courses (40 quarter units) of Phase I may be waived by adequate undergraduate credit or experience.
2. The last 36 quarter units must be taken in residence.

For information about requirements and practices to which all graduate students are subject, the student should consult the Academic Practices section of division I of this BULLETIN.

Phase I courses (10 courses) The following courses are required:

BUAD 504 Computer Applications to Administration (4)
BUAD 505 Management Science (4)
BUAD 507 Administrative Accounting (4)
BUAD 509 Economic Environment (4)
BUAD 511 General Administration (4)
BUAD 513 Human Resources Management (4)
BUAD 516 Legal and Regulatory Environments (4)
BUAD 518 Marketing (4)
BUAD 521 Administrative Finance (4)
BUAD 525 Organizational Theory and Behavior (4)

Phase II courses (6 courses) The following courses are required:

BUAD 541 Government Relations (4)
BUAD 558 Policy Formulation and Administration (4)
BUAD 565 International Environment (4)
BUAD 584 Society, Ethics, and Government (4)
BUAD 592 Social and Ethical Responsibility (4)
BUAD 595 Quantitative Analysis for Decision Making (4)
BUAD 671 Seminar in Administration of Operations (4)
BUAD 678 Seminar in Organization of Operations (4)
BUAD 683 Seminar in Forecasting Domestic and International Environments (3)
BUAD 685 Seminar in Forecasting the External Environment (4)
BUAD 691 Seminar in Strategic Planning and Policy Formulation (4)
BUAD 692 Seminar in the Strategic Plan and Contingency Planning (4)

Specialization areas The following areas of specialization are available:

MARKETING

BUAD 538 Marketing Administration (4)
BUAD 542 Consumer Behavior (4)
BUAD 611 Marketing Strategy and Policy (4)

FINANCE

BUAD 535 Budgeting for Service Organizations (4)
BUAD 576 Financial Analysis (4)
BUAD 625 Financial Strategy and Policy (4)

HUMAN RESOURCES

BUAD 554 Industrial Relations and Public Policy (4)
BUAD 571 Human Resource Selection and Development (4)
BUAD 615 Human Resource Strategy and Policy (4)

PHASE II ELECTIVES

BUAD 547 Information System Concepts (4)
BUAD 581 Wills, Estates, and Trusts (4)
BUAD 587 Estate Planning and Trust Management (4)
BUAD 534 Health Care Administration and the Law (4)
BUAD 537 Managerial Economics (4)
BUAD 665 Seminar in Trust Services (4)

COURSES

BUAD 504 Computer Applications to Administration (4)
Systems development life cycle. Topics include feasibility study analysis, cost/benefit control features to ensure file integrity, and capability for auditing systems. Configurations of computer-based management information systems analyzed. Case analyses.

BUAD 505 Management Science (4)
Deterministic and stochastic models applicable to management. Emphasizes the application of quantitative analytical methods to decision making. Includes linear programming, simulative queueing models, inventory models, decision theory.

BUAD 507 Administrative Accounting (4)
A comprehensive managerial coverage of accounting principles and basic nonprofit accounting concepts.

BUAD 509 Economic Environment (4)
Macro- and microeconomic analysis from a managerial perspective. Cost behavior, pricing, economic stabilization, and financial markets.

BUAD 511 General Administration (4)
Systems and decision approaches and models in administration. Better operating performance through resource organization and productivity improvement. Superior, peer, and subordinate communications and relationships. Skill development through case studies.

BUAD 513 Human Resources Management (4)
A basic course relating to managerial decision making with respect to the acquisition, development, reward, and maintenance of human resources.

BUAD 516 Legal and Regulatory Environments (4)
A comprehensive study of business law principles. Uniform Commercial Code, common law, and regulatory environment.

BUAD 518 Marketing (4)
The marketing process. Product development, pricing, packaging, and promotional strategy.

BUAD 521 Administrative Finance (4)
Analysis of operations and budgets. Decision models for determining size and character of assets, liabilities, and equities. Capital budgeting. Sources of funds and costs of capital.

BUAD 525 Organizational Theory and Behavior (4)
The relationship of the individual and the organization. Leadership, motivation, group dynamics, decision making, interpersonal relations, and change. Cases and readings in a lecture/discussion format.

BUAD 534 Health Administration and the Law (4)
Study of administrative and judicial process in public health. Government regulations, public policy issues, and common law principles.

BUAD 535 Budgeting for Service Organizations (4)
Budget systems, control processes, and variance analysis for profit and nonprofit organizations.

BUAD 537 Managerial Economics (4)
Application of economic analysis to determine supply and demand and make pricing and output decisions. Forecasting economic conditions by economic indicators and economic models.

BUAD 538 Marketing Administration (4)
Formulating an effective marketing program. Product development, pricing, and promotional strategy, and channels of distribution integrated into a coherent marketing program for profit and nonprofit organizations.

BUAD 544 Consumer Behavior (4)
Attitude formation and change, consumerism, lifestyle analysis, information processing, and behavioral models applicable to the market place.

BUAD 547 Information System Concepts (4)
Computer concepts with emphasis on decision-making. Current information systems, the benefits and obstacles in installation.

BUAD 554 Industrial Relations and Public Policy (4)
Decision making in formal employee-employer relationships. Collective bargaining and collective bargaining agreements. Public policy and the union institution.

BUAD 571 Human Resource Selection and Development (4)
Building the executive and personnel team. Protecting organization structure, position and skill requirements. Managing critical human resource functions. Promotion, selection, and development. Career plans, development and performance evaluation programs, role play, and case studies.

BUAD 576 Financial Analysis (4)
Case study approach to financial techniques to integrate problems and develop logical, systematic solutions in written form.

BUAD 581 Wills, Estates and Trusts (4)
Property and future interest in a state distribution by intestacy or will. Origin and nature of trust as dispositive devices and will alternatives. Planning and administration of trusts and estates, including capacity to be a trustee or executor, the vesting of beneficiaries, and transfer of interests.

BUAD 584 Society, Ethics, and Government (4)
Social, ethical, moral, and economic responsibility of administrators and their firms to external and internal constituencies involving government and regulatory relations. Development of value systems and guidelines through case applications.

BUAD 587 Estate Planning and Trust Management (4)
Trust and estate administration and the fiduciary functions required of the administrator. Estate planning alternatives. Income, gift, and estate tax consequences. Investment policy, asset inventory and accounting, and full discharge of fiduciary responsibility.

BUAD 592 Social and Ethical Responsibility (4)
Legal, economic, ethical, and moral responsibilities of adminstrators and their organizations to external and internal constituencies. Value systems development through research and case studies.

BUAD 595 Quantitative Analysis for Decision Making (4)
Quantitative modeling techniques applied to decision making in product and service industries. Network models, linear programming, project management models, forecasting.

BUAD 611 Marketing Strategy and Policy (4)
An analytical study of marketing strategies. Emphasis on planning, execution, and evaluation of the total marketing program.

BUAD 615 Human Resource Strategy and Policy (4)

Consideration of strategic and technical problems in management of human resources in the enterprise. Case studies, papers, and intensive individual reading.

BUAD 625 Financial Strategy and Policy (4)

A readings and problem solving seminar in financial management to develop methods of effective optimization and policy implementation.

BUAD 665 Seminar in Trust Services (4)

A case method seminar focusing on effective trust department management, including staffing, policies, control, and audit procedures and administration.

BUAD 671 Seminar in Administration of Operations (4)

Strategy implementation, performance monitoring, measurement and operation adjustments, and performance review. Conversion process, operating and capital budgets, productivity standards and profit improvement, the information and communication systems.

BUAD 678 Seminar in Organization of Operations (4)

Designing and implementing the organization structure. Corporate, divisions, departments, and support groups. Organizing work: positions, specifications, performance standards and reviews, reward systems, man-machine systems, and program and project management

BUAD 683 Seminar in Forecasting Domestic and International Environments (4)

Developing an understanding of current and projected conditions through historical study and building forecasts, projections, scenarios, and profiles of opportunities. Limitations and threats for the major environments: demographic, economic, financial, government and political, legal and regulatory, international and regional, technological/ecological/scientific, social, moral, and ethical. Developing forecasts and projections models.

BUAD 691 Seminar in Strategic Planning and Policy Formulation (4)

Designing strategic and contingency plans for profits, revenues, investments, and financing using a systems approach. Formulating policy to assist in implementation of the plans.

DENTISTRY

FACULTY

THOR C. BAKLAND, D.D.S. Loma Linda University SD 1962
Coordinator, graduate program in dentistry
Professor of Restorative Dentistry
Restorative dentistry

LEIF K. BAKLAND, D.D.S. Loma Linda University SD 1963
Professor of Endodontics
Endodontics

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

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

ALDEN B. CHASE, D.D.S. Loma Linda University SD 1960; M.S. GS 1963
Professor of Orthodontics
Orthodontics

MAX CRIGGER, D.D.S. Ohio State University 1965; M.S. University of Rochester 1972
Professor of Periodontics
Periodontics

JAN H. EGELBERG, L.D.S. University of Lund 1960; ODONT. DR. University of Lund 1967
Professor of Periodontics
Dental research

WILLIAM T. JARVIS, PH.D. University of Oregon 1973
Professor of Health Education
Preventive and community dentistry

ELMER KELLN, D.D.S. University of Nebraska 1949; M.S.D. University of Minnesota 1960
Professor of Oral Pathology
Oral pathology

JUDSON KLOOSTER, D.D.S. University of the Pacific 1947; M.M.S. Tulane University 1968
Professor of Restorative Dentistry
Restorative dentistry

DONALD L. PETERS, D.D.S. Loma Linda University SD 1961; M.S. GS 1969
Professor of Endodontics
Endodontics

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

JOHN L. TOMLINSON, PH.D. University of Washington 1967
Professor of Orthodontics
Materials engineering

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

BJORN Y. ZACHRISSON, D.D.S. Royal Dental School, Stockholm 1963; M.S. University of Oslo 1967; ODONT. DR. Karolinska Institute, Stockholm 1968
Professor of Orthodontics
Orthodontics

J. MILFORD ANHOLM, D.D.S. University of the Pacific 1946; M.S. Loma Linda University GS 1962
Associate Professor of Orthodontics
Orthodontics

GARY C. BOGLE, D.D.S. Loma Linda University SD 1969; M.S. GS 1973
Associate Professor of Periodontics
Periodontics

RALEIGH R. CUMMINGS, D.D.S. Loma Linda University SD 1966; M.S. GS 1970
Associate Professor of Endodontics
Endodontics

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

GEORGE C. GAMBOA, D.D.S. University of the Pacific 1946; M.S.D. University of Minnesota 1953
Associate Professor of Oral Surgery
Oral and maxillofacial surgery

JOHN S. GARRETT, D.D.S. Northwestern University 1971; M.S. Loma Linda University GS 1976
Associate Professor of Periodontics
Periodontics

ROBERT D. KIGER, D.D.S. Loma Linda University SD 1970; M.S. University of Oregon 1973
Associate Professor of Periodontics
Periodontics

JOHN E. PETERSON, JR., D.D.S. Loma Linda University SD 1970; M.S. GS 1978
Associate Professor of Orthodontics and Pedodontics
Orthodontics and pedodontics

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

GARLAND E. SCOTT, PH.D. North Carolina State University 1972
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

DAVID ANDERSON, D.D.S. Loma Linda University SD 1970
Assistant Professor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

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

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

LEE E. OLSEN, D.D.S. Loma Linda University SD 1967; M.S. GS 1969
Assistant Professor of Orthodontics
Orthodontics

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

LAWRENCE W. WILL, D.D.S. Loma Linda University SD 1970; M.S. GS 1973
Assistant Professor of Orthodontics
Orthodontics

FLOYD S. BRAUER, M.D. Loma Linda University SM 1951
Professor of Anesthesiology
Anesthesiology

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

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

STEVEN ASAHINO, D.D.S. Loyola University 1958; M.S. 1960
Associate Professor of Orthodontics
Orthodontics

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

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

LAWRENCE D. DAY, D.D.S. University of Illinois 1953; M.S. Loma Linda University GS 1969
Associate Professor of Oral Surgery
Oral and maxillofacial surgery

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

VIRGIL V. HEINRICH, D.D.S. Loma Linda University SD 1961; M.S. GS 1964
Associate Professor of Orthodontics
Orthodontics

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

GARY MORIKONE, D.D.S. University of the Pacific 1949; M.S. Loma Linda University GS 1967
Associate Professor of Orthodontics
Orthodontics

KARL NISHIMURA, D.D.S. Loyola University 1960; M.S. University of Illinois 1963
Associate Professor of Orthodontics
Orthodontics

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

MERRILL E. SCHMIDT, D.D.S. Loma Linda University SD 1962
Associate Professor of Endodontics
Endodontics

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

JOSEPH M. CARUSO, D.D.S. Loma Linda University SD 1973; M.S. GS 1975; M.P.H. SH 1976
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

J. BURTON EVERETT, D.D.S. Loma Linda University SD 1965
Assistant Professor of Orthodontics
Orthodontics

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

JAMES T. LEE, D.D.S. University of Southern California 1974; M.S. 1977
Assistant Professor of Orthodontics
Orthodontics

RONALD C. PARKER, D.D.S. Loma Linda University SD 1971; M.S. GS 1973
Assistant Professor of Orthodontics
Orthodontics

THOMAS L. ROBERTSON, D.D.S. Marquette University 1959; M.S. Ohio State University 1963
Assistant Professor of Orthodontics
Orthodontics

RUSSELL O. SEHEULT, D.D.S. Loma Linda University SD 1976
Assistant Professor of Oral Surgery
Oral and maxillofacial surgery

LAURENCE A. SEIFERT, D.D.S. Loma Linda University SD 1968; M.S. GS 1978
Assistant Professor of Orthodontics
Orthodontics

MARK R. STEVENS, D.D.S. University of the Pacific 1976
Instructor of Oral and Maxillofacial Surgery
Oral and maxillofacial surgery

ROMEO I. STOLL, D.D.S. Howard University 1967; M.S. Loma Linda University GS 1970
Assistant Professor of Orthodontics
Orthodontics

DALE E. STRINGER, D.D.S. The University of Iowa 1972
Assistant Professor of Oral Surgery
Oral and maxillofacial surgery

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

JAMES YOUNG, D.M.D. University of the Philippines 1973; M.S. Loyola University 1977
Assistant Professor of Orthodontics
Orthodontics

Graduate study leading to the Master of Science degree or a specialty certificate is offered in the following areas:

endodontics oral and maxillofacial surgery orthodontics 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 meet the requirements of the respective specialty boards.

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 November 15.

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 2.00. 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 less than three members is named by the Graduate Council.

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 and may be required to defend the thesis orally.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

ENDODONTICS

The goal of the graduate program in endodontics is to prepare by education and experience dentists who are eligible for certification as specialists in this area of dentistry. The course has been designed (1) to provide a comprehensive study of the biomedical sciences, with emphasis on their relationships to endodontics; (2) to provide advanced competency in the clinical practice of both the usual and the unusual endodontic procedures; and (3) to provide training in research and teaching so as to encourage continued growth and involvement after completion of the program. A minimum of two years of general practice experience before applying is preferred.

Two programs are available. The certificate program requires a minimum of twenty-two months in residence, beginning in September. Master's degree programs require a minimum of twenty-four months in residence and may require additional time, depending on the major interest area. Both programs fulfill the requirements for eligibility for certification by the American Board of Endodontics.

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
GRAD	604	General Research Methods
GRDN	526	Applied Anatomy
ORBI	522	Cell Biology
ORBI	526	Microbiology
ORBI	531	Physiology of Bone
ORMD	521	Principles of Medicine, Physical Diagnosis, and Hospital Dentistry
ORPA	531	Clinical Oral Pathology
RLGN	___	Religion
STAT	509	General Statistics

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 health care 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 specialty board.

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

Required courses

GRAD	604	General Research Methods
GRDN	526	Applied Anatomy
ORDN	521	Applied Cephalometrics for Oral and Maxillofacial Surgeons
ORMD	521	Principles of Medicine, Physical Diagnosis, and Hospital Dentistry
ORPA	531	Clinical Oral Pathology
ORSR	521	General Anesthesia
ORSR	531	Oral and Maxillofacial Surgery I
ORSR	532	Oral and Maxillofacial Surgery II
ORSR	533	Oral and Maxillofacial Surgery III
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

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 for pursuing 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

GRAD	604	General Research Methods
GRDN	524	Social Dynamics of Dental Practice
GRDN	526	Applied Anatomy
GRDN	601	Practice Management
ORBI	522	Cell Biology

ORBI	531	Physiology of Bone
ORDN	524	Introduction to Graduate Orthodontics
ORDN	525	Materials Science and Mechanics
ORDN	535	Advanced Cephalometrics
ORDN	536	Concepts of Physical Anthropology
ORDN	544	Mixed Dentition in Health and Disease
ORDN	545	Growth and Development
ORDN	546	Fundamentals of Occlusion
ORDN	554	Physiology and Pathology of Speech
ORDN	574	Diagnosis and Treatment Planning
ORDN	584	Current Orthodontics Literature
ORDN	604	Seminar in Orthodontics
ORDN	605	Advanced Seminar in Orthodontics
ORDN	606	Craniofacial Genetics
ORDN	625	Clinical Practice in Orthodontics
ORDN	634	Orthodontics Clinical Conference
ORDN	654	Practice Teaching in Orthodontics
ORDN	697	Research
ORDN	698	Thesis
ORPA	531	Clinical Oral Pathology
ORPA	533	Radiology
ORSR	641	Applied Orthognathic Surgery
RLGN	___	Religion
STAT	509	General Statistics
STAT	698	Research Consultation

PERIODONTICS

The graduate program in periodontics leads to a certificate, or a Master of Science degree combined with a certificate,

The two-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 and clinical components as well as research opportunities.

The three-year Master of Science program includes the didactic and clinical work for the certificate program. In addition the residents have the opportunity to complete one or more research projects and to be involved in clinical and didactic undergraduate teaching activities. The Master of Science program prepares the residents for academic careers in periodontal research and teaching.

These programs fulfill the requirements for eligibility for certification by the American Board of Periodontology. A minimum of twenty-four months in residence is required for the certificate program, beginning in the summer quarter. The Master of Science degree requires an additional twelve months.

Required courses

GRAD	604	General Research Methods
GRDN	526	Applied Anatomy
GRDN	601	Practice Management
ORBI	522	Cell Biology
ORBI	526	Microbiology
ORBI	527	Immunopathology
ORBI	531	Physiology of Bone
ORMD	521	Principles of Medicine, Physical Diagnosis, and Hospital Dentistry
ORPA	531	Clinical Oral Pathology
ORPA	533	Radiology
PERI	531	Periodontal Histopathology
PERI	601	Seminar in Periodontics
PERI	602	The Periodontium
PERI	604	Current Periodontal Literature
PERI	611	Introduction to Periodontics
PERI	625	Clinical Practice in Periodontics
PERI	634	Clinical Conferences
PERI	654	Practice Teaching in Periodontics
PERI	697	Research
PERI	698	Thesis
RLGN	____	Religion
STAT	509	General Statistics

CORE COURSES

BIOSTATISTICS

STAT 509 General Statistics (3)

STAT 698 Research Consultation (1)

GRADUATE DENTISTRY CONJOINT COURSES

GRDN 505 Principles of Instruction (1)
Survey practicum in the application of didactic and psychological principles of learning in the preparation of instructional objectives and materials, and in test construction and evaluation of student performance.

GRDN 524 Social Dynamics of Dental Practice (2)
Current theories and principles in psychology related to learning and teaching, personality development and change, interpersonal process and dynamics, and how these principles apply to a dental specialty practice.

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

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

ORBI 522 Cell Biology (3)
Presentation of a unified description of cellular structures and function as a core of current knowledge upon which the student will build new facts and concepts as they become available.

ORBI 526 Microbiology (2)
Principles of microbiology, with emphasis on the occurrence, taxonomy, cytology, staining, and physical properties of oral microorganisms. Fundamental aspects of virus-host relationships. Review of sterilization and disinfection procedures relative to dental therapy.

ORBI 527 Immunopathology (2)
Fundamental aspects of immunology and immunological reactions, with special considerations to transplantation, hypersensitivity, and immunopathology.

ORBI 531 Physiology of Bone (2)
A specialized presentation of bone healing, mechanisms of mineralization and resorption, growth and development.

ORMD 521 Principles of Medicine, Physical Diagnosis, and Hospital Dentistry (2)
Study of methods of recognizing normal and abnormal physical conditions in order to develop the dentist's general medical knowledge. Attention given to blood diseases, systemic diseases, and cardiac disturbances. Patient admission, physical, orders, and discharge.

ORPA 531 Clinical Oral Pathology (2, 2)
Emphasis on oral manifestations 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.

GRADUATE SCHOOL COURSE

GRAD 604 General Research Methods (3)
A survey of scientific methodology. Its development, rationale, and the necessity for its rigorous rules. How to develop, design, and report research in the health sciences.

DEPARTMENTAL COURSES

ENDODONTICS

ENDN 534 Endodontic Treatment Conference (2, 2, 2)
Designed to evaluate and discuss endodontic treatment cases, with an effort to integrate the treatment plan, the endodontic procedure, the total oral health, and the patient's physical status. In addition, clinical conferences are scheduled in oral pathology.

ENDN 601 Principles of Endodontics (3, 3, 3)
A comprehensive study of all aspects of clinical endodontics.

ENDN 604 Literature Seminar in Endodontics (2, 2, 2)
A 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 (1, 1)
Supervised teaching in the endodontic preclinical laboratory and predoctoral clinic. Lectures and table clinics included in the program.

ENDN 697 Research (arranged)

ENDN 698 Thesis (arranged)

ORAL AND MAXILLOFACIAL SURGERY

ORSR 521 General Anesthesia (3, 3)
Study and experience in the use of general anesthetic agents on hospital surgery patients. Physiological action of the agents, methods of administration, premedication, armamentarium, complications, and accidents.

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 the 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 postraumatic 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 604 Literature Review in Oral and Maxillofacial Surgery (1)

ORSR 641 Applied Orthognathic Surgery (1, 1, 1)
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)

ORSR 697 Research (arranged)

ORSR 698 Thesis (arranged)

ORDN 521 Applied Cephalometrics for Oral and Maxillofacial Surgeons (2)
Projection analyses, preoperative diagnosis, and planning of treatment of malocclusion through cephalometric review. Cephalometric diagnosis and follow-up of postsurgical and postorthodontic treatment.

ORDN 524 Introduction to Graduate Orthodontics (18)
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 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 535 Advanced Cephalometrics (2)

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

ORDN 544 Mixed Dentition in Health and Disease (1)
Concepts presented in anatomy and in ORDN 546 applied to the clinical problems presented by the patient in the transition period between primary and permanent dentitions. Diagnosis and treatment planning of orthodontic problems in this critical period of human development.

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)
The development of the human face and dentition. A concept of dynamic functioning occlusion.

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

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

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

ORDN 604 Seminar in Orthodontics (1, 1, 1, 1)
A 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 (1, 1, 1, 1)
Second-year seminar: design of clinical diagnosis, practice management.

ORDN 606 Craniofacial Genetics (2)

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 654 Practice Teaching in Orthodontics (1)

ORDN 697 Research (arranged)

ORDN 698 Thesis (arranged)

PERIODONTICS

PERI 531 Periodontal Histopathology (2)
Study of the specific scientific literature which forms the basis for current concepts on histopathology of periodontal diseases and periodontal wound healing.
Must be repeated for a total of 4 units. Alternate years.

PERI 601 Seminar in Periodontics (2)
Study of the specific scientific literature which forms the basis for current concepts on the epidemiology, etiology, and treatment of periodontal diseases.
Must be repeated for a total of 12 units.

PERI 602 The Periodontium (2)
Study of the specific scientific literature which forms the basis for current concepts on the development, structure, and function of the normal periodontium.
Must be repeated for a total of 4 units. Alternate years.

PERI 604 Current Periodontal Literature (1)
Review of papers in the most recent issues of periodontal scientific journals.
Must be repeated for a total of 7 or 11 units, depending on program requirements.

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 (1522 or 2002 clock hours)
Clinical experience in the diagnosis and treatment of periodontal diseases.
The two-year program requires 1522 clock hours; the three-year program requires 2002 clock hours.

PERI 634 Clinical Conference (2)
Case management conferences with interdisciplinary faculty input to assist the student in diagnosis, treatment planning, and the management of patients.
Must be repeated for a total of 12 units.

PERI 654 Practice Teaching in Periodontics (1-2)
Experience in teaching the undergraduate dentistry student.
Must be repeated for a total of 4 units in the second year; students in the third year must repeat for 8 more units, a total of 12 units.

PERI 697 Research (13-21)

PERI 698 Thesis (1-8)
A total of 8 units required.

ENGLISH

FACULTY

FRANK KNITTEL, PH.D. University of Colorado 1960
Chairman; Professor of English
Medieval literature, twentieth-century literature

DOROTHY M. COMM, PH.D. University of Alberta 1971
Professor of English
Eighteenth-century and world literature, writing

ROBERT P. DUNN, PH.D. University of Wisconsin 1970
Professor of English
English renaissance, religion and literature

GROSVENOR R. FATTIC, PH.D. Michigan State University 1972
Professor of English
Medieval literature

LLEWELLYN E. FOLL, PH.D. Michigan State University 1974 (on leave)
Professor of English
American literature

OPAL I. HAGELGANTZ, ED.D. University of Nebraska 1969
Professor of English
Nineteenth-century literature, grammar and composition

MARILYN C. TEELE, M.ED. Boston University 1961
Professor of English
Reading and composition theory

CORDELL A. BRIGGS, PH.D. Howard University 1982
Assistant Professor of English
American literature, linguistics and composition

KENNETH E. MATTHEWS, PH.D. University of California at Los Angeles 1983
Assistant Professor of English
Twentieth-century literature and writing

EMERITUS PROFESSORS

RICHARD B. LEWIS, PH.D. Stanford University 1949
Emeritus Professor of English
English renaissance and literary criticism

HELEN F. LITTLE, M.A. University of Nebraska 1938
Emeritus Professor of English

THOMAS A. LITTLE, PH.D. University of Nebraska 1950
Emeritus Professor of English

J. PAUL STAUFFER, PH.D. Harvard University 1952
Emeritus Professor of English
Nineteenth-century literature

The purposes of the graduate programs in English are to increase the student's resources and equipment for teaching, writing, and exploration in the areas of specialty; to help perfect research skills; and to expand interests and information in the literature and culture of Western civilization.

The student who is preparing to teach in California should consult the credentials adviser in the School of Education for guidance in qualifying for a California Standard Teaching Credential.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

DEGREE REQUIREMENTS

Acceptance The applicant should hold a baccalaureate degree with a major (or the equivalent) in English from an accredited college and demonstrate competence through GRE scores to do graduate work.

Residency A minimum of three quarters in residence is required of all graduate students in English.

Diagnostic examination During the first term of enrollment, each student will take a diagnostic examination. The results of this examination, together with the student's undergraduate records and test scores, will be used by the adviser or guidance committee in planning the student's overall program.

Total units A minimum of 44 units is required for graduation. At least 36 units must be in English, with no less than 24 units in courses above the 500 level.

Required courses Each student must take the following courses:

ENGL 504 Methods and Materials of Literary Study (2)
ENGL 697 Research (2)
RLGN ____ Religion (3 units at the 500 or 600 level)

Curriculum For each student, an individualized plan of study will be designed which will take into account previous experience and career goals (see "programs"). Each student's study plan, when combined with his/her undergraduate English major, should meet the following basic requirements:

1 course in literary criticism
2 courses in major authors (one to be Chaucer, Shakespeare, or Milton)
1 course in religion and literature
1 course in the Bible as literature
1 course in bibliography and research
5 period courses in English literature
2 courses in American literature
1 course in world or classical literature
2 courses in language or linguistics
2 advanced writing courses (above the freshman level)
1 course in rhetoric or style

Many of these courses will have been taken as part of the student's baccalaureate program; a student's graduate program will make up any lacks as well as meet individual interests and professional goals.

Programs Program A is the traditional master's program for a student desiring to work after graduation toward the doctoral degree in English or for the student who wants maximum preparation in the areas of English and American literature.

Program B is for the student who wishes to emphasize the teaching of reading or composition/rhetoric or linguistics on the primary or secondary level, but who also wish a background in literature. The student will take a minimum of 16 units in the area of specialization (for example, reading) and will have the following basic requirements waived: one course in a major author and two period courses in literature.

Foreign language Each student must demonstrate reading competency in Spanish, French, German, Latin, or another language approved by the department. Competency may be demonstrated by an academic transcript indicating that courses have been taken through the intermediate level in college or by a proficiency examination administered by the Department of Modern Languages.

Final requirements At the end of the program, the student will either write a comprehensive examination over all graduate English courses taken or write a thesis, project, or publishable paper. The examination or paper will then be defended in an oral examination before the English department faculty.

COURSES

UPPER DIVISION COURSES APPLICABLE TO GRADUATE PROGRAM

ENGL 404 Narrative Writing (4)

ENGL 415 Literature for Children (4)

ENGL 416 Literature for Adolescents (4)

ENGL 417 Knowledge and Skills in Literature (4)

ENGL 425 Major American Authors or Movements (4)

ENGL 434 Old and Middle English Literature (4)
Offered alternate years.

ENGL 435 English Renaissance Literature (4)
Offered alternate years.

ENGL 436 Restoration and Eighteenth-Century Literature (4)
Offered alternate years.

ENGL 437 Nineteenth-Century English Literature (4)

ENGL 438 Twentieth-Century English Literature (4)

ENGL 445 Biblical Literature (4)

ENGL 457 Chaucer (4)
Offered alternate years.

ENGL 458 Shakespeare (4)
Offered alternate years.

ENGL 459 Milton (4)
Offered alternate years.

ENGL 465 Literary Criticism: The Major Texts (4)
Offered alternate years.

ENGL 475 History of the English Language (4)
Offered alternate years.

ENGL 489 Religion and Literature (4)
Offered alternate years.

ENGL 499 Directed Study (1-4)

GRADUATE COURSES

ENGL 504 Methods and Materials of Literary Study (2)
Required of all degree candidates.

ENGL 506 Composition and Rhetorical Theory (4)

ENGL 507 Diagnosis and Remediation in Reading (4)

ENGL 508 Practicum in Reading (2, 2)
Required of reading teaching assistants. May be repeated once for credit.

ENGL 509 Scholarly Writing (2)
The theory and practice of expository and persuasive writing, emphasizing the construction and style of research papers and theses. Not applicable toward a master's degree in English.

ENGL 515 Workshop (1-4)
Varied content offered in concentrated courses for special groups (such as Shakespeare on film, C. S. Lewis in the secondary classroom, humor in American literature). May be repeated as long as content is not duplicated.

ENGL **575 Problems in English Language and Linguistics (4)**

Graduate seminar content varies according to the specialization and research interest of the teacher. The course schedule and the student's transcript indicate the specific area of study. For example, Seminar in a Major Author: Johnson; *or* Seminar in a Literary Genre: Poetry. Seminars may be repeated with new content for additional credit. A seminar typically carries 4 units of credit unless otherwise noted in the course schedule. Occasionally a seminar extends over two terms for 5 units of credit.

ENGL **615 Seminar in Literary History and Criticism (4-5)**

ENGL **625 Seminar in a Major Literary Period (4-5)**

ENGL **635 Seminar in a Major Author (4-5)**

ENGL **645 Seminar in Religion and Literature (4-5)**

ENGL **675 Directed Study (1-4)**

ENGL **697 Research (1-4)**
Required of all degree candidates.

ENGL **698 Thesis (4-8)**

GEOLOGICAL SCIENCES

FACULTY

LANNY H. FISK, PH.D. Loma Linda University 1976
Coordinator; Associate Professor of Geology and Biology
Palynology, paleobotany, petroleum and coal geology

KNUT ANDERSSON, PH.D. University of Wyoming 1982
Associate Professor of Geology and Biology
Micropaleontology, invertebrate paleontology, biostratigraphy

H. PAUL BUCHHEIM, PH.D. University of Wyoming 1978
Assistant Professor of Geology
Sedimentology, paleolimnology

ASSOCIATE FACULTY

LEONARD R. BRAND, PH.D. Cornell University 1970
Professor of Biology
Vertebrate zoology and paleontology

IVAN G. HOLMES, PH.D. Oregon State University 1969
Professor of Chemistry
Geochemistry, clay mineralogy

EDWIN A. KARLOW, PH.D. Washington State University 1971
Professor of Physics
Physics, geophysics

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

ELWOOD S. MC CLUSKEY, PH.D. Stanford University 1959
Associate Professor of Biology and Physiology
Physiology, taxonomy, college teaching

IVAN E. ROUSE, PH.D. Washington State University 1970
Associate Professor of Physics
Physics, geophysics

The graduate programs offered by the Department of Geological Sciences are designed to prepare students for a career in the petroleum or mining industry, teaching, or with government agencies; or for continued graduate study toward the PH.D. degree in geology. The teaching and research emphasis of the department is sedimentary rocks, fossils, and the depositional and environmental history evidenced by them.

Extensive fieldwork is built into the programs since it provides a first-hand experience with geological phenomena that can never be satisfactorily grasped or understood solely from classroom or laboratory study. An individualized program of coursework and research is developed for each graduate student, taking into account his/her academic background, present interests, and future goals.

Some areas of specialization are paleontology, paleoecology, petroleum geology, stratigraphy, sedimentology, and geochemistry. Through their thesis research, students are expected to contribute to the basic data in their chosen discipline.

Facilities Research and instructional facilities, including laboratories, museum, and classrooms, are located in the Geology Building, Anacapa Building, and Palmer Hall on the La Sierra campus. Research equipment and facilities are available for a variety of types of laboratory and field research in geology and paleontology. Geographically, Loma Linda University is well situated to enable students to pursue fieldwork throughout the year. Southern California and surrounding areas contain a rich variety of minerals, rocks, and fossils for study.

General requirements For information about requirements and practices to which all graduate students are subject, consult the *Academic Practices* section of division I of this BULLETIN.

MASTER OF SCIENCE — Geology

The program leading to a Master of Science degree in geology offers students an opportunity to broaden their experience and training in the geological sciences in preparation for immediate employment or for continued graduate study. Courses may be chosen to emphasize one of several subspecialties in geology or paleontology, or to expand and broaden the student's undergraduate experience. The student's original scientific research, with the courses, form a solid preparation for employment as an exploration geologist in the petroleum or mining industry, teaching at the secondary or junior college level, or continued geological research with government or industry.

Admission Applicants must meet the general Graduate School admission requirements. Acceptable undergraduate preparation includes a bachelor's degree in geology, or a related field, with courses in historical geology, paleontology, mineralogy, petrology, stratigraphy/sedimentology, structural geology, and a field mapping course; plus one year each of general chemistry, general physics, and courses in college-level math. Students lacking this essential preparation may be admitted to the program on a provisional basis until course deficiencies have been eliminated.

Curriculum A minimum of 48 quarter units, including 28 units at or above the 500 level, constitutes the curriculum for the Master of Science degree in geology. The following courses are required as part of either the undergraduate or graduate program:

research techniques
field interpretations in historical geology
graduate seminar (3)
history and philosophy of science
statistics

The remainder of the curriculum will be planned to meet student needs, interests, and future plans. Additional courses and a research program will be planned in consultation with the student's major professor and graduate advisory committee. In addition to courses, students are expected to attend all departmental seminars, fulfill research and thesis expectations, and successfully pass a final oral examination.

MASTER OF SCIENCE — Paleobiology

This interdepartmental program offered in cooperation with the Department of Biology provides the student with a sequence of studies leading to a Master of Science degree in paleobiology. The program has been planned to provide the student with interest in the biology of ancient life the opportunity for advanced study and professional preparation for employment or for continued education at the doctoral level. The research and thesis requirement along with the experience provided in courses develop the student's potential to solve complex paleontological problems and to interpret the fossil record.

Admission Applicants must meet the general Graduate School admission requirements. Acceptable undergraduate preparation includes a bachelor's degree in geology, biology, or in a related field, and must include physical geology, general paleontology, historical geology, mineralogy, petrology, one year each of general biology, chemistry, physics, and mathematics. Students lacking some of these courses may be accepted on a provisional basis and make up deficiencies while enrolled at this University.

Curriculum A minimum of 48 quarter units, including 28 units at or above the 500 level, constitutes the curriculum for the Master of Science degree in paleobiology. The following courses are required as part of either the undergraduate or graduate program:

research techniques
stratigraphy
sedimentology
graduate seminar (2)
statistics
history and philosophy of science
field interpretations in historical geology
biosystematics and speciation

The remainder of the student's program will be planned in consultation with the major professor and graduate advisory committee. In addition to coursework, students are expected to attend all departmental seminars, fulfill research and thesis expectations, and successfully pass a final oral examination.

COURSES

UPPER DIVISION GEOLOGY COURSES APPLICABLE TO GRADUATE PROGRAM

GEOL **431 Geochemistry (4)**

GEOL **437 Geophysics (4)**

GEOL **453 Optical Mineralogy (4)**

GEOL **454 Sedimentary Petrology (4)**

GEOL **455 Igneous and Metamorphic Petrology (4)**

GEOL **467 Introduction to Oceanography (4)**

GEOL **472 Petroleum Geology (4)**

GEOL **475 Current Topics in Geology (1-4)**

GRADUATE GEOLOGY COURSES APPLICABLE TO GRADUATE PROGRAMS

GEOL **515 Research Techniques (1)**
Concepts and methods used in geological research, including scientific literature, research design, and proposal writing.
Staff.

GEOL **524 Paleobotany (4)**
The study of 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. Offered alternate years: 1984-85.
Prerequisite: GEOL 105 and a course in botany.
Fisk.

GEOL 525 Palynology (4)

Survey of the scope, methods, and application of the study of plant microfossils to understanding and interpreting the fossil record. Emphasis on the stratigraphic succession of fossil spore floras. Laboratory work integrated with lecture. Offered alternate years; 1985-86.

Prerequisite: GEOL 105 and a course in botany or consent of the instructor.

Fisk.

GEOL 534 Advanced Invertebrate Paleontology (4)

Study of the 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, one three-hour laboratory per week. One field trip required. Offered alternate years; 1984-85.

Prerequisite: GEOL 105 or consent of the instructor.

Andersson.

GEOL 535 Micropaleontology (4)

Morphology, taxonomy, and stratigraphic use of major groups of fossil microorganisms. Emphasis on foraminifers. Three class hours, one three-hour laboratory per week. Offered alternate years; 1985-86.

Prerequisite: GEOL 105 or equivalent or consent of the instructor.

Andersson.

GEOL 544 Vertebrate Paleontology (4)

Structure, classification, distribution, and taphonomy of fossil vertebrates. Principles of interpretation of their fossil record. Two class hours, two three-hour laboratories per week. Offered alternate years; 1985-86.

Prerequisite: GEOL 105 or consent of the instructor.

Brand.

GEOL 548 Field Interpretations in Historical Geology (4)

Analysis of the fossil and stratigraphic record, and comparison to theories of origin. Fieldwork at specific sites in the western United States. Summer only.

Prerequisite: GEOL 106 or consent of the instructor.

Staff.

GEOL 554 Lacustrine Rocks (3)

The study of ancient lake deposits, including their sedimentologic, paleontologic, mineralogic, geochemical, and stratigraphic characteristics. The depositional processes occuring in modern lakes investigated as analogs. Laboratory and fieldwork included. Offered alternate years; 1984-85.

Prerequisite: GEOL 304 or consent of the instructor.

Buchheim.

GEOL 555 Advanced Lacustrine Rocks (3)

In-depth study of ancient lake deposits, with particular emphasis on sedimentary processes and the reconstruction of lacustrine paleoenvironments. Field trips and individual student projects included. Offered alternate years; 1985-86.

Prerequisite: GEOL 554 or consent of the instructor.

Buchheim.

GEOL 556 Advanced Depositional Environments (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 compared as analogs. Three class hours, one laboratory or field trip per week. Offered alternate years; 1984-85.

Prerequisite: GEOL 304 or consent of the instructor.

Buchheim.

GEOL 558 History and Philosophy of Science (4)

A study of selected topics in the history and philosophy of science, and the application of these principles in analyzing contemporary scientific trends.

Prerequisite: GEOL 106 or consent of the instructor.

Fisk.

GEOL 575 Current Topics in Geology (1-4)

Review of current knowledge in specific 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 the instructor.

Staff.

GEOL 604 College Teaching (2-4)

Methods of teaching. Student assigned responsibility for one or two laboratory sections or selected lecture sessions of an undergraduate course for one quarter. Those electing classwork only register for two units.

Fisk.

GEOL 615 Seminar in Geology (1)

Selected topics dealing with recent developments, particularly reports of current research. Student presents one seminar during the quarter.

Staff.

GEOL 675 Advanced Topics in Geology (1-4)

Review at an advanced level of current knowledge in specific areas of the earth sciences. Registration should indicate the specific topic studied. May be repeated for additional credit. Offered on demand.

Prerequisite: Consent of the instructor.

Staff.

GEOL 685 Teaching Experience in Geology (1-4)

On-the-job training in teaching geology, including opportunity to develop course outlines, lectures, and laboratory exercises; to grade papers, laboratory reports, and examinations; and to give occasional lectures under supervision. Regular conferences with the instructor about student's effectiveness as a teacher.

Prerequisite: Consent of the instructor.

Staff.

GEOL 695 Special Problems 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 the instructor.

Staff.

GEOL 697 Research (1-4)

GEOL 698 Thesis (1-4)

HISTORY

FACULTY

FREDERICK G. HOYT, PH.D. Claremont Graduate School 1963
Chairman; Professor of History and Political Science
American history

WILFRED J. AIREY, PH.D. University of Washington 1945
Professor of History
American history

JONATHAN M. BUTLER, PH.D. University of Chicago Divinity School 1975
Professor of Church History
Church history

PAUL J. LANDA, PH.D. Vanderbilt University 1976
Professor of Church History
Church history

WALTER C. MACKETT, PH.D. University of Southern California 1948
Professor of History
British empire, modern Europe

DELMER G. ROSS, PH.D. University of California at Santa Barbara 1970
Professor of History
Latin America

DALTON D. BALDWIN, PH.D. Claremont Graduate School 1975
Associate Professor of Religion
Historical theology

T. RICHARD RICE, PH.D. University of Chicago Divinity School 1974
Associate Professor of Historical Theology
Historical theology

RENNIE B. SCHOEPFLIN, M.A. University of Wisconsin 1980
Assistant Professor of History
History of science and medicine

ASSOCIATE FACULTY

GODFREY T. ANDERSON, PH.D. University of Chicago 1944
Research Professor of American History
American history: colonial and middle periods

V. NORSKOV OLSEN, PH.D. University of London 1966; DR.THEOL. University of Basel 1968
Professor of Church History
Church history

The principal purposes of the graduate program in history are to assist students in attaining the qualifications essential for teaching in secondary schools and colleges and to prepare some students for research, doctoral programs, and the pursuit of scholarly careers in history.

The applicant is normally expected to have a baccalaureate degree with a major in history from an accredited college. If the college record and test scores indicate any weaknesses or deficiencies, the student may be required to take additional compensatory undergraduate work.

Degree requirements The following are the requirements for the Master of Arts degree:

1. A minimum of three quarters in residence as a graduate student.
2. A minimum of 44 quarter units of graduate credit in history (at least 24 units must be in courses numbered above 500; 8 units may be transferred from an approved college or university; 8 units may be in an approved cognate area). HIST 504 Research Methods (2), ENGL 509 Scholarly Writing (2), and HIST 506 Historiography (4) are required.
3. Reading proficiency in a modern or classical foreign language.
4. A core of four courses (including a seminar and a reading tutorial) in the student's field of specialization.
5. After 38 units of courses, either a qualifying or a comprehensive examination:
   (a) A student who chooses to write a thesis will take a two-hour, written, general qualifying examination.
   (b) A student who chooses to submit a project — either a publishable paper or two revised and expanded graduate seminar papers — will take a three-hour written, general qualifying examination.
   (c) A student who chooses not to write a thesis or to submit a written project will take a two-part written comprehensive examination over all courses taken for the degree.

The student may emphasize American, European, or Church history.

The student who is preparing to teach in California should consult the credentials adviser in the School of Education about a California Standard Teaching Credential.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

COURSES

UPPER DIVISION COURSES APPLICABLE TO GRADUATE PROGRAM

HIST 407 The Scientific Revolution (4)

HIST 408 Modern Natural Science: Mechanisms for Change (4)

HIST 409 Sickness and Health in American Society (4)

HIST 414 The French Revolution and Napoleon (4)

HIST 416, 417, 418 Europe I, II, III (4, 4, 4)

HIST 425, 426 History of Russia I, II (4, 4)

HIST 428 Mexico (4)

HIST 429 Central America and the Caribbean (4)

HIST 444, 445, 446 American Diplomatic Relations I, II, III (4, 4, 4)

HIST 447, 448, 449 United States Constitution I, I, III (4, 4, 4)

HIST 454 American Colonial History (4)

HIST 455 Religion in American Life (3-4)

HIST 456 Civil War and Reconstruction (4)

HIST 458 Western America (4)

HIST 459 California History (4)

HIST 464, 465 Asia in World Affairs I, II (4, 4)

HIST 466 The Early Christian Church (3-4)

HIST 467 The Medieval Church (3-4)

HIST 468 History of the Papacy (3-4)

HIST 469 The Age of the Renaissance (3-4)

HIST 474 The Lutheran Reformation (3-4)

HIST 476 The Swiss Reformation and Calvinism (3-4)

HIST 478 The English Reformation (3-4)

HIST 484 Twentieth-Century Church History (3-4)

HIST 485 History of Seventh-day Adventism (3-4)

HIST 486 Ellen G. White: Her Life and Thought (3-4)

HIST 487 Natural Theology: A Historical Survey (3-4)

HIST 488 Protestant Thought in the Twentieth Century (3-4)

HIST 494 History Colloquium (4)

HIST 495 Readings in History (1-6)

HIST 497 Proseminar (4)

HIST 499 Directed Study (1-6)

GRADUATE COURSES

HIST 504 Research Methods in History (2)

HIST 506 Historiography (4)

HIST 555 Religion in American Life (3-4)

The place of religion in American intellectual, political, social and cultural developments, from the Colonial period to the present. Identical to RELH 555.

HIST 566 The Early Christian Church (3-4)

Study from primary sources of the important men, developments, and ideas in the Christian Church from apostolic times through the fifth century A.D. Identical to RELH 566. Offered on demand.

HIST 567 The Medieval Church (3-4)

Study from primary sources of the important men, developments, and ideas in the Christian Church from the sixth through the fifteenth centuries A.D. Identical to RELH 567. Offered on demand.

HIST 568 History of the Papacy (3-4)

Historical and theological development of the Papacy and Roman Catholicism during patristic, medieval, and modern periods. Identical to RELH 568. Offered on demand.

HIST 569 The Age of the Renaissance (3-4)

Offered on demand.

HIST 574 The Lutheran Reformation (3-4)

A study of Martin Luther, his theology, and the Reformation movement he initiated, down to 1555. Identical to RELH 574. Offered alternate years; not offered 1984-85.

HIST 576 The Swiss Reformation and Calvinism (3-4)

Leading men of the Swiss Reformation (Zwingli, Bullinger, Calvin, and Beza) and the theological and sociological influences of Calvinism. Identical to RELH 576. Offered alternate years; not offered 1984-85.

HIST 578 The English Reformation (3-4)

Main historical forces and religious movements of the English Reformation until the Westminster Assembly. Identical to RELH 578. Offered alternate years; not offered 1984-85.

HIST 584 Twentieth-Century Church History (3-4)

Modern religious trends and their impact on church and society. Identical to RELH 584. Offered on demand.

HIST 585 History of Seventh-day Adventism (3-4)

Millerism and early Sabbath-keeping Adventism, anti-Catholicism, antislavery, and church-state relations. "Shut-door" theology and missionary expansion. Organization, 1888 and reorganization. Health and prohibition, education and evangelism. Origin and development of the Seventh-day Adventist denomination to the present. Identical to RELH 585.

HIST 586 Ellen G. White: Her Life and Thought (3-4)

A study of the key events in the life of Ellen G. White (1827-1915) and her major theological contribution. Identical to RELH 586.

HIST 587 Natural Theology: A Historical Survey (3-4)

Beginning with the Middle Ages, a historical survey of different approaches to the question of faith and reason, or what can be known of God by rational inquiry alone, within Christian thought. Identical to RELH 587. Offered on demand.
Prerequisite: Consent of the instructor.

HIST 588 Protestant Thought in the Twentieth Century (3-4)

An examination of the major figures, issues, and resources of contemporary Protestant theology. Identical to RELH 588. Offered on demand.
Prerequisite: Consent of the instructor.

HIST 634 Seminar in European History (4)

Offered on demand.

HIST 635 Seminar in Church History (4)

Identical to RELH 635. Offered alternate years; not offered 1984-85.
Prerequisite: Consent of the instructor.

HIST 647 Seminar in American History (4)
Offered on demand.

HIST 655 Seminar in Latin America (4)
Offered on demand.

HIST 694 Special Problems in History (directed individual study) (arranged)

HIST 697 Research (1-4)

HIST 698 Thesis (2)

MARRIAGE AND FAMILY THERAPY

FACULTY

ANTONIUS D. BRANDON, PH.D. United States International University 1980
Chairman; Associate Professor of Marriage and Family Therapy
Marriage and family therapy, crisis intervention

ANEES A. HADDAD, PH.D. University of Southern California 1971
Professor of Sociology and Family Studies (on leave);
Dean, College of Arts and Sciences
Family sociology, human sexuality

ALBERTA MAZAT, M.S.W. University of Denver 1970
Professor of Marriage and Family Therapy
AAMFT Approved Supervisor
Marriage therapy, human sexuality

IAN P. CHAND, PH.D. Pennsylvania State University 1980
Associate Professor of Sociology and Family Studies
Sociology

MARY E. MOLINE, PH.D. Brigham Young University 1979
Associate Professor of Marriage and Family Therapy
Clinical director, marriage and family therapy

S. DOUGLAS MOLINE, PH.D. Brigham Young University 1979
Assistant Professor of Marriage and Family Therapy
Marriage and family therapy

ASSOCIATE FACULTY

VERN ANDRESS, PH.D. United States International University 1976
Professor of Psychology
Psychology

HARRISON S. EVANS, M.D. Loma Linda University 1936
Professor of Psychiatry
Psychiatric problems and counseling

BENJAMIN KOVITZ, M.D. University of Wisconsin 1938
Professor of Psychiatry
Psychiatry

FRED H. OSBOURN, PH.D. School of Theology at Claremont 1972
Professor of Marriage and Family Therapy
AAMFT Approved Supervisor
Marriage therapy practice

L. FRANCES PRIDE, PH.D. University of Maryland 1967
Professor of Nursing
AAMFT Approved Supervisor
Family systems theory

PETER G. STRUTZ, PH.D. University of Alberta 1966
Professor of Psychology
Psychology

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

Marriage and family therapy is an interdisciplinary program leading to the Master of Science degree. It is designed to give the student a broad academic background for understanding the family and its problems and to prepare the graduate to assist families in working through their problems. The master's degree enables the graduate to qualify for advanced internships and subsequent state licensure as a therapist; to teach college or adult education courses in marriage and family life; to direct family life programs for church or secular organizations; or to go directly into marriage, family, and child therapy practice in areas where the state license is not yet required.

Marriage, family, and child therapy has been 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. Persons previously practicing as licensed marriage, family, and child therapists must update their credentials by approved continuing education programs. Other states than California have enacted or plan to enact similar legislation. The master's program at this University meets licensing standards.

The American Association for Marriage and Family Therapists (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 this University is one of the sixteen fully accredited programs nationwide.

In addition to preparing registrants for the master's degree, the program provides courses and clinical training for those who do some marriage or family counseling as part of their work (pastors and others in helping professions). Clinical supervision is also provided for those who have already earned master's degrees but need additional clinical time to qualify for the state licensing examination.

Admission Applicants to the program must meet the Graduate School admission requirements outlined in this BULLETIN, give evidence of emotional stability and maturity, and have well-defined personal values in harmony with the Christian ethic.

In addition to completing the required application forms, providing character and academic references, and Graduate Record Examination (GRE) aptitude scores, the prospective student should also arrange for a personal interview with one of the program coordinators.

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: abnormal psychology, introduction to personality, introductory statistics. A prerequisite course in interviewing and counseling is required for nonbehavioral science majors.

Because of the sequence of courses, students are admitted only during the autumn quarter. Students may enroll on a part-time basis with the consent of the coordinator.

Special status Persons in the helping professions, particularly pastors desiring to improve their counseling skills, may arrange to take relevant courses and a limited amount of supervised counseling without proceeding toward a degree. Before applying for nondegree status, students should discuss their needs with the program chairman.

Degree requirements Requirements for the Master of Science degree include the following:

1. Residence of at least two academic years.
2. A minimum of 82 quarter hours of graduate work, which includes credit received for core courses, electives, and 4 hours of religion.
3. Practicum in marriage and family counseling (minimum of 800 hours), inclusive of clinical training (MFAM 534, 634).
4. Successful completion of a written comprehensive examination (taken before advancement to candidacy) and an oral examination (taken at the end of the program).

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

Clinical services The program operates a marriage and family therapy clinic to provide counseling services to individuals, couples, and families, and to give opportunity for clinical practice for students and interns. This service is based in Griggs Hall. Part of the student's field experience and internship may be taken at other clinics in the Riverside and San Bernardino areas.

Clinical program The state of California requires 3,000 hours of supervised clinical practice over a minimum of two years for licensure in marriage, family, and child therapy. Of the total, approximately 800 hours are included in the master's program. Students planning to obtain the California license after conferral of the degree may arrange for an advanced internship of at least 2,000 hours of supervised counseling. To do this under the direction of the faculty, the student should inquire about the advanced clinical program on an application form available at the coordinator's office.

Persons who have acceptable degrees but who need the clinical internship to qualify for licensure should arrange for an interview with the clinical coordinator before completing the application form.

CORE COURSES

GENERAL THEORY

MFAM	501	Research Design and Methodology I
MFAM	502	Research Design and Methodology II
MFAM	542	Professional Seminar I
MFAM	556	Psychopathology and Diagnostic Procedures
MFAM	568	Group Theories in MFAM Therapy
MFAM	614	Family Law and Ethics
MFAM	669	Human Sexual Behavior
SOCI	514	The Family: Crosscultural Family Values
SOCI	614	Seminar in Family Communication

CLINICAL THEORY

MFAM	515	Crisis Intervention Counseling and Psychotherapeutic Techniques
MFAM	551	Marital Therapy Theory and Practice I
MFAM	552	Marital Therapy Theory and Practice II
MFAM	555	Counseling the Adolescent
MFAM	584	Treating the Troubled Child
MFAM	624	Psychological and Marital Assessment
MFAM	642	Professional Seminar II
MFAM	656D	Personality Assessment

PRACTICUM

MFAM 534 Clinical Training
MFAM 535, 536, 537 Case Presentation Seminar 2, 2, 2
MFAM 634 Advanced Clinical Training
MFAM 635, 636, 637 Case Presentation Seminar, 2, 2, 2
MFAM 744 Clinical Internship
NRSG 577 Family Systems Theory

ELECTIVE COURSES

MFAM 577 Family Life Workshop
MFAM 579 Family Systems Seminar
MFAM 604 Premarital Counseling
MFAM 605 Gestalt Therapy
MFAM 656 Seminar in Family Therapy
MFAM 656C Advanced Human Growth and Development
MFAM 656E Experiential Family Therapy
MFAM 656F Medical Dimensions of Psychotherapy
MFAM 656G Structural Family Therapy
MFAM 656H Family Life Cycle Development
MFAM 656I Family Violence and Chemical Abuse
MFAM 657 Starting Private Practice in Family Therapy
MFAM 667 Dissolution Counseling
MFAM 670 Seminar in Sexual Therapy
MFAM 671 Program Development in Relationship Enrichment
MFAM 672 Practicum in Relationship Enrichment
MFAM 675 Clinical Problems in Marriage and Family Therapy
MFAM 694 Directed Study: Marriage and Family
MFAM 695 Research Problems: Marriage and Family

COURSES

GRADUATE COURSES

MFAM 501 Research Design and Methodology I (2)
Current social research methods, practice in the use of techniques, consideration of the philosophy of scientific method, and familiarization with MFAM testing instruments.

MFAM 502 Research Design and Methodology II (2)
Prerequisite: MFAM 501 or consent of the instructor.

MFAM 515 Crisis Intervention Counseling and Psychotherapeutic Techniques (2-4)
Lectures, discussion, and laboratory experience in crisis intervention counseling in connection with the "hot line" emergency service.

MFAM 534 Clinical Training (300 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 250 clock hours.

MFAM 535 Case Presentation Seminar (2)

Formal presentation of ongoing cases by clinical interns. Taping, video playbacks, and verbatim reports with faculty and clinical peers. Three quarters required.

MFAM 536 Case Presentation Seminar (2)

Formal presentation of ongoing cases by clinical interns. Taping, video playbacks, and verbatim reports with faculty and clinical peers. Three quarters required.

MFAM 537 Case Presentation Seminar (2)

Formal presentation of ongoing cases by clinical interns. Taping, video playbacks, and verbatim reports with faculty and clinical peers. Three quarters required.

MFAM 542 Professional Seminar I (2)

The relationship between marriage counseling and other professions. Seminar guests share expertise from various disciplines and counseling approaches. Two quarters required.

MFAM 551 Marital Therapy: Theory and Practice I (4)

Intensive study of the major methods and techniques in marriage and family counseling. Role play, peer counseling, and videotaped presentations employed to enhance counseling techniques.

MFAM 552 Marital Therapy: Theory and Practice II (4)

Counseling theories and practices, dynamics of marital interaction, problems at various stages of the marital cycle, and dissolution counseling.

Prerequisite: MFAM 551.

MFAM 555 Counseling the Adolescent (2)

Special problems of the adolescent: coping with changes, need for privacy, setting limits, peer-group pressure.

MFAM 556 Psychopathology and Diagnostic Procedures (4)

Recognition of psychopathology. Sources of help for clients with psychopathology or other symptoms. Methods of dealing with such clients, including techniques of referral.

MFAM 568 Group Theories in MFAM Therapy (2)

MFAM 577 Family Life Workshop (2)

Focus on lay-counselor skills which may be used by ministers and teachers dealing with crisis situations and in preventing problems which affect the stability of family constellations. Not limited to non-MFAM students.

MFAM 584 Treating the Troubled Child (2)

The psychodynamics involved in children's problems with respect to the parent-child relationship. Demonstration of counseling approaches.

MFAM 604 Premarital Counseling (2)

A clinically oriented course demonstrating specific problems and issues in premarital counseling.

MFAM 605 Gestalt Therapy (2-4)

The 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.

MFAM 614 Family Law and Ethics (2)

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, and ethical relations with other professions.

MFAM 624 Psychological and Marital Assessment (2)

Application of psychological testing methods in the diagnostic assessment of individual and group behavioral dynamics as encountered in marriage and family counseling. Observations and/or laboratory experience. Identical to PSYC 556. Credit not given for both courses.

Prerequisite: PSYC 356.

MFAM 634 Advanced Clinical Training (500 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 the 500 clock hours required.

MFAM 635 Case Presentation Seminar (2)

Formal presentation of ongoing cases by clinical interns. Taping, video playbacks, and verbatim reports with faculty and clinical peers. Three quarters required.

MFAM 636 Case Presentation Seminar (2)

Formal presentation of ongoing cases by clinical interns. Taping, video playbacks, and verbatim reports with faculty and clinical peers. Three quarters required.

MFAM 637 Case Presentation Seminar (2)

Formal presentation of ongoing cases by clinical interns. Taping, video playbacks, and verbatim reports with faculty and clinical peers. Three quarters required.

MFAM 642 Professional Seminar II (2)

Further exploration of the interfacing between marriage counseling and other professions. Seminar guests include therapists with specialized expertise in various counseling modalities.

MFAM 656 Seminar in Family Therapy (2)

Family therapy theories and methods, problems and case studies in family life, role playing, and peer counseling.

MFAM 657 Starting Private Practice in Family Therapy (2)

Economics of starting a private practice, discussion of legal aspects, choice of location, client sources.

MFAM 667 Dissolution Counseling (2-4)

Methods of supportive counseling for those experiencing the trauma of divorce. Self-image improvement, coping with loss.

MFAM 669 Human Sexual Behavior (4)

Sexuality in contemporary society from the sociopsychological viewpoint. Anatomy and physiology of human sexuality: reproduction, normal and abnormal sexual response, psychosexual development, human fertility, human sexual dysfunction.

MFAM 670 Seminar in Sexual Therapy (2)

Discussion of the major male and female sexual dysfunctions, therapeutic processes of treatment.
Prerequisite: MFAM 669.

MFAM 671 Program Development in Relationship Enrichment (2)

Experience in development and implementation of workshops, seminars, and classes in relationship enrichment and improvement. A preventive mental health approach. Limited to MFAM students.

MFAM 672 Practicum in Relationship Enrichment (2)

Experience in organization and leadership in relationship enrichment groups.
Prerequisite: MFAM 671.

MFAM 675 Clinical Problems in Marriage and Family Therapy (2)

An 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 (2-4)

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 (2-6)

Directed research in the student's special field of interest in the family.
Prerequisite: MFAM 504 or concurrent registration with the consent of the coordinator.

MFAM 744 Clinical Internship (0)

PSYC 555 Group Process Theory and Procedure (4)

Group guidance, theories of group-individual interaction, communication processes, development and structure of organized groups.

SOCI 514 The Family: Crosscultural Family Values (4)

Structure and function, changing patterns, future in urban society. Relationship of changes in society to widespread family problems.

SOCI 614 Seminar: The Family (4)

Evaluation of current research on the family, especially in the United States. Research project on some aspect of family structure or function. Styles of communication within the family unit (verbal and nonverbal), sources of communication pathology, methods of reestablishment of communication.

NRSG 577 Family Systems Theory (3-4)

Review of systems theory. A study of Bowen Family Theory and an introduction to family psychotherapy as an outgrowth of the theory.

NRSG 579 Family Systems Seminar (1-2)

Application of Bowen Family Theory to student's family and client families.
Prerequisite: NRSG 577.

MEDICAL SCIENTIST PROGRAM

W. BARTON RIPPON, PH.D., Coordinator

Faculty active in this program come from among the graduate programs in the biomedical sciences, from clinical departments in the School of Medicine at Loma Linda University, and from research laboratories in and beyond Loma Linda University.

The Medical Scientist Program comprises an integration of the M.D. with the M.S. or PH.D. degrees. The foundation is a sequence of study in cell and molecular biology, which integrates basic biomedical science knowledge within the context of the cell. Through parallel correlative seminars, this basic material is expanded to include organ systems and is applied to gain understanding of diseases in man. Subsequent courses throughout the curriculum integrate basic biomedical, clinical sciences. Research and thesis/dissertation is supervised by graduate faculty of the basic biomedical sciences — anatomy, biochemistry, microbiology, pharmacology, and physiology.

Admission Applicants submit complete applications (with fees) to both the Graduate School and the School of Medicine during the senior undergraduate year.

Acceptance to the Graduate School is granted after application review and recommendation by an admissions committee.

The admissions committee makes its recommendations based on the usual Graduate School criteria, personal interview, and some measures of relevant traits such as analytic potential, inquisitiveness, creativity, compassion, and initiative of the applicant.

Applicants must be accepted into both the Graduate School and the School of Medicine to allow participation in the program. Successful applicants are invited to participate in the summer program in one of the anatomy, biochemistry, microbiology, physiology, or pharmacology research laboratories.

Curriculum The curriculum, which is innovative in courses and in sequence, integrates the clinical and research perspectives of medical science.

A thirty-unit sequence in cell and molecular biology taken during the first year emphasizes problem solving and analysis as a foundation for a research-oriented approach to biomedical science and medicine. Weekly parallel sessions integrate basic science and clinical concerns, expanding the perspective of the cell and molecular topics to include organ systems and the relationship to disease.

The sequence of the entire curriculum is:

Entry year: cell and molecular biology courses

Summer: research

Modified freshman year, School of Medicine

Summer: research

Modified sophomore year, School of Medicine

Research year(s): research and courses for M.S. or PH.D. (Subsequent financial aid will depend on the degree completed.

Modified junior year, School of Medicine

Modified senior year, School of Medicine

Advisement Students admitted are classified as medical scientist on School of Medicine and Graduate School rosters and advised by the program coordinator.

During the sophomore medical year, students choose a basic science program in which they concentrate subsequent research and course efforts, guided by the graduate program coordinator for the chosen discipline.

Time limits Limits relate especially to completion of the academic degree and to financial assistance for the professional degree.

Up to three years between the sophomore and junior years of the School of Medicine are allowed for completion of the PH.D. degree; one year is allowed for the M.S. degree. Completion within these times assures financial aid in the junior and/or senior School of Medicine years; see Financial Assistance.

Reentry to the School of Medicine for the junior year does not require completion of the academic degree, although there is no further financial aid in the School of Medicine until the academic degree is completed.

Completion of the M.D. degree before completion of the academic degree automatically withdraws a student from the combined degree program and the Graduate School. Normal reapplication to the Graduate School is available; readmission may involve repetition of courses and changes in research activity, if recommended by the admissions committee. Financial aid would be renegotiated in view of changed circumstances.

Financial assistance Financial assistance to students admitted to the Medical Scientist Program provides :

1. Stipends similar to those in other School of Medicine/Graduate School basic science programs during the graduate school years — the entry year and those following the sophomore medical year.

2. Graduate School and School of Medicine tuition waivers available through the completion of the M.S. or PH.D. degree, whichever is the terminal degree for the student.

3. A tuition waiver without stipend during the junior medical year only for completion of the M.S. degree; tuition waiver for both the junior and senior medical years for completion of the PH.D. degree. (No waiver of tuition is granted in either year for students failing to complete the graduate degree.)

Funds for waivers and stipends derive in part from an alumni gift.

COURSES

CMBL 501 Steady State Cell (10)
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 (10)
Processes by which the generalized cell either enters the cell cycle to replicate or undergoes transition to a terminally differentiated cell with specialized structures and functions. Regulation of the cell cycle. Structural and functional organization of the chromosome. Regulation, control, and manipulation of genetic information. 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 531 DNA Replication and Repair (3)
DNA replication, cell cycle, virus infection, mutagenesis, and DNA repair. Fall quarter.

CMBL 532 Genetic Mechanisms and Gene Manipulation (3)
Mobile genetic elements, techniques of genetic engineering, and phenotype manipulation. Fall quarter.

CMBL 533 Gene Expression (3)
Gene regulation in eukaryotes and prokaryotes, eukaryotic chromosome structure, gene structure, and mechanisms of differentiation. Fall quarter.

CMBL 541 Cellular Structural Elements (4)
A comprehensive description of biological membranes and cell fibrillar systems that will form a basis for ellucidating the functions of specialized cells. Spring quarter.

CMBL 542 Cellular Excitability (3)
Classical and nonclassical treatment of excitable membranes, followed by applications to neuronal, sensory, and contractile systems. Spring quarter.

CMBL 543 Cell-Cell Interactions (3)
Discussion of the role of cell-cell interactions and the mechanism for cellular specialization. Particular emphasis on the immune system, production of extracellular matrix, and hormonal integration of function. Spring quarter.

MICROBIOLOGY

FACULTY

RAYMOND E. RYCKMAN, PH.D. University of California, Berkeley 1960
Chairman; Professor of Microbiology
Medical entomology, parasitology, biosystematics

LEONARD R. BULLAS, PH.D. Montana State University 1963
Professor of Microbiology
Microbial and molecular genetics, bacteriology

ROBERT L. NUTTER, PH.D. Iowa State University 1957
Professor of Microbiology
Virology, molecular biophysics

EDWARD D. WAGNER, PH.D. University of Southern California 1953
Professor of Microbiology
Parasitology

GEORGE T. JAVOR, PH.D. Columbia University 1967
Associate Professor of Microbiology
Bacterial physiology

JAMES D. KETTERING, PH.D. Loma Linda University 1974
Associate Professor of Microbiology
Virology, medical bacteriology

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

ANTHONY ZUCCARELLI, PH.D. California Institute of Technology 1974
Associate Professor of Microbiology
Molecular genetics

ASSOCIATE FACULTY

JOHN E. LEWIS, PH.D. Loma Linda University GS 1969
Associate Professor of Pathology and Medicine
Immunology, medical bacteriology

RICHARD D. TKACHUCK, PH.D. University of California, Los Angeles 1970
Associate Professor of Biology
Biochemistry and physiology of parasites

WILLIAM C. EBY, M.D. Loma Linda University 1967; PH.D. University of Illinois 1978
Assistant Professor of Microbiology and Pathology
Immunology

IRA ROY, PH.D. Ohio State University 1965
Assistant Professor of Microbiology
Diagnostic mycology, bacteriology, antimicrobial agents

Medical microbiology encompasses the broad scope of human host-parasite relationships. This is understood to include a knowledge of bacteria, fungi, spirochetes, rickettsiae, viruses, protozoa and metazoa, arthropod vectors; and the immunologic, physiologic, biochemical, and other principles which concern each division of the field.

The main objective of the graduate program in microbiology is to prepare teachers, research workers, and administrators in education, research, and health programs either in this country or in other parts of the world.

The minimum science prerequisites for admission to the graduate programs are:

One year of general biology
One year of general chemistry
One complete course in organic chemistry
One complete course in general physics

Waiver of any one of these requirements is only by departmental consent before admission to the graduate program.

Master of Science Advanced study leading to the Master of Science degree is offered for the student having a bachelor's degree, including the minimum course requirements specified for admission to the Graduate School; for the student who has the equivalent of a bachelor's degree and has completed the first year of the professional curriculum in medicine or in dentistry; and for the graduate from medicine or dentistry.

During the time of study, the student acquires a clear understanding of the fundamental principles of microbiology and a familiarity with their application in the laboratory. In addition, provision is made for concentration in a special field of microbiology and the corresponding mastery of its techniques.

Although reading knowledge of a language other than English is not required for the master's degree, it is strongly recommended if there is any desire or intention to proceed to the Doctor of Philosophy degree.

Of the 48 quarter units required for the Master of Science degree, the student must complete at least 20 units of graduate courses in microbiology. A minimum of 9 units of graduate courses in another area (usually biochemistry, biology, physiology, pharmacology, or biophysics) constitutes a minor. The student must present an acceptable thesis based on at least 6 units of research and 3 units of thesis in microbiology.

Doctor of Philosophy A student who is completing a master's degree and who wishes to proceed to the Doctor of Philosophy degree applies in writing to the Department of Microbiology and Graduate School Admissions.

The student plans a program of courses under the direction of the guidance committee. Usually the courses (including courses in the major field, the minor field, and, in some cases, in related areas) are completed within the first two years beyond the master's degree. A reading knowledge of two modern languages, other than English, is required. The departmental advisory committee, in approving the selection, gives preference to the languages in which significant publications in the area of concentration are found or a synthetic language pertinent to the area. The examination for the second foreign language should be taken sometime during the second year of the doctoral program.

After passing the written comprehensive examination, the language examinations, and the oral comprehensive examination, the student applies for candidacy for the doctoral degree. During the candidacy period, most of the time is spent in research. On completion of the research and the writing of the dissertation, the student defends the dissertation at an oral examination administered by the committee. Prior to advancement to candidacy the student must have completed satisfactorily a minimum of 8 quarter units of graduate biochemistry. It is recommended that a course in differential and integral calculus be included in the undergraduate preparation.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

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

MICR 484 Diagnostic Medical Parasitology (2-3)

Didactic and laboratory study emphasizing morphology and laboratory recognition of medically important protozoan and metazoan parasites of man. Collateral work on life cycles, diagnostic methods and procedures. Offered alternate years; 1984-85.

Wagner.

MICR 486 Diagnostic Medical Mycology (2-3)

Laboratory identification of medically important fungi, with special emphasis on diagnostic procedures and modern techniques. Offered on demand.

Roy, Brodie.

MICR 521, 522 Medical Microbiology (8-4)

Fundamental techniques and concepts of microbiology. Principles involved in the mechanism of resistance to infection, including those concerned with hypersensitiveness. Systematic study of pathogenic bacteria, spirochetes, actinomycetes, fungi, rickettsiae, viruses, protozoa, and helminths. Methods of sterilization, disinfection and chemotherapy. Important aspects of medical entomology. (For medical students in the combined M.D./PH.D. degree program.)

Staff.

MICR 524, 525, 526, 527 Immunology, Virology, Bacteriology, Parasitology (arranged)

Portion of MICR 521 and 522. By consent of the department chairman only.

Staff.

MICR 531, 532 Fundamentals of Microbiology (5, 4)

In-depth foundation in basic microbiology on which advanced study may be built. Also recommended for graduate students in other departments desiring an exposure to microbiology. Lectures and conferences. Classification, morphology, and physiology of major groups of organisms. Their interaction with the environment and with the animal hosts. Laboratory exercises emphasizing techniques of cytology, cultivation, and biochemical and immunological reactions. Subspecialty areas.

Prerequisite: An introductory course in microbiology.

Lau, Staff.

MICR 534 Microbial Physiology (4)

Study of the growth, nutrition, and metabolism of microorganisms. The effect of physical and chemical environment on the bacterial cell. Offered alternate years; 1985-86.

Javor.

MICR 535 Advances in Molecular Genetics (3-4)

Detailed study of current research in selected areas of molecular genetics: restriction enzymes, gene cloning, techniques in genetic engineering, split genes (introns-exons), pseudogenes, the somatic rearrangement of immunoglobulin genes, enzymology of general recombination, site-specific recombination, transposable genetic elements, overlapping genes, mechanism of DNA replication, the genetic code in mitochondria, DNA repair, molecular organization of chromatin, DNA conformations, "Z" DNA. Offered on demand.

Zuccarelli.

MICR 542 Applied Clinical Microbiology (3)

Designed for microbiologists and medical and allied health personnel having a special interest in diagnostic clinical microbiology and infectious diseases. Conferences and special projects assigned. Offered alternate years; 1985-86.

Lau.

MICR 546 Advanced Immunology (4)

Fundamental biological and chemical aspects of immunity, hypersensitivity, and serology, with particular consideration of the following: mechanisms of native immunity, mechanisms of acquired immunity, mechanisms of hypersensitivity, and serology and antigenic systems. Offered alternate years; 1984-85.

Prerequisite: One of more of the following courses — MICR 501, 521, 524, 531.

Eby.

MICR 555 Microbial Genetics (3-4)

Genetic processes of microorganisms, including molds, protozoa, viruses, and bacteria. The contribution that the study of microorganisms has made in modern genetics toward the understanding of the nature of the genetic material and the mechanism of its action. Offered alternate years; 1984-85.

Bullas.

MICR 556 Microbial Genetics Laboratory (2)

Laboratory exercises in bacterial and bacteriophage genetics. Offered alternate years; 1984-85.

Prerequisite: Microbial genetics, MICR 555.

Bullas.

MICR 565 Virology (3)

Fundamental aspects of virus-host cell relationships of bacteriophages and selected groups of animal viruses. Offered alternate years; 1984-85.

Nutter.

MICR 566 Cell Culture (3)

The practical aspects of growth of animal cells in culture. Experience with both primary cell cultures and established cell lines. Offered alternate years; 1985-86.

Nutter.

MICR 568 Laboratory Techniques in Virology (2-3)

Laboratory exercises involving bacteriophages and animal viruses. Handling, growth, assay, seriological, and other procedures utilized in virus research. Offered alternate years; 1984-85.

Prerequisite: MICR 521, 522; or MICR 565.

Kettering.

MICR 574 Arthropod Vectors of Infectious Agents (4)

Vector potential of insects, ticks, and mites. Importance of ecology and biosystematics to host-parasite relationships. Offered alternate years; 1984-85.

Ryckman.

MICR 575 Arthropod Vectors Laboratory (1-2)

To be taken in conjunction with MICR 574 as an option.

Ryckman.

MICR 576 Field Medical Entomology (3)

The ecology and host relationships of medically important arthropods under field conditions. Emphasis on habitat and host recognition and identification of the parasitic forms. Offered alternate years; 1985-86.

Ryckman.

MICR 585 Helminthology (4)

Important aspects of the parasitic helminths of animals, particularly the vertebrates. Special consideration of taxonomy, morphology, life histories, host-parasite relationships, and special techniques in the preparation of specimens for study. Offered alternate years; 1985-86.

Wagner.

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. Offered alternate years; 1985-86.

Lau.

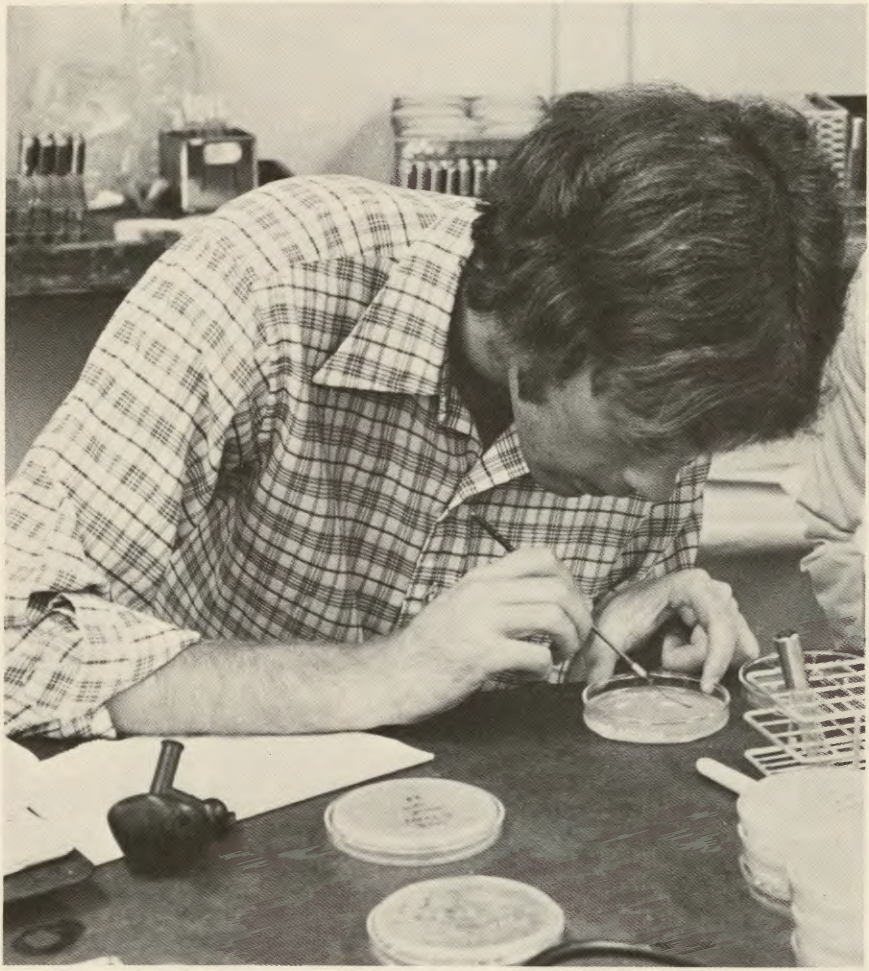
MICR **604 Seminar in Microbiology (1)**
Required for a major in microbiology.

MICR **624 Special Problems in Microbiology (2-4)**
Required for a major in microbiology.

MICR **697 Research (1-4)**

MICR **698 Thesis (1-3)**

MICR **699 Dissertation (arranged)**



NURSING

FACULTY

FRANCES L. FICKESS, D.N.SC. Catholic University of America 1976
Professor of Nursing
Medical/surgical

PATRICIA C. FOSTER, PH.D. Claremont Graduate School 1979
Professor of Nursing
Medical/surgical, teaching/curriculum in higher education

HELEN EMORI KING, PH.D. Boston University 1973
Professor of Nursing
Medical/surgical, biology/cellular physiology

L. FRANCES PRIDE, PH.D. University of Maryland 1967; PH.D. Georgetown University 1976
Professor of Nursing
Psychiatric/mental health, research design, systems theory

CLARICE W. WOODWARD, M.S. University of California at Los Angeles 1964
Professor of Nursing
Parent/child

DARLENE B. JOHNSON, M.S. University of Maryland 1975
Associate Professor of Nursing
Community health

FRANCES P. MILLER, M.S. Loma Linda University GS 1973
Associate Professor of Nursing
Community health

RUTH S. WEBER, M.S. Loma Linda University GS 1975
Associate Professor of Nursing
Medical/surgical, administration

KAREN L. CARRIGG, M.S. Loma Linda University GS 1972, 1977
Assistant Professor of Nursing
Psychiatric/mental health, marriage and family counseling

MARY J. WALDRON, M.S. Loma Linda University GS 1965 (on leave)
Assistant Professor of Nursing
Medical/surgical, adult nurse practitioner

ASSOCIATE FACULTY

L. LUCILE LEWIS, M.S. Loma Linda University GS 1958
Professor of Nursing
Medical/surgical

MARILYN C. SMITH, ED.D. University of Southern California 1974
Professor of Nursing
Community health, administration

A curriculum leading to a Master of Science degree with a clinical nursing major or a nursing administration major is offered through the Graduate School of Loma Linda University. A minimum of 58 quarter units is required. Part-time study is available; and students may be admitted any term during the year. The entire course of study is planned with consideration for individual needs and in consultation with the major adviser. Students may petition to transfer up to 9 quarter units of graduate credit from an approved educational institution.

For information about requirements and practices to which all graduate students are subject, the student should consult Section I of the *Graduate School* BULLETIN.

Philosophy The beliefs of the faculty of the graduate program in nursing are in harmony with the philosophy of the University and the Graduate School, and the philosophy, purpose, and conceptual framework of the School of Nursing. The graduate program in nursing shares with the total University the philosophy that God uses human agencies to assist Him in restoring individuals to wholeness. Seventh-day Adventist Christian nursing is a professional service to humanity which is motivated by love for God and people, strives to help others better understand God's will and purpose, and contributes to the restoration of people to the image of God.

Nursing provides health care in the client system's environment. It has at its disposal a body of knowledge and a repertoire of skills designed to assist clients in the management of self-care functions at the level necessary for (*a*) promoting and maintaining function or preventing dysfunction; and (*b*) coping with, recovering from, and/or controlling effects of insults to the system. Nursing focuses on behavioral responses of the client to actual or potential dysfunction.

In graduate education, the student has opportunity for the intense pursuit of knowledge in a chosen field of interest. The teaching-learning focus is on the attainment of knowledge, and the development of advanced intellectual, clinical, leadership, and investigative skills.

Objectives The primary aim of the program is to prepare nurse leaders who are capable of improving professional nursing through clinical practice, teaching, administration, or research. The program is so designed that, at its completion, the graduate will demonstrate accountability to nursing practice by:

1. Using a body of knowledge acquired from literature, from interaction with experts, and through development and use of conceptual and analytical skills.
2. Articulating a theoretical framework for professional practice congruent with personal beliefs and values.
3. Demonstrating clinical and functional expertise in nursing of client systems.
4. Evaluating nursing process competencies in terms of content, process, and outcomes.
5. Evaluating health care delivery systems and the existing and potential nursing roles within those systems.
6. Collaborating with clients and health professionals for the purpose of mutual goal-setting and improvement in the delivery of nursing care.
7. Using the research process in order to refine and expand the developing theoretical and clinical base for nursing.
8. Valuing the need for continued scholarly endeavor beyond the academic experience.

ADMISSION TO THE GRADUATE PROGRAM

Admission The following criteria are considered for admission to the graduate program in nursing:

A baccalaureate degree in nursing from a college or university accredited by the National League for Nursing (or its equivalent).

An undergraduate record with a grade point average of B (3.00), both cumulative and in the nursing major.

A minimum of 24 quarter units in clinical nursing on the upper-division level. Applicants who have challenged upper-division clinical nursing courses must present 20 quarter units of unchallenged upper-division clinical nursing courses.

Graduate Record Examination General section. It is recommended that the applicant have a composite minimum score of 900-1000 for the verbal and quantitative sections. Individuals with lower scores may be asked for additional evidence of aptitude for graduate study.

Current California registered nurse license before enrollment in clinical nursing courses. Individuals admitted pending examination results are subject to withdrawal from clinical courses if the examination is not passed.

The applicant is encouraged to have nursing experience in the area of the desired clinical major before beginning graduate study. One year of experience as a registered nurse is required to enter the administration major.

Prerequisite courses include:

General statistics (descriptive and beginning inferential), 3 quarter units.

Introduction to research methods, 2 quarter units, or equivalent.

Physical assessment, 2-3 quarter units required for clinical majors. A waiver examination is available.

Upper-division normal human physiology, 3-4 quarter units taken within the last seven years, is *required for applicants who plan to enroll in the adult and aging family major.*

PROGRAM REQUIREMENTS

Grades A minimum grade point average of 3.00 must be maintained in all work taken for the degree.

Research options The student has the option of completing one of three research programs within the curriculum for the master's degree. The choice is based on evaluation of which program better prepares the individual student for the chosen leadership role in nursing. The decision is made in consultation with the student's adviser.

Examination A comprehensive written and oral examination is required.

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.

Majors The graduate program offers majors in clinical nursing and nursing administration.

Required courses The following subjects are required of all students:

NRSG 507 Concept and Theory Development in Nursing (3)
NRSG 510 Political Process and Professional Issues (2)
NRSG 541, 542 or 545 Practicum in Nursing Leadership (4 or 6)
NRSG 681, 682 Research Methods and Design in Nursing I, II (2, 3)
_____ Religion (3)
_____ Behavioral and/or natural science cognates: clinical major requires 6 units, administration requires 4 units
_____ Research option (2-6)

Clinical nursing major The clinical major in nursing prepares nurses who have advanced nursing knowledge, clinical expertise, and functional preparation in teaching. All graduates within a clinical major meet the ANA standards for definition of a clinical specialist. Clinical majors are offered in the following areas (required courses indicated). At least 36 quarter units are in nursing.

NURSING AND CLIENT SYSTEMS: The Growing Family
NRSG 604 Nursing in Family Systems (3)
NRSG 606 Community and Mental Health Nursing (3)
NRSG 614 The Childbearing Family (3)
NRSG 615 The Childrearing Family (3) **or**
NRSG 617 Families at Risk: Perinatal (3)

NURSING AND CLIENT SYSTEMS: The Adult and Aging Family
NRSG 604 Nursing in Family Systems (3)
NRSG 606 Community and Mental Health Nursing (3)
NRSG 624 Nursing the Adult Aging Family (3)
NRSG 557 Pathophysiology (3)
NRSG 535 Gerontological Nursing (3) **or**
NRSG 556 Oncological Nursing (3) **or**
NRSG 626 Cardiopulmonary/Respiratory/ Renal Nursing (3)

Clinical majors are prepared in the functional area of teaching (required courses indicated):

TEACHING
NRSG 544 Nursing Leadership: Teaching (4)
NRSG 545 Practicum in Nursing Leadership: Teaching (4)
EDCE 506 Instructional Evaluation Design (3)
EDCI 515 Curriculum Development in Higher Education (3)
EDFO 547 History and Philosophy of Higher Education (2)

Nursing administration major The major in nursing administration provides nurses the opportunity to acquire knowledge and skills in advanced clinical nursing, in management practices, and in the utilization of nursing research to promote the advancement of nursing as a profession.

The following courses are required, in addition to those required of all students:

NRSG 604 Nursing in Family Systems (3)
NRSG ___ Other Advanced Clinical Nursing (3)
NRSG 541, 542 Practicum in Nursing Administration I, II (3, 3)
NRSG 543 Nursing Administration (3)
BUAD 513 Human Resources Management (or equivalent) (4)
BUAD 525 Organizational Theory and Behavior (or equivalent) (4)

To complete a minimum of 58 units required for the degree, and to meet individual career goals, students may choose additional courses from business administration, health administration, education, psychology, nursing, or the behavioral sciences. At least 32 quarter units are in nursing.

COURSES

NRSG 506 Transcultural Nursing (2-3)
Study of world health needs, health manpower, and sociocultural influences. Patterns of health care examined in relation to culture and economics of selected countries. Problems, health beliefs, and practices of United States ethnic groups compared.
Staff.

NRSG 507 Concept and Theory Development in Nursing (3)
Explores need for and methods of concept, conceptual model, and theory development in nursing. Reviews present conceptual models in nursing. Practice in concept development and beginning theory building.
Pride.

NRSG 509 Guided Study (1-6)
Opportunity for study in a particular area of nursing under faculty direction.
Prerequisite: Consent of the adviser.
Faculty.

NRSG 510 Political Process and Professional Issues (2)
Analyzes selected political/legislative processes as regulatory forces that influence the health-care delivery system and the practice of nursing. The study of impact of the socio-political system, current trends, and issues affecting the changing profession of nursing, as well as the impact nursing can have on these systems.
Johnson.

NRSG 512 School Nursing Services (2-3)
Explores administrative styles in school health programs, with emphasis on management. Principles and analysis of school health program planning, methods for implementation and evaluation. Students registered for three units are involved in clinical experience.
Miller.

NRSG 535 Gerontological Nursing (3)
Identification of major problems of aging in the individual, the family, and the community. Social conditions, personal adjustment to aging, health maintenance, and nursing implications.
Staff.

NRSG 541, 542 Practicum in Nursing Administration (3, 3)
Observation and practice in selected levels of nursing administration
Prerequisite: NRSG 543, BUAD 525 or equivalent, 6 quarter units of clinical nursing.
Weber.

NRSG 543 Nursing Administration (4)

Study, application, and evaluation of principles of administration as they apply to nursing leadership.

Prerequisite: NRSG 507, BUAD 525, one quarter of clinical nursing.

Weber.

NRSG 544 Nursing Leadership: Teaching (4)

Exploration of the components of the teaching-learning process. Opportunity provided for students to practice specific teaching skills.

Foster.

NRSG 545 Practicum in Nursing Leadership: Teaching (4)

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. Practice in teaching students in clinical and classroom settings.

Prerequisite or concurrent: EDFO 547, EDCI 515, NRSG 544, and 12 quarter units of clinical nursing.

Miller.

NRSG 556 Oncological Nursing (3)

Nursing care problems of cancer patients in relation to family dynamics, pathophysiology, and psychosocial aspects. Study of current therapeutic modalities and research findings; their influence on nursing practice. Concurrent practicum required.

Staff.

NRSG 557 Pathophysiology (3)

Utilizing systems theory, disease is seen as loss of steady state. Mechanisms of disease, body response, effects on normal functions, and interaction of body systems emphasized.

Prerequisite: PHSL 304 or equivalent.

Fickess.

NRSG 577 Family Systems Theory (3-4)

A review of Bowen theory of family systems and an introduction to family psychotherapy as an outgrowth of the theory. Four units required for nursing administration and MFAM majors.

Pride.

NRSG 579 Family Systems Seminar (1-2)

Application of Bowen family theory to students' own families.

Prerequisite: NRSG 577

Pride.

NRSG 604 Nursing in Family Systems (3)

Concepts and theories guiding advanced nursing practice, including Loma Linda University's conceptual framework for nursing; family assessment models; and nursing diagnosis. Required for all majors. Clinical practicum concurrent.

Staff.

NRSG 606 Community and Mental Health Nursing (3)

Study given to the organization of human systems, special populations, and communities and their influence on health behaviors. Nursing process used in the identification of health-care needs and the fostering of community mental health. Required for clinical majors. Clinical practicum concurrent.

Carrigg.

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. Explanation of theories and research findings dealing with the evolving parent/child relationship. Concurrent practicum required.

Woodward.

NRSG 615 The Childrearing Family (3)

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. Concurrent practicum required.
Heppenstall, Woodward.

NRSG 616 Human Development in the Life Cycle (3)

Review of major theories and research findings about human development during childhood, adolescence, adulthood, and old age. Physiological growth/change, personality development/change, cognition, social relationships, socialization, and family development.
Heppenstall.

NRSG 617 The Family at Risk: Perinatal (3)

Explores pathophysiologic and psychosocial aspects of selected high-risk problems of mother and newborn in the perinatal period. Study of actual and potential family system dysfunction. Emphasis on collaborative roles of family nurse and other health professionals. Concurrent praticum required.
Staff.

NRSG 624 The Adult and Aging Family (3)

Utilizes the Loma Linda University conceptual framework for nursing, with the self-care function of preservation, restoration, individuation, and protection as the organizing frame. Theoretical models utilized to formulate hypotheses for testing and to guide alternate therapeutic approaches in the adult and aging client. Clinical practicum concurrent.
Fickess.

NRSG 626 Cardiopulmonary/Respiratory/Renal Nursing (3)

A clinical option within the adult and aging nursing major. Nursing of the acute and chronically ill client. Opportunity to formulate hypotheses for clinical testing. Clinical practicum concurrent.
Staff.

NRSG 681 Research Methods and Design in Nursing I (2)

Emphasizes the application of research process to nursing problems and the design in a professional scientific context. Includes the use of statistics and the computer in data analysis.
Prerequisite: STAT 404 or equivalent, NRSG 498 or equivalent.
Miller, Staff.

NRSG 682 Research Methods and Design in Nursing II (3)

Application of research concepts in proposal development. Peer review of graduate student research proposals. Includes the use of statistics and the computer in data analysis.
Prerequisite: NRSG 681.
Miller, Staff.

NRSG 698 Research and Thesis in Nursing (2-6)

The nonthesis project requires registration for two units. For thesis credit, a total of six units is required.
Faculty.

POSTBACCALAUREATE CERTIFICATE PROGRAM

CERTIFICATE IN NURSING MANAGEMENT

This program provides opportunity for nurses in leadership positions to acquire knowledge and skills needed to improve their managerial competence. The curriculum provides the basic elements in understanding organizations, their structure/process, and the human component. It also provides concepts in fiscal/legal issues and their implications for nurse leaders. Twenty quarter units are required for the certificate in nursing management.

Prerequisite admission requirements The following are prerequisite for admission:

Employment in a nursing management or leadership position.

Current B.R.N. licensure or equivalent.

B.S. in nursing.

Course requirements The following courses are required:

		UNITS
NRSG 543	Nursing Administration	4
BUAD 513	Human Resources Management (or equivalent)	4
BUAD 525	Organizational Theory and Behavior (or equivalent)	4
_____	Electives (see below for suggested electives)	8
		20

The following are suggested elective courses:

NRSG 507	Concept and Theory Development in Nursing	3
NRSG 510	Political Process and Professional Issues	2
BUAD 506	Administrative Accounting	4
BUAD 521	Administrative Finance	4
BUAD 535	Budgeting for Service Organization (prerequisite BUAD 521)	4
BUAD 555	Group Process	4

Students choosing to take classwork applicable only to the nursing management certificate may register on an S/U basis rather than for graded credit. Students admitted to the Graduate School may request courses be applied toward a master's degree if taken for graded credit. The certificate is awarded by the School of Nursing.

NUTRITION

FACULTY

U. D. REGISTER, PH.D. University of Wisconsin 1950
Chairman; Professor of Nutrition (on leave)
Biochemistry of nutrition

KATHLEEN K. ZOLBER, PH.D. University of Wisconsin 1968
Interim Chairman; Professor of Nutrition
Food systems administration

JAMES W. BLANKENSHIP, PH.D. University of Wyoming 1969
Professor of Nutrition
Lipids, biochemistry, and nutrition

ALBERT SANCHEZ, DR. P.H. University of California at Los Angeles 1968
Professor of Nutrition
Public health nutrition

BERTRUM C. CONNELL, PH.D. University of Missouri-Columbia 1981
Associate Professor of Nutrition
Food systems administration

WINSTON J. CRAIG, PH.D. University of Queensland 1971 (on leave)
Associate Professor of Nutrition
Nutritional biochemistry

ELLA HADDAD, D.H.SC. Loma Linda University 1979 (on leave)
Assistant Professor of Nutrition
Public health nutrition

PATRICIA K. JOHNSTON, M.P.H. Loma Linda University 1978; M.S. University of Washington 1979
Assistant Professor of Nutrition (on leave)
Community nutrition

ASSOCIATE FACULTY

KENNETH I. BURKE, PH.D., Florida State University 1973
Professor of Nutrition
Foods and nutrition

TERRY D. SHULTZ, PH.D. Oregon State University 1980
Assistant Professor of Biochemistry
Vitamins, biochemistry, nutrition

Programs The Department of Nutrition offers two degrees:

1. A professional program for the Master of Public Health degree is offered through the School of Health and is outlined in the BULLETIN of that School.

2. A program for the Master of Science degree is offered through the Graduate School, as outlined below.

Objectives The offerings of the department are directed toward objectives that —

1. Provide students with an understanding of nutritional concepts for guidance in their efforts to improve the nutritional status of the individual and the community.

2. Prepare students to evaluate the diets of individuals and populations and provide sound bases for making recommendations or initiating programs for nutritional improvements.

3. Instruct in the principles of diet therapy and encourage cooperation with the physician and other members of the medical team.

4. Stimulate scientific curiosity and provide opportunities and facilities for research that will contribute to the fundamental knowledge of nutrition, both basic and applied.

5. Initiate habits of continuing self-education that will enhance professional growth.

6. Assist in fulfilling the objectives of the School and the University.

MASTER OF SCIENCE DEGREE

A student who has a baccalaureate degree with a major in foods and nutrition, or in related areas with an adequate background in nutrition and biochemistry, may apply for graduate study in nutrition. This program is planned to provide for anticipated careers in teaching, research, or public health. A minor in biochemistry is desirable with a nutrition major.

Prerequisite course requirements for this program are as follows: basic nutrition, foods, general chemistry, organic chemistry, human physiology, and microbiology. Biochemistry is helpful but not required for entrance.

The student may choose a thesis or nonthesis option. The thesis option requires 21 units of nutrition courses as well as a thesis on an approved subject. Nine units of research and thesis are required. The nonthesis option requires at least 25 units of nutrition courses, including a monograph in nutrition. An oral examination will be given on the monograph, and a comprehensive written examination is given at the completion of all the courses. A minimum of 48 units is required for graduation.

For a major in nutrition, in addition to electives the following courses are required:

			Thesis	Nonthesis
BCHM	501	Introduction to Biochemistry	X	X
BCHM	514	Medical Biochemistry Laboratory	X	—
NUTR	506	Carbohydrates	X	X
NUTR	508	Lipids	X	X
NUTR	507	Proteins	X	X
NUTR	604	Seminar in Nutrition (3)	X	X
NUTR	694	Research	X	—
NUTR	695	Thesis	X	—
NUTR	696	Monograph in Nutrition	—	X
STAT	509	General Statistics	X	X

The Master of Science degree in nutrition with a thesis option may involve research with a special clinical nutrition emphasis for registered dietitians only.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division 1 of this BULLETIN.

COURSES

GRADUATE COURSES

NUTR 506 Carbohydrates (2)
Nutrition and metabolism of carbohydrates as related to health and disease.
Prerequisite: Biochemistry.
Blankenship.

NUTR 507 Proteins (3)
Nutrition, metabolism, and function of proteins as related to health and disease.
Prerequisite: Biochemistry or consent of the instructor.
Sanchez.

NUTR 508 Lipids (3)
Metabolism and nutrition of lipids as related to health and disease.
Prerequisite: Biochemistry or consent of the instructor.
Blankenship.

NUTR 509 Public Health Nutrition (2-3)
Survey of national and international nutrition problems in the two fields of public health. Concepts of applied nutrition. Two-unit option available only to registered dietitians and persons with similar backgrounds.
Register, Sanchez.

NUTR 515 Minerals (2)
Study of physiological functions and metabolism of selected macrominerals and trace minerals in humans. Interaction of essential minerals with vitamins and toxic minerals.

NUTR 516 Vitamins (2)

Descriptive information on water and fat-soluble vitamins. Biochemical and physiological role or functions and their implication in the health and nutrition of the individual. Newer research in the field of vitamins.

Prerequisite: Biochemistry and physiology.

Register, Blankenship, Shultz.

NUTR 527 Assessment of Nutritional Status (3)

A course designed to acquaint the student with the techniques of nutritional assessment. The dietary history, record, evaluation of nutritional data, anthropometric measurements, biochemical and clinical evaluation, and nutritional counseling.

Sanchez, Staff.

NUTR 528 Special Topics in Nutrition (1)

The science of nutrition as related to the Seventh-day Adventist philosophy of halth.

Prerequisite: NUTR or consent of instructor.

Staff.

NUTR 534 Maternal and Child Nutrition (3)

Role of nutrition in human growth and development, with emphasis on prenatal, infancy, preschool, school age, and adolescence.

Throssell.

NUTR 545 Preventive and Therapeutic Nutrition (3)

A practical approach to the most common nutritional problems met in public health; prevention and therapeutic measures related to patients' needs. Laboratory.

Prerequisite: NUTR 404, physiology, or the equivalent.

Staff.

NUTR 575 Food Systems Management (3)

Application of current management concepts to the administration of a dietary service for effective utilization of resources.

Connell.

NUTR 604 Seminar in Nutrition (1)

Presentation and discussion in the area of interest, individual reports dealing with recent developments. May be repeated for credit.

Prerequisite: Consent of the instructor.

Staff.

NUTR 694 Research (arranged)

NUTR 695 Thesis (2)

NUTR 696 Directed Study (1-4)

Open by arrangement to the advanced student.

NUTR 697 Special Project (1-4)

Extensive study and written report on a selected problem.

PHARMACOLOGY

FACULTY

IAN M. FRASER, PH.D. Cambridge University 1952
Chairman; Professor of Pharmacology
Drug metabolism, chemotherapy

MARVIN A. PETERS, PH.D. University of Iowa 1969
Professor of Pharmacology
Drug metabolism, biochemical pharmacology, neuropharmacology

ALLEN STROTHER, PH.D. Texas A and M University 1963
Professor of Pharmacology
Drug metabolism, biochemical pharmacology, nutrition

BERNARD E. TILTON, M.D., Loma Linda University SM 1948; PH.D. University of California at Los Angeles 1960
Professor of Pharmacology
Autonomic pharmacology, clinical pharmacology

C. RAYMOND CRESS, PH.D. Oregon State University 1970
Associate Professor of Pharmacology
Toxicology

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

ASSOCIATE FACULTY

RALPH E. CUTLER, M.D. University of California at Los Angeles 1956
Professor of Pharmacology, Chief Clinical Pharmacology Section
Clinical Pharmacology

DONALD I. PETERSON, M.D. Loma Linda University SM 1947
Associate Professor of Pharmacology
Neuropharmacology

Programs Qualified students may be admitted to programs leading to the Master of Science degree, the Doctor of Philosophy degree, or concurrent programs for the D.D.S./M.S. degrees, the M.D./M.S. degrees, the D.D.S./PH.D. degrees, or the M.D./PH.D. degrees. The 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.

Applicants for a graduate program in pharmacology are expected to have the following minimum units in their undergraduate preparation:

Biology, 8 quarter units
Chemistry, 20 quarter units (inclusive of general, quantitative, and organic chemistry)
Physics, 8 quarter units

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 satisfied.

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.

Master of Science A minimum of 48 quarter units is required for the degree. Of this total, 30 units must be in pharmacology. The student may select 18 units of cognate courses in consultation with his departmental adviser. Cognate courses usually include biochemistry and physiology, unless the student has had acceptable work previously in one or both areas, in which case other courses may be selected.

A maximum of 12 units 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.

The student planning to continue toward the Doctor of Philosophy degree in pharmacology at this University may elect to bypass the master's degree.

Although a foreign language is not a requirement for the master's degree, students who plan to proceed to a Doctor of Philosophy degree are strongly encouraged to demonstrate, during the course of the master's program, reading ability in at least one of the languages required for the PH.D.

Doctor of Philosophy A student may be admitted to a program of study toward the Doctor of Philosophy degree with a major in pharmacology after completing the Master of Science degree or its equivalent. A minimum of 72 quarter units beyond the master's degree is required. Of this total, 48 units must be in the major field of study, 28 units of which must be formal courses. The remainder may be composed of 20 units of research and 24 units of selected cognate courses.

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 section I of this BULLETIN.

Combined programs In the combined 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 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.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

COURSES

PHARMACOLOGY

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.
Tilton, 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.
Tilton, Staff.

PHRM 555 Laboratory in Neuropharmacology (1)
Experimental studies illustrating the didactic material presented in PHRM 554.
Tilton, 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.
Tilton, Staff.

PHRM 565 Laboratory in Cardiovascular and Renal Pharmacology (1)
Experimental studies illustrating the didactic material presented in PHRM 564. Offered on demand.
Tilton, 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 594 Special Topics in _____ (1-3)
Responsibility for a special literature or laboratory project. Registration must designate one of the following specific fields: autonomic pharmacology, biochemical pharmacology, cardiovascular pharmacology, chemotherapy, clinical pharmacology, comparative pharmacology, drug abuse, drug interactions, drug metabolism, endocrine pharmacology, neuropharmacology, pharmacogenetics, psychopharmacology, renal pharmacology, toxicology.
Fraser, Staff.

PHRM 604 Seminar in Pharmacology (1)
Reports and discussions of recent research in pharmacology.

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)

PHYSICAL EDUCATION AND HEALTH

FACULTY

WALTER S. HAMERSLOUGH, ED.D. University of Oregon 1971
Chairman; Professor of Health and Physical Education
Exercise physiology, motor learning, philosophy

VERNON L. SCHEFFEL, D.P.E. Springfield College 1977
Professor of Health and Physical Education
History, sociology, statistics

NELSON E. THOMAS, PH.D. Florida State University 1974
Professor of Health and Physical Education
Psychology, sociology

SANDRA R. CAVANAUGH, ED.D. Brigham Young University 1982
Associate Professor of Health and Physical Education
Physical Fitness, curriculum

ASSOCIATE FACULTY

WILLIAM J. NAPIER, PH.D. University of Southern California 1972
Professor of Health and Physical Education
History, literature

ROBERT K. SCHNEIDER, M.A. Loma Linda University 1974
Associate Professor of Health and Physical Education
Administration

The main objectives of the graduate program in physical education and health are to assist students in attaining qualifications necessary for teaching in secondary schools and in colleges; to prepare students for research in physical education and health; to prepare students to develop and administer physical fitness programs in churches, schools, and industry; and to prepare students for advanced graduate study.

The applicant is normally expected to have a baccalaureate degree with a major in physical education or health from an accredited college. If the college record and test scores indicate any weaknesses or deficiencies, the student may be required to take additional preparatory undergraduate study.

Degree requirements Degree requirements include:

1. A minimum of three quarters in residence as a graduate student. This may be met by attendance for three summers.
2. A minimum of forty-eight quarter units of graduate credit (at least twenty-four units must be courses numbered above 500).
3. A minimum of twenty units in physical education courses.
4. From twelve to sixteen units in health.
5. A course in research methods.
6. Master's thesis or an approved alternative project.
7. Comprehensive written and oral examinations.

The student who is preparing to teach should consult the credentials adviser in the School of Education for guidance.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section in division I of this BULLETIN.

COURSES

UPPER DIVISION COURSES
APPLICABLE TO GRADUATE PROGRAMS

PETH 314 Community Health (3)

PETH 317 Health and Society (3)

PETH 344 Adaptive Physical Education (2)

PETH 408 Management of Physical Education and Intramural Programs (4)

PETH 414 Mental Health and Drug Abuse Education (4)

PETH 415 Consumer Health and Disease (4)

PETH 416 Human Sexuality (2)

PETH 417 Safety Education (2)

PETH 418 Topics in Physical Education and Health (1-4)

PETH 424 Biomechanics (4)

PETH 426 Exercise Physiology (4)

PETH 427 Motor Learning (4)

PETH 429 Tests and Measurements (2-4)

PETH 444 Principles of Physical Fitness (2)

PETH 464 Principles of Epidemiology (3)

PETH 473 Environmental Health (3)

PETH 489 God-Man-Sport (4)

GRADUATE COURSES

PETH 506 Philosophy of Physical Education (4)
Offered 1986-87.

PETH 508 Literature and Issues of Physical Education Programs (4)
A critical appraisal of contemporary trends and issues. Investigation and analysis of professional literature. Offered 1985-86.

PETH 509 Curriculum and Facilities (4)
Steps in curriculum construction, planning, design, and evaluation, of facilities. Offered 1986-87.

PETH 514 Seminar in Physical Education and Health (1-4)
Course content may vary from year to year and may be repeated for credit.

PETH 524 Human Performance Laboratory (1-4)
Advanced techniques and analysis of selected motor skills.

PETH 526 Scientific Aspects of Physical Activity (4)
Current issues and problems in the area of biomechanics, exercise physiology, and sports medicine. Offered 1987-88.

PETH 527 Psychology of Physical Activity (4)
Variables that influence athletic behavior. Offered 1985-86.

PETH 528 Laboratory Techniques (4)
Use of equipment and techniques utilized in research.

PETH 555 Sociology of Sport (2)
Survey of sport as cultural phenomena, with emphasis on social values, personality, attitudes, competition, collective behavior, and group interaction. Offered 1987-88.

PETH 564 History of Physical Education (2)
Genesis, development, events, and trends of physical education. Offered 1987-88.

PETH 589 Research Methods (4)
Methods of scientific inquiry. Development and presentation of thesis proposal.

PETH 599 Directed Study (1-4)
Emphasis on research.

PETH 698 Thesis (4-6)

PHYSIOLOGY

FACULTY

JOHN LEONORA, PH.D. University of Wisconsin 1957
Cochairman; Professor of Physiology
Endocrinology

W. ROSS ADEY, M.D. University of Adelaide 1949
Professor of Physiology
Neurophysiology

KENNETH A. ARENDT, PH.D. Boston University 1955
Professor of Physiology
Cardiovascular physiology, microcirculation

LAWRENCE D. LONGO, M.D. Loma Linda University SM 1954
Professor of Gynecology/Obstetrics and of Physiology
Placental exchange, fetal physiology

GORDON G. POWER, M.D. University of Pennsylvania 1961
Professor of Gynecology/Obstetrics and of Physiology
Placental exchange, fetal physiology

ROBERT A. BRACE, PH.D. Michigan State University 1973
Professor of Physiology
Cardiovascular physiology, fluid dynamics, microcirculation

RAYMOND D. GILBERT, PH.D. University of Florida 1971
Professor of Physiology
Fetal cardiovascular physiology

RAYMOND G. HALL, JR., PH.D. Loma Linda University GS 1968
Associate Professor of Physiology
Cell physiology

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

ELWOOD S. McCLUSKEY, PH.D. Stanford University 1959
Associate Professor of Physiology
Comparative physiology

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

T. JOE WILLEY, PH.D. University of California at Berkeley 1969
Associate Professor of Physiology

CECELIA Y. CHEUNG, PH.D. Stanford University 1975
Assistant Professor of Gynecology and Obstetrics and Physiology
Neuroendocrinology

RAMON R. GONZALEZ, JR., PH.D. Wake Forest University 1973
Assistant Professor of Physiology
Cardiovascular physiology, control of circulation

ROGER L. PLATA, D.D.S., M.S. Loma Linda University 1973
Assistant Professor of Physiology
Oral and respiratory physiology

DONALD R. RAFUSE, PH.D. Washington State University 1973
Assistant Professor of Physiology
Neural aspects of behavior

JOHN W. PATRICKSON, PH.D. Howard University 1978
Assistant Professor of Anatomy and Physiology
Neurophysiology

JEAN-MARC TIECHE, PH.D. Loma Linda University 1979
Assistant Research Professor of Physiology
Endocrinology

Prerequisite 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.

Master of Science The thesis program requires a minimum of forty-eight quarter units for the master's degree. Of this total, a minimum of thirty units must be in physiology, including PHSL 511, 512. The remaining eighteen units may be selected in cognate courses. A maximum of twelve units of the thirty units in physiology should be in research leading to the preparation and successful defense of a formal thesis. The candidate must take a comprehensive written examination in physiology.

The nonthesis program also requires forty-eight units. Of this total, a minimum of thirty units in physiology — including PHSL 511, 512 — and four units of research are required. The research can be done in an area of physiology selected by the student. The remaining eighteen units may be selected in cognate courses. The candidate must take a comprehensive written examination in physiology.

Doctor of Philosophy A student may be admitted to a program of study toward the Doctor of Philosophy degree with a major in physiology after completing the Master of Science degree or its equivalent. A minimum of seventy-two quarter units beyond the master's degree is required. Of this total, forty-eight units must be in physiology — twenty-eight units of which must be formal courses, including PHSL 541, 542. The remainder may be composed of twenty units of research. A minor of twenty-four units of selected cognate courses is 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 section I of this BULLETIN.

Language requirements A reading knowledge of two modern languages other than English is required. However, a synthetic language (e.g., FORTRAN) may be substituted for one language requirement.

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

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

COURSES

PHSL 511, 512 Medical Physiology I, II (6, 6)
The 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 521, 522 Lectures in Physiology I, II (5, 5)
Lectures from PHSL 511, 512.
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)
A 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; 1985-86.
Prerequisite: Zoology (preferably invertebrate), physiology (or biochemistry).
McCluskey.

PHSL 541, 542 Cell and Molecular Biology I, II (4, 4)

Life processes fundamental to animal, plant, and microorganism; a graduate-level introduction. Lecture three units, laboratory one unit each term. Offered alternate years; 1984-85.

Prerequisite: Organic chemistry and one of the following: biochemistry, molecular biology, or cell biology. Physics desirable.

McCluskey, Hall.

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)

A 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; 1985-86.

Prerequisite: Consent of the instructor.

Willey, Rafuse.

PHSL 555 Regulation in Normal and Cancer Cells (lecture) (2)

The regulatory mechanisms of both normal and cancer cells; emphasis on control of DNA synthesis and cell division. Offered alternate years; 1984-85.

Hall.

PHSL 556 Regulation in Normal and Cancer Cells (laboratory) (2)

Introduction to techniques in cell culture, autoradiography, and cell cycle analysis.

Concurrent with, or subsequent to, PHSL 555. Offered alternate years; 1984-85.

Hall.

PHSL 558 Physiology of Exercise and Inactivity (3)

The 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; 1985-86.

Prerequisite: Medical physiology.

Hall.

PHSL 567 Respiratory Physiology (3)

An 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; 1984-85.

Longo, Power.

PHSL 568 Microcirculation and Fluid Dynamics (3)

A study of the microcirculatory control of local blood flow rates and fluid volume distributions between blood and tissues. Emphasis on mechanisms and aspecific characteristics of individual organs, including brain, heart, lungs, kidneys, skin, and skeletal muscles. Includes lymphatic and renal contributions to overall fluid balance. Offered alternate years; 1985-86.

Prerequisite: Medical Physiology 511, 512; or equivalent.

Brace.

PHSL 569 Oxygenation of Tissues (2)

The 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; 1984-85.

Longo.

PHSL 575 Neurobiological Basis of Behavior (3)

The study of animal behavior through consideration of the contribution to behavior by single neurons and neuronal networks. Plasticity and memory overlearning explained at the neuronal network level. The majority of systems studies are invertebrate, although application is made to vertebrate behavior. Offered alternate years; 1984-85.

Rafuse.

PHSL 577 Cardiac Physiology (3)

A 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 permission of the instructor. Offered alternate years; 1984-85.

Gonzalez.

PHSL 578 Vascular Physiology (3)

A study of the physical principles which govern flow of fluids (rheology), the functional anatomy, and the reflexes of the peripheral circulation. Also considered are the autonomic control of vascular smooth muscle and the hemodynamic behavior of special circulations such as brain, heart, skeletal muscle, etc. Offered alternate years; 1985-86.

Prerequisite: Calculus, an advanced physiology course, or permission of the instructors.

Gonzalez, Gilbert, Arendt.

PHSL 579 Classic Readings in Circulatory Physiology (2)

An analysis of the pathology of scientific discovery in gaining an understanding of the dynamics and control of the cardiovascular system. Reading and discussion of some of the landmark works in the field, including those of William Harvey, Richard Lower, Stephen Hales, Jean L. M. Poiseville, Carl F. W. Ludwig, Claude Bernard, Otto Frank, Ernest H. Starling, and others. Offered alternate years; 1985-86.

Prerequisite: Medical Physiology 511, 512; or equivalent.

Longo.

PHSL 584 Readings in Neurophysiology (2)

A 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. Offered alternate years; 1985-86.

Prerequisite: Consent of the instructors.

Rafuse, Willey.

PHSL 585 Endocrinology (3)

A 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; 1985-86.

Leonora.

PHSL 586 Fetal and Neonatal Physiology (2)

A study of the normal and abnormal physiology of the developing fetus and neonate. Emphasis on problems of placental exchange, placental and fetal circulation, and blood gases; papers and current investigative work. Offered alternate years; 1984-85.

Longo, Power.

PHSL 587 Physiology of Reproduction (2)

A study of the development of the male and female reproductive systems, the hormonal control of reproductive function, fetal development, and parturition. Offered alternate years; 1984-85.

Leonora.

PHSL 588 Neuroendocrinology (2)

The role of the central nervous system in the control of endocrine functions. Major areas of emphasis include the anatomy of the neural structures and pathways involved, the physiology of the pituitary gland, the central catecholamines, and the neural peptides mediating these regulatory mechanisms. The feedback control relationships and the maintenance of homeostasis of various physiological and behavioral functions and their respective hormonal systems. Offered alternate years; 1984-85.

Cheung.

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 taken more than once for credit. Offered alternate years; 1984-85.
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. Offered alternate years; 1985-86.
McCluskey.

PHSL 604 Seminar in Physiology (1)

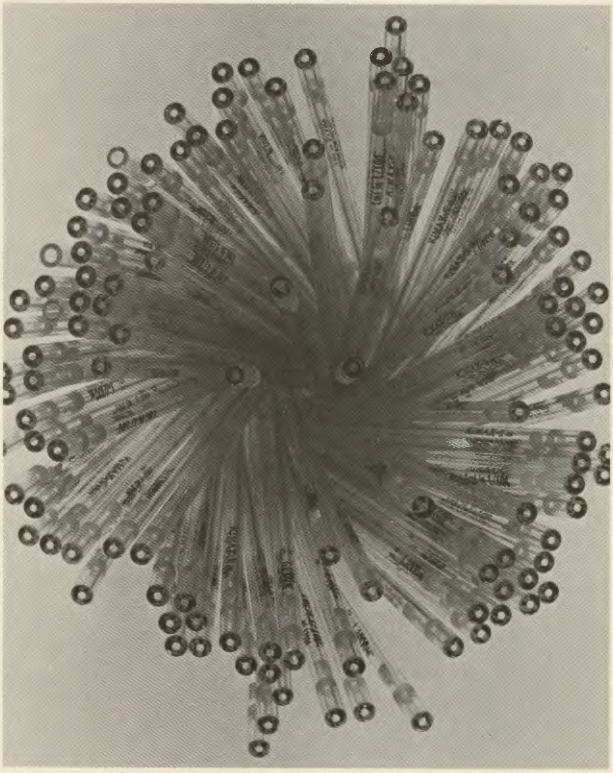
Literature and research reports on selected topics. Required of all graduate students. Credit optional.

PHSL 694 Special Problems in Physiology (arranged)

PHSL 697 Research (1-18)

PHSL 698 Thesis (1)

PHSL 699 Dissertation (2)



RELIGION

FACULTY

KENNETH L. VINE, PH.D. University of Michigan 1965
Dean; Professor of Biblical Studies
Archaeology and Old Testament

WILBER ALEXANDER, PH.D. Michigan State University 1962
Professor of Theology and Clinical Ministry
Clinical ministry

NIELS-ERIK ANDREASEN, PH.D. Vanderbilt University 1971
Professor of Old Testament
Old Testament

V. BAILEY GILLESPIE, PH.D. Claremont Graduate School 1973
Professor of Theology and Christian Personality
Theology/Christian nurture

A. GRAHAM MAXWELL, PH.D. University of Chicago Divinity School 1959
Professor of New Testament
New Testament

JACK W. PROVONSHA, M.D. Loma Linda University 1953; PH.D. Claremont Graduate School 1967
Professor of Philosophy of Religion and Christian Ethics
Christian ethics

WALTER F. SPECHT, PH.D. University of Chicago 1955
Emeritus Professor of New Testament
New Testament

DALTON D. BALDWIN, PH.D. Claremont Graduate School 1975
Professor of Christian Theology
Theology

JONATHAN M. BUTLER, PH.D. University of Chicago Divinity School 1975
Professor of Church History
Church history

M. JERRY DAVIS, REL.D. School of Theology at Claremont 1967
Associate Professor of Pastoral Care
Clinical ministry/chaplain training

PAUL J. LANDA, PH.D. Vanderbilt University 1976
Professor of Church History
Church history

T. RICHARD RICE, PH.D. University of Chicago Divinity School 1974
Professor of Theology
Theology

CHARLES W. TEEL, JR., PH.D. Boston University 1972
Professor of Religion and Sociology
Religion and society

DON R. HAMER, REL.D. School of Theology at Claremont 1968; PH.D. Claremont Graduate School 1980
Assistant Professor of Theology
Theology

DAVID R. LARSON, PH.D. Claremont Graduate School 1982
Associate Professor of Christian Ethics
Christian ethics

LEON I. MASHCHAK, M.A. Andrews University 1963
Assistant Professor of Old Testament
Old Testament

GORDON R. MATTISON, D. MIN. San Francisco Theological Seminary 1982
Associate Professor of Applied Theology
Theology

JAMES W. WALTERS, PH.D. Claremont Graduate School 1979
Assistant Professor of Religion and Christian Ethics
Christian ethics

ASSOCIATE FACULTY

F. LYNN MALLERY, D.MIN. San Francisco Theological Seminary 1973; S.T.D. 1979
Associate Professor of Applied Theology
Applied theology

LOUIS VENDEN, PH.D. Princeton Theological Seminary 1979
Associate Professor of Preaching
Applied theology

Degrees The Division of Religion offers the Master of Arts degree. It is designed to equip students for research and other scholarly careers in religion, to train teachers of religion for secondary schools, and to prepare Christian workers.

MASTER OF ARTS

Admission requirements specific to this degree are an adequate undergraduate preparation, generally through a major or minor emphasis in religion, or the equivalent.

DEGREE REQUIREMENTS:

1. A total of 48 units of graduate credit, with at least 28 units in courses numbered 500-699. Up to 9 units of credit may be transferred from an approved graduate program. A minimum of 18 units of the bilingual (Hispanic) curriculum must be in the student's second language (English or Spanish).
2. One course in research methods for religious studies and one coures in scholarly writing. Bilingual (Hispanic) ministry students must meet the latter requirement in both English and Spanish. Students who come with the necessary skills as demonstrated in honors papers, theses or publications, may apply for exemption from this requirement.
3. A reading tutorial in the area of specialization and two graduate seminars.
4. A grade point average of B (3.00) or better.
5. A reading proficiency in a modern or classical foreign language (for students specializing in Bible or church history).
6. Satisfactory performance on a written comprehensive examination in the candidate's field(s) of study.
7. A thesis (4 units of credit) or two major papers originally prepared for graduate seminars, but revised to the satisfaction of the student's guidance committee.

For information about requirements and practices to which all graduate students are subject, the student should consult the Academic Practices section of division I of this BULLETIN.

1. The student may, in consultation with the adviser, select courses from the following areas of specialization: biblical studies, Christian ethics, church history, church and ministry, and theology.

2. A curriculum with a professional orientation is available in religious education: Biblical studies (8 units), church history (8 units), ethics and theology (8 units), religious education and nurture (20 units), to be chosen from the following: RELT 564; RELP 515, 568, 584, 585, 586, 615; EDCI 547, 574.

Credentials and licenses The following programs leading to professional certification are available at Loma Linda University:

1. TEACHING CREDENTIALS Graduate students in religious education may earn denominational teaching credentials from the Office of Education in the North American Division of Seventh-day Adventists. The requirements for these credentials are met by courses in biblical studies, historical studies, theological and ethical studies, and by the following courses available through the School of Education: EDFO 305, 404; EDCI 414, 433 (3 units), 456 (9 units), 574.

2. CLINICAL PASTORAL EDUCATION In the setting of the University Medical Center, the University makes available a program in clinical pastoral education approved by the Association for Clinical Pastoral Education, Inc., an interdenominational body that certifies ministers and seminary students for the clinical experience. The applicant should be a graduate of an accredited college and should have completed at least one year at a theological seminary, with courses in pastoral counseling and psychology. Students who wish graduate credit must meet the entrance requirements of the Graduate School. Questions should be addressed to the Chaplain Supervisor, Loma Linda University Medical Center, Loma Linda, California 92350.

Courses of instruction Graduate students will normally choose courses numbered between 500-699. Certain advanced upper division undergraduate courses (numbered 400-499) are also acceptable for graduate credit. Unless specified in a curriculum, such undergraduate courses should be selected *only* in consultation with a Division of Religion adviser (for a listing of advanced upper division undergraduate courses, refer to the Division of Religion BULLETIN). Students who anticipate having to transfer graduate credits from Loma Linda University to professional or graduate programs in other schools of religion or theological seminaries should know that ordinarily only courses numbered 500-699 will be acceptable as graduate transfer credit.

COURSES

BIBLICAL STUDIES

RELB 505 The Making of the Bible (3-4)
The writing of the sacred books, their collection into one book, their transmission in handwritten form, and their translation into today's languages.

RELB 506 The Pentateuch (3-4)
The place of the Pentateuch in the Old Testament, followed by an investigation of its key themes, such as Creation and Fall, election and promise, law and covenant, and wanderings in the wilderness.

RELB 507 Wisdom Books of the Old Testament (3-4)
The meaning and role of wisdom in Israel and in surrounding nations, followed by an examination of the Old Testament wisdom literature: Job, Proverbs, Ecclesiastes, and certain Psalms.

RELB 545 Biblical Archaeology (3-4)
The Bible in its religious, cultural, and political environment as illuminated by discoveries of modern archaeology.

RELB 554 The Gospels (3-4)
A study of the Gospels that includes an examination of the synoptic problem and an exegesis of major passages.

RELB 555 Old Testament Exegesis (3-4)
May be repeated.
Prerequisite: Consent of the instructor.

RELB 558 Old Testament Theology (4)
The major theological concepts of the Old Testament, with a view to their impact on Christian life and thought.

RELB 559 New Testament Theology (4)
An examination of the major theological themes of the teaching of Jesus as set forth in the Gospels, the Kerygma of the primitive Church, the letters of Paul, and the Johannine writings.

RELB 564 The Letter to the Romans (3-4)
An introduction to the book, with an exegesis of its text and consideration of its major theological themes.

RELB 565 New Testament Exegesis (3-4)
May be repeated.
Prerequisite: Consent of the instructor.

RELB 568 Hebrews (3-4)
An introduction to the book, with an exegesis of its text and a consideration of the major theological themes presented.

RELB 606 Seminar in Near Eastern History and Literature (3-4)
Prerequisite: Consent of the instructor.

RELB 614 Old Testament Seminar (3-4)
May be repeated up to 12 units.
Prerequisite: Consent of the instructor.

RELB 624 New Testament Seminar (3-4)
May be repeated up to 12 units.
Prerequisite: Consent of the instructor.

RELB 630 Fieldwork in Middle East Archaeology (1-8)
Prerequisite: Consent of the instructor.

RELB 674 Reading Tutorial in Biblical Studies (3-4)
Prerequisite: Consent of the instructor.

RELB 698 Thesis in Biblical Studies (4)

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

CHURCH AND MINISTRY

PROFESSIONAL STUDIES

RELP 504 Research Methods in Religion (2)
Philosophical presuppositions and methods used in the field of religion. Basic resources and procedures for scholarly research. The use of the library as a research center. Bibliography in the varius religious disciplines. The construction of term papers and theses; advanced techniques and practice of expository and persuasive writing.

RELP 514 Fieldwork in Educational Ministry (1)
Practice in teaching in an educational setting, interaction with students in a learning setting either in a school or a church. May be repeated for additional credit to a maximum of 3 units.
Prerequisite: RELP 468.

RELP 515 Youth Ministry and the Local Church (3)
Designed to provide insight into the theology, organization, and methods of local youth ministry. The problem of what to do in the local setting with youth as they grow toward God. Consideration of the problems of leadership, activities, models of ministry, and current materials available.

RELP 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 to enrollment.
Prerequisite: Consent of the instructor and the director of the program.
Credit earned in this course is recognized by the Association for Clinical Pastoral Education, Incorporated. A maximum of 6 units of credit may be applicable to a Master of Arts degree in religion. A qualified student wishing to earn credit in Clinical Pastoral Education must receive permission from the graduate advisers and the Graduate School Admissions Committee prior to enrollment.

RELP 525 Fieldwork in Pastoral Ministry (1)
Practical application of the practice of ministry into an overall theory of ministry. May be repeated for additional credit to a maximum of 3 units.
Prerequisite: Consent of the instructor.

RELP 527 Crisis Care (3-4)
Crisis phenomena, current crisis theory, a Christian model of crisis care, and the dynamics and practices of crisis care.

RELP 536 Pastoral Counseling (3)
The biblical and theological bases of and methodologies for pastoral counseling as it relates to the unique role of ministers.

RELP 539 Theology of Ministry (3-4)
Biblical and theological bases of and methods for helping relationships as they relate to the unique role of the ministry.

RELP 544 Theology, Encounter, and Family Therapy (3-4)

A study of the basic foundations of traditional Christian theology as they relate to the development of personality and provide a basis for effective living. Evaluation of relational processes in the light of ethical, moral, and value decisions.

RELP 568 Methods of Educational Ministry (3)

A critical examination of the foundations, theories, and practices of Christian education as an aspect of ministry. Emphasis on practical application of theology and religious development as it relates to the educational setting. Development of materials for secondary Bible teaching.

Prerequisite: RELT 564.

RELP 569 Methods in Health Evangelism (3-4)

Effective methods through which health professionals can use their training to make the evangelistic outreach of the church more effective through medical practices, hospitals, and church-based health programs.

RELP 584 The Christian Nurture of Children and Adolescents (3)

The nature and religious needs of children from birth to twelve years of age. Responsibilities of the home, the church school, and the congregation for the nurture of children.

RELP 585 Adult Development and Religious Experience (3)

Exploration of the dynamics in adult crisis and faith emergence and their expression in the religious commitment of the adult years. Methods and materials for working with adults in the church.

RELP 586 Moral Learning and Values in Religious Formation (3)

A critical, in-depth examination of faith emergence, value formation, and moral growth. A study of the major theorists as they relate to religious development, including Fowler, Kohlberg, Simons, James, and Sherrill.

RELP 604 Seminar in Church and Ministry (3-4)

Prerequisite: Consent of the instructor.

RELP 605 Seminar in Personal Evangelism (1)

A practical seminar in which the student gains experience in giving Bible studies to interested people in the community under the guidance of the instructor. May be repeated for additional credit to a maximum of 3 units.

RELP 606 Seminar in Worship (3-4)

RELP 607 Seminar in Pastoral Counseling (3-4)

RELP 674 Reading Tutorial in Professional Studies (3-4)

Prerequisite: Consent of the instructor.

RELP 694B Seminar in Counseling Adventist Youth (3)

A practical study of the concepts of biblical counseling, with emphasis on issues of moral concern and values development for modern Christian youth. Identical to EDCE 694B.

RELP 698 Thesis (4)

RELP 699 Directed Study (2-6)

Prerequisite: Consent of the instructor.

RELE 524 Christian Bioethics (3-4)

Designed to give the graduate student an in-depth acquaintance with 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 alternatives encountered by public health administrators, educators, and investigators.

RELE 545 Sociology of Religion (3-4)

A descriptive examination of church as a social institution. Dynamics of change as a religious movement evolves toward a religious institution. Models of relationship between church and world. Content analysis of sectarian characteristics in the early *Review and Herald* periodicals.

RELE 548 Christian Social Ethics (3-4)

An in-depth opportunity for the graduate student to discover what are the implications of Christian belief for selected problems in social ethical theory and practice.

RELE 577 Theological Ethics (3-4)

Ethical dimensions of theological positions advocated in the twentieth century.

RELE 588 Types of Ethical Theory (3-4)

A critical analysis of the basic theories propounded in philosophical ethics. A study of the writings of major ethical theorists, including Plato, Aristotle, I. Kant, and J. S. Mill. A consideration of philosophical ethics as compared with the Christian faith and Seventh-day Adventism.

RELE 624 Seminar in Christian Ethics (3-4)

Prerequisite: Consent of the instructor.

RELE 674 Reading Tutorial in Christian Ethics (3-4)

Prerequisite: Consent of the instructor.

RELE 694 Colloquium in Christian Ethics (1)

Monthly discussions of topics and issues pertinent to graduate students and faculty in Christian ethics. May be repeated to a maximum of four units.

RELE 698 Thesis (4)

RELE 699 Directed Study (2-6)

Prerequisite: Consent of the instructor.

HISTORICAL STUDIES

RELH 555 Religion in American Life (3-4)
The place of religion in American intellectual, political, social, and cultural developments from the colonial period to the present. Identical to HIST 555.

RELH 566 The Early Christian Church (3-4)
Study from primary sources of the important men, developments, and ideas in the Christian Church from apostolic times through the fifth century A.D. Offered alternate years. Identical to HIST 566.

RELH 567 The Medieval Church (3-4)
Study from primary sources of the important men, developments, and ideas in the Christian Church from the sixth through the fifteenth centuries. Offered alternate years. Identical to HIST 567.

RELH 568 History of the Papacy and Roman Catholicism (3-4)
Historical and theological development of the Papacy and Roman Catholicism during the patristic, medieval, and modern periods. Offered alternate years. Identical to HIST 568.

RELH 574 The Lutheran Reformation (3-4)
A study of Martin Luther, his theology, and the Reformation movement he initiated down to 1555. Offered alternate years. Identical to HIST 574.

RELH 576 The Swiss Reformation and Calvinism (3-4)
Leading men and movements of the Swiss Reformation, with particular emphasis on John Calvin and the theological and sociological legacy of Calvinism. Offered alternate years. Identical to HIST 576.

RELH 578 The English Reformation (3-4)
Main historical forces and religious movements of the English Reformation until the Westminster Assembly. Offered alternate years. Identical to HIST 578.

RELH 585 History of Seventh-day Adventism (3-4)
A study of major doctrinal and organizational developments within Seventh-day Adventism from its Millerite origins to 1922. Identical to HIST 585.

RELH 586 Ellen G. White: Her Life and Thought (3-4)
A study of the key events in the life of Ellen G. White (1827-1915) and her major theological contribution. Offered alternate years. Identical to HIST 586.

RELH 587 Natural Theology: A Historical Survey (3-4)
A historical survey, beginning with the Middle Ages, of different approaches to the question of faith and reason, or what can be known of God by rational inquiry alone, within Christian thought. Identical to HIST 587.
Prerequisite: Consent of the instructor.

RELH 588 Protestant Thought in the Twentieth Century (3-4)
An examination of the major figures, issues, and resources of contemporary Protestant theology. Identical to HIST 588.
Prerequisite: Consent of the instructor.

RELH 604 Seminar: Problems in the History of Seventh-day Adventist Theology (3-4)
Prerequisite: Consent of the instructor.

RELH 635 Seminar in Church History (4)
Prerequisite: Consent of the instructor.

RELH 674 Reading Tutorial in Historical Studies (3-4)
Prerequisite: Consent of the instructor.

RELH 698 Thesis (4)

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

RELT 506 Seventh-day Adventist Beliefs and Life (2-3)
Introduction to beliefs and lifestyle in Seventh-day Adventism. Limited to students who are not members of the Seventh-day Adventist church. Offered on demand.

RELT 536 Religious Belief and the Modern World (3-4)
Reality and relevance of God for contemporary man.

RELT 538 The Doctrine of Man (3-4)
The Christian understanding of the nature and destiny of human beings. Anthropological concepts in the Bible and in Christian thought.

RELT 539 The Doctrine of God (3-4)
Study of the nature and attributes of God, the trinitarian concept of God, and God's relation to the temporal world.

RELT 548 The Doctrine of Christ (3-4)
Study of the person and work of Christ. Attention given to the nature of Christ and his atoning work in his life on earth, his death on the cross, and his intercession in the heavenly sanctuary.

RELT 564 Religious Development and Nurture (4)
Biblical principles of emerging self-identity and faith concepts. Religious development of children, adolescents, and youth. Religious learning problems and practical methodologies in communicating religious values.

RELT 604 Seminar in Religion and Science (3-4)
Prerequisite: Consent of the instructor.

RELT 614 Seminar in Theological Studies (3-4)
May be repeated up to 12 units.
Prerequisite: Consent of the instructor.

RELT 615 Seminar in Philosophy of Religion (3-4)
Offered on demand.
Prerequisite: Consent of the instructor.

RELT 616 Seminar in Religious Experience (3-4)
Offered on demand.
Prerequisite: Consent of the instructor.

RELT 674 Reading Tutorial in Theological Studies (3-4)
Prerequisite: Consent of the instructor.

RELT 698 Thesis (4)

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

MISSION STUDIES

These courses are not available in 1984.

RELM 534 Anthropology of Mission (3)
A study of mission, applying the findings of anthropology as they relate to cultural change. The processes of religious development, the means of diffusion, the factors affecting religious acculturation, and the analysis from case studies of programs planned to direct changes in religion. Identical to ANTH 534.

RELM 537 The Qur'an (3)
A study of the Qur'an, noting its sources, structures, inspiration, and purpose. Attention given to the Qur'an as literature, to the great ideas of the Qur'an, and to principles of interpretation.

RELM 545 The Religion of Islam (3)
A study of the history of the development of Islamic institutions. Islam depicted as a way of life based on divine law. Includes the discussion of formative era for law and theology, institutions of the Persian and Turkish dynasties, and more recent movements of reform and revival.

RELM 546 The Religions of the East (3)
A survey of Hinduism, Buddhism, Confucianism, Taoism, and Shinto. Emphasis determined by the interest of the class.
Prerequisite: RELM 444 or consent of the instructor.

RELM 547 The Religions of Africa (3)
An investigation of folk religion through case studies; the investigation of African forms of Christianity and Islam.
Prerequisite: RELM 444 or consent of the instructor.

RELM 548 The Religions of Latin America (3)
A study of the historic religions of Latin America and their interaction with Christianity and contemporary religious movements in the area.
Prerequisite: RELM 444 or consent of the instructor.

RELM 564 Theology of Mission (3)
A study of the biblical theology applied to defining the concerns, structures, and methods of mission. Mission as a general function of the church and as specific activities related to persons, time, and place. Topics include the idea of the church, the definition of missionary, the priorities of mission, and the place of eschatology.

RELM 575 Structure and Practice of Mission (3)
A study of mission, noting the structures and programs of the Seventh-day Adventist church for mission, and the major problems encountered by the missionary. Problems of religious experience, career planning, health maintenance, family needs, and personal relationships.

RELM 624 Seminar: Mission Studies (2-4)
Prerequisite: Consent of the instructor.

RELM 637 Seminar: Teachings of the Qur'an (2-4)
Prerequisite: Consent of the instructor.

RELM 644 Seminar: Comparative Religion (2-4)
Prerequisite: Consent of the instructor.

RELM 674 Reading Tutorial in Mission Studies (2-4)
Prerequisite: Consent of the instructor.

RELM 698 Thesis (4)

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

SOCIOLOGY

FACULTY

WON K. YOON, PH.D. Louisiana State University 1976
Chairman; Professor of Sociology
Social theory, ethnic relations, methodology

ANEES A. HADDAD, PH.D. University of Southern California 1971
Dean, College of Arts and Sciences
Professor of Sociology and Family Studies (on leave)
Family, socialization, Middle East

JAMES H. STIRLING, PH.D. University of California at Los Angeles 1968
Professor of Anthropology
Cultural anthropology, archaeology, Middle America

IAN P. CHAND, PH.D. Pennsylvania State University 1980
Associate Professor of Sociology and Family Studies
Community, family, religion, youth

ASSOCIATE FACULTY

JOHN W. ELICK, PH.D. University of California at Los Angeles 1969
Professor of Anthropology; Curator, Anthropological Museum
Conductor, the Institute of World Missions

JERRY W. LEE, PH.D. University of North Carolina 1976
Associate Professor of Psychology
Social psychology

CHARLES W. TEEL, JR., PH.D. Boston University 1972
Associate Professor of Religion and Sociology
Religion and society

The aim of the program in sociology is to broaden the student's understanding of the organization and function of society. The factors that operate to promote cultural stability and change, the effects of contact between peoples of differing cultures, and the social movements of the modern world scene are best understood against a background of theory and practice. This understanding is essential to a liberal education.

The program is designed for persons who intend to engage in teaching, research, medical arts, mission service, or administration, either in the United States or abroad. There are two objectives: (1) to further the education of those who intend to make some aspect of sociology their lifework; and (2) to broaden, by cognate offerings, the professional and liberal arts education given in various schools in the University.

Master of Arts The student specializes in sociology in preparing for the master's examination, but takes 8 units of courses in a field not chosen for specialization. The program of studies is arranged in consultation with the adviser, consideration being given to the amount and quality of undergraduate preparation. The prospective student whose undergraduate major is in other than the social sciences is required to take supplementary courses in preparation for the comprehensive examination.

Professional students The professional school registrant who desires to enroll in graduate-level sociology courses must have taken an introductory course or a course in social psychology.

Degree requirements Essential to fulfill the requirements for the Master of Arts degree are:

1. A minimum of 3 quarters in residence as a graduate student.
2. A minimum of 45 quarter units of graduate credit in sociology, and related fields, of which at least 24 units are in graduate-level courses and seminars (numbered 500 and above) in the field of specialization.
3. Social theory: (*a*) seminars in theory, (*b*) core literature as specified by the department, (*c*) critiques and/or abstracts as assigned.
4. Research competence: (*a*) introductory statistics (prerequisite to research methods, preferably taken before entering the graduate program); (*b*) graduate-level research methods course; (*c*) foreign language and/or computer language and/or advanced statistics.
5. Thesis, 10 quarter units.
6. Satisfactory performance in a written comprehensive examination.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

ANTHROPOLOGY COURSES

UPPER DIVISION COURSES APPLICABLE TO GRADUATE PROGRAM

ANTH 306 Language and Culture (4)

ANTH 308 Geography of Man (4)

ANTH 309 Cultural Ecology (4)

ANTH 425 Sociocultural Change (4)

ANTH 434 Anthropology of Mission (2)

ANTH 444 Comparative Religion (4)

ANTH 445 Culture and Personality (4)

ANTH 447 Applied Anthropology (4)

ANTH 448 Medical Anthropology (4)

ANTH 488 Current Issues in Sociology (2)

ANTH 498 Laboratory Projects (1-6)

GRADUATE COURSES

ANTH 506 Transcultural Health Care (3)
Identical to NRSG 506.

ANTH 534 Anthropology of Mission (3)
Identical to RELM 534.

ANTH 544 Comparative Religion (4)
Identical to RELM 544.

ANTH 604 Seminar: Cultural Anthropology (4)
Intensive work on particular problems in some aspect of cultural anthropology.

ANTH 625 Seminar: Sociocultural Change (4)
Evaluation of various theories of culture change. Individual research in specific culture-change problems.

ANTH 626 Seminar: Anthropological Linguistics (4)
The role played by language in perception and cognition. Ethnographic research in linguistic domains as indicators of culturally determined cognitive ranges and emphases. Structural analysis of a selected language.

ANTH 634 Seminar: Social Theory (4)
A seminar required of both sociology and anthropology master's degree candidates.

ANTH 644 Seminar: Comparative Religion (4)
Reading and discussion of current anthropological writing on the role of religion in maintaining the cultural system. Research in particular religious systems, mythology, and world view.

ANTH 648 Seminar: Medical Anthropology (4)
Research in traditional medical systems (folk medicine, curanderismo, shamanism, etc.), folk psychiatry, ethnopharmacognosy, dental anthropology.

ANTH 665 Fieldwork in Ethnography (arranged)
Individual program of field research in social anthropology, under the supervision of a faculty member acquainted with the society or community chosen for study.

ANTH **694 Directed Reading (arranged)**

ANTH **697 Research (4-6)**

SOCIOLOGY COURSES

UPPER DIVISION COURSES APPLICABLE TO GRADUATE PROGRAM

SOCI **306 Social Issues (4)**

SOCI **375 Criminology (4)**

SOCI **376 Juvenile Delinquency (4)**

SOCI **404 Foundations of Social Thought (4)**

SOCI **414 Sociology of the Family (4)**

SOCI **415 Urban Sociology (4)**

SOCI **416 Collective Behavior (4)**

SOCI **417 Sociology of Religion (4)**

SOCI **488 Current Issues in Sociology (2)**

GRADUATE COURSES

SOCI 505 Social Research Methods (4)

Analysis of current social research methods. Practice in the use of techniques. Consideration of the philosophy of scientific method.

Prerequisite: An introductory course in statistics.

SOCI 514 The Family: Crosscultural Family Values (4)

Systematic and comparative analysis of the American family and family systems of other cultures. Changing family patterns. The future of the family in an urbanizing world into the twenty-first century. The family as a value-maintaining and a value-transmitting institution.

SOCI 525 Population (2-4)

Introduction to demography. Analysis of the development and current status of population problems. Consideration of current population-control programs and their progress. Offered on demand.

SOCI 604 Seminar: Social Psychology (4)

Consideration of specific areas of social psychology. Evaluation of current research in the field. Offered on demand.

SOCI 605 Seminar: Middle Eastern Cultural History (4)

Survey of the cultural history of the development of civilization in the East.

SOCI 607 Seminar in Ethnic Relations (4)

Critical examination of the various contemporary issues in ethnic and race relations, especially in the United States. Provides theoretical frameworks and empirical findings on the subject.

SOCI 614 Seminar: The Family (4)

Evaluation of current research on the family, especially in the United States. Research project on some aspect of family structure or function.

SOCI 615 Seminar: The Middle East in the Twentieth Century (4)
Contemporary Middle East. A comparison of political systems. Problems of the area in general.

SOCI 616 Seminar: Collective Behavior (4)
Analysis of various manifestations of collective behavior of major social movements and their effects on society.

SOCI 618 Seminar: Population (4)
Consideration of specific areas of demographic research. Analysis of census data, particularly of the United States. Offered on demand.

SOCI 624 Seminar: Sociology of Religion (4)
Individual and group research into religion as a social institution, its relation to other social institutions, and its organizational forms. Offered on demand.

SOCI 625 Seminar: The Community (4)
Study into current research on the community, especially problems of the urban and suburban community. Offered on demand.

SOCI 634 Seminar: Social Theory (4)
A seminar required of both sociology and anthropology master's degree candidates. Credit for either SOCI 634 or ANTH 634, not both.

SOCI 674 Seminar: Medical Sociology (4)
Study of medicine as a social institution. Research into various aspects of the medical community and its relation to the rest of society. Offered on demand.

SOCI 694 Directed Reading (arranged)

SOCI 697 Research (4-6)

SOCI 698 Thesis (10)

SPEECH-LANGUAGE PATHOLOGY

FACULTY

E. EVELYN BRITT, SC.D. Johns Hopkins University 1963
Coordinator; Associate Professor of Speech-Language Pathology and Audiology
Medical audiology, speech science, psychoacoustics

MELVIN S. COHEN, PH.D. University of Utah 1973
Associate Professor of Speech-Language Pathology and Audiology
Augmentative communication, stuttering, professional aspects

JEAN B. LOWRY, PH.D. Kent State University 1973
Associate Professor of Speech-Language Pathology and Audiology
Adult aphasia

KEIKO I. KHOO, M.S. Loma Linda University GS 1979
Assistant Professor of Speech-Language Pathology and Audiology
Diagnostic and rehabilitative audiology

ANN E. RATCLIFF, M.S. University of Redlands 1973 (on leave)
Assistant Professor of Speech-Language Pathology and Audiology
Childhood language

LOUISE M. SCRIVEN, M.S. Loma Linda University GS 1981
Assistant Professor of Speech-Language Pathology and Audiology
Childhood language, voice disorders

ASSOCIATE FACULTY

ROGER I. BURGRAFF, PH.D. University of Denver 1970
Lecturer
Stuttering, cleft palate, voice disorders

JOYCE A. O'NEILL, PH.D. University of Missouri 1978
Lecturer
Adult aphasia

The purposes of this graduate program are to offer preparation for careers in the professional practice of speech-language pathology and audiology, 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 (*a*) increase understanding in the basic sciences of communication, (*b*) develop competence in the practice of speech-language pathology and audiology, and (*c*) promote a sense of responsibility toward the speech, language, and hearing handicapped and toward the community.

The clinical services of the La Sierra Hearing, Language, and Speech Center, Loma Linda University, and of 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 the offerings of other departments of the College of Arts and Sciences, the professional schools of the University, and the Graduate School.

Admission Acceptable undergraduate preparation includes courses in the basic sciences; in the normal development and use of speech, language, and hearing; in behavioral sciences; and introductory courses in speech-language pathology and audiology. Applicants whose records show subject deficiencies in one or more of these areas may be admitted; but before they are advanced to candidacy for the master's degree at the end of the third quarter in the Graduate School, they must make up all deficiencies.

Program 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-Lauguage Pathology, or (b) to prepare for doctoral study or careers in related fields.

The speech-language pathology 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.

The program of study consists of completing (*a*) subject deficiencies, if any, (*b*) required graduate-level courses, (*c*) supervised clinical practice, and (*d*) research. Courses prerequisite to graduate-level study in speech-language pathology or their equivalent are usually taken before entry to the graduate program, but courses which have not been taken before entry to graduate study must be included in the student's program. The program does not offer a masters degree in audiology. Courses and clinical practicum are available for students wishing to increase their breadth of knowledge and experience in audiology.

PREREQUISITE COURSES IN SPEECH-LANGUAGE PATHOLOGY

MAJOR

SPPA 277 Development of Speech and Language
SPPA 284 Introduction to Speech-Language Pathology and Audiology
SPPA 324 Language Disorders of Children
SPPA 334 Articulation Disorders
SPPA 354 Hearing Problems and Basic Audiometry
SPPA 376 Anatomy of Speech and Hearing Mechanism
SPPA 424 Adult Language Pathology
SPPA 434 Disorders of Fluency
SPPA 435 Voice Disorders
SPPA 444 Organic Speech Disorders
SPPA 464 Aural Rehabilitation
SPPA 467 Clinical Practice
SPPA 485 Procedures and Materials
SPPA 486 Diagnostic Methods

COGNATES

PHYS 204 Physics of Music and Speech
MATH 251 Introduction to Statistics I
EDFO 305 Psychological Foundations of Education
PSYC 356 Psychological Tests and Measurements **or**
EDCE 404 Standardized Testing in Education
EDCE 460 The Exceptional Child
PSYC 479 Human Neuropsychology
STAT 509 General Statistics

DEGREE REQUIREMENTS

The following are requirements for the Master of Science degree specific to this program:

1. A minimum of three quarters in residence as a graduate student.
2. A minimum of 67 quarter units of graduate work, with a minimum of 40 quarter units in a professional area of speech-language pathology. No more than 6 quarter units of externship in speech-language pathology may count toward this area.
3. Selection and completion of a research option — with thesis (option A) or project (option B).

Research: Thesis, option A Option A requires completion of six units of SPPA 698 Thesis, and an oral examination.

Research: Project, option B Option B requires completion of four units of SPPA 697 Research, and an oral presentation of the research.

For information about requirements and practices to which all graduate students are subject, the student should consult the *Academic Practices* section of division I of this BULLETIN.

COURSES

GRADUATE COURSES

SPPA 524 Language Disorders of Children, Advanced (3)
Lectures and discussions dealing with assessment and management of the preschool and primary 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 severe dysacousis.

SPPA 525 Augmentative Communication (3)
Lectures and discussions pertaining to the assessment and treatment of communicative disorders which are unique to nonvocal, severely physically handicapped individuals. Emphasis placed on the implementation of augmentative, nonvocal communication systems (including blissymbolics) and the use of electronic, computerized, nonoral communication prostheses. Offered alternate years; 1986-87.

SPPA 526 Advanced Procedures in Speech-Language Pathology (3)
Advanced techniques and procedures for speech-language and hearing disorders in hospitals, schools, and special facilities; in-depth analysis of clinical procedures. Includes the use of the Apple IIe computer for assessment, treatment, and accountability. Offered alternate years; 1985-86.

SPPA 527 Curriculum Development in the Aphasia Classroom (3)
Description of methods, techniques, and strategies for establishing and maintaining an integrated educational program for the severely language-handicapped child. Covers classroom organization and structure, scheduling, behavioral management techniques, effective utilization of instructional aides and other support personnel. Offered alternate years; 1985-86.

SPPA 544 Cleft Palate (3)
Consideration of the etiologies, differential diagnosis, and management of the impairments of communicative function associated with congenital or acquired oral-facial anomalies. Primary emphasis given to cleft palate deformity.

SPPA 554 Advanced Audiological Assessment (4)
Study of the application of psychoacoustics and instrumentation to the selection and use of hearing tests. Experience in the administration of tests for intensive diagnostic and rehabilitation purposes. Measurement and methodology.

SPPA 555 Middle Ear Analysis (3)
Lectures, discussions, and the study of literature relating to middle ear pathology and the instrumentation and procedures employed for the differential diagnosis of middle ear disease. Primary emphasis given to the use and interpretation of tympanometry. Offered at discretion of instructor.

SPPA 557 Central Auditory Analysis (3)

Lectures and discussions dealing with the function and pathologies of the central auditory pathways and auditory cortex. An analytic study of the use and interpretation of psychoacoustic and electrophysiologic procedures. Offered at discretion of instructor.

SPPA 558 Pediatric Audiology (3)

Study of the (*a*) development of the auditory systems in the embryo, infant, and child; (*b*) pathologies of the auditory mechanism of the child; (*c*) instrumentation and procedures for assessing hearing function of infants and children; (*d*) habilitation procedures appropriate to assessment.

SPPA 564 Auditory Rehabilitation and Hearing Aids (4)

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 Externship in Speech-Language Pathology/Audiology (1-6)

Supervised practice in diagnosis and therapy. Thirty clock hours required for each unit of credit. Maximum of 6 units in SPPA 567 apply toward a major in speech-language pathology and audiology. Consent of the supervisor.

SPPA 575 Acoustic and Physiologic Phonetics (4)

Lecture, discussion, and demonstration of speech-sound pattern production and analysis.
Prerequisite or concurrent: SPCH 315, SPPA 376.

SPPA 577 Applied Psycholinguistics (4)

Mental processes underlying the acquisition and use of language; structure and meaning of language; perception and cognition. Offered alternate years; 1986-87.
Prerequisite: Consent of the instructor.

SPPA 578 Psychoacoustics and Instrumentation (4)

Consideration given to the nature of stimulus, the manner of its presentation, neurophysiology of audition, and the instrumentation for its analysis and description.

SPPA 585 Professional Aspects of Speech-Language Pathology and Audiology (3)

Study of the ethical, business, and legal considerations in organizing and administering programs, including accountability, record keeping, case selection, case load, supervision, staffing, budgeting, and interagency cooperation in schools, clinics, and private practice.

SPPA 586 Diagnostics in Speech-Language Pathology, Advanced (3)

Study of the principles of diagnosis applicable to communication; consideration of factors related to patient management in various allied health professional settings.

SPPA 588 Directed Teaching in Speech-Language Pathology (8-12)

Supervised therapy on the elementary and/or secondary level. Twenty-two clock hours required for each unit of credit. Not more than six units of clinical practicum are applicable toward the master's degree. This includes directed teaching. A transfer student who has completed directed teaching as an undergraduate is required to do a minimum of eight units of directed teaching during the master's degree program if (s)he wishes to qualify for the California Rehabilitative Services Credential under Loma Linda University's credential program.

SPPA 598 Research Methods in Speech-Language Pathology (4)

Lectures and discussion designed to facilitate the student's ability to develop research ideas, leading to formulation of a master's degree project or thesis. Attention directed toward use of the scientific method, techniques of grantsmanship, and professional writing style.
Prerequisite: STAT 509.

SEMINARS. Analysis of 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 **686** **Seminar: Voice Disorders (3)**

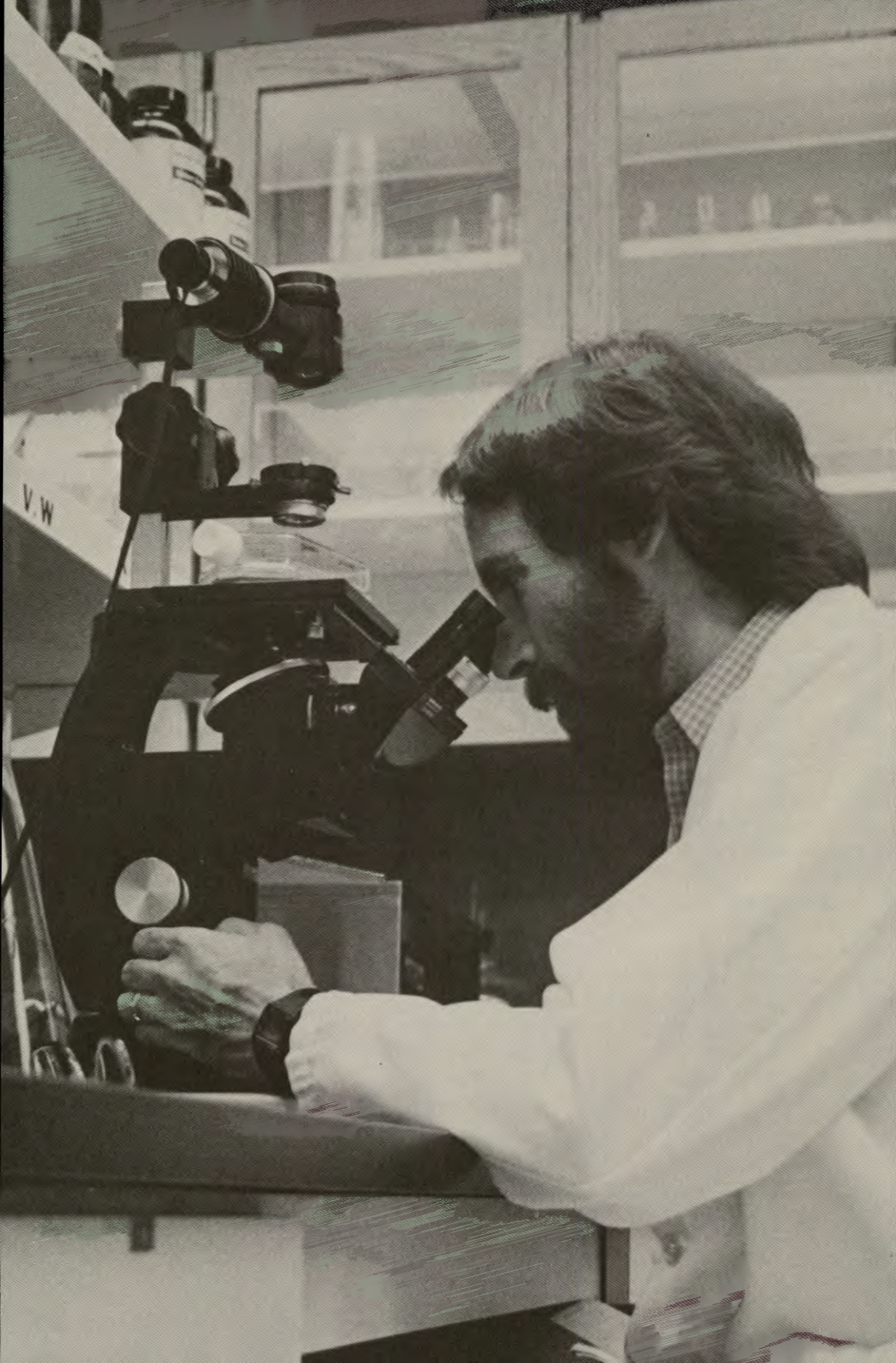
SPPA **687** **Seminar: Open Seminar (3)**

SPPA **688** **Seminar: Articulation (3)**

SPPA **697** **Research (4)**

SPPA **698** **Thesis (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 DIR STDY — ADLT LANG.



III

University Administration
The Graduate School
Alumni Federation
Instructional Resources

THE TRUSTEES

Officers	Chairman	FRANCIS WERNICK
	Vice Chairman	WALTER D. BLEHM
	Secretary	RICHARD A. JAMES, B.S.

UNIVERSITY ADMINISTRATION

OFFICERS OF THE UNIVERSITY

President		NORMAN J. WOODS, PH.D.
Vice President	Academic Administration	HELEN W. THOMPSON, PH.D.
Vice President	Medical Affairs	HARRISON S. EVANS, M.D.
Vice President	Financial Administration	JAMES A. GREENE, B.S.
Vice President	Public Relations and Development	E. C. WINES, M.A.
Provost	La Sierra campus	R. DALE MCCUNE, ED.D.

THE GRADUATE SCHOOL

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.

MAURICE HODGEN, ED.D., Dean

GRADUATE SCHOOL COUNCIL

Niels-Erik Andreasen
Thor C. Bakland
Antonius Brandon
E. Evelyn Britt
Ian P. Chand
Robert A. Chilson
Conrad D. Clausen
Robert P. Dunn
Lanny H. Fisk
Patricia C. Foster
Walter Hamerslough
Maurice Hodgen
Frederick G. Hoyt
George Javor
Arno Kutzner
John Leonora
Paul J. McMillan
W. Barton Rippon
Allen Strother
Helen W. Thompson
Ignatius Yacoub
Kathleen K. Zolber

THE FACULTY AND LECTURERS

In the alphabetical list of teachers, the code letters indicate the section(s) in which the teacher's name is found.

ANAT	Anatomy
BCHM	Biochemistry
BIOL	Biology
BUAD	Business Administration
DENT	Dentistry
ENGL	English
GEOL	Geological Sciences
HIST	History
MFAM	Marriage and Family Counseling
MICR	Microbiology
NRSG	Nursing
NUTR	Nutrition
PETH	Physical Education and Health
PHRM	Pharmacology
PHSL	Physiology
RLGN	Religion
SOCI	Sociology
SPPA	Speech-Language Pathology

Adey, W. Ross	PHSL
Airey, Wilfred J.	HIST
Alexander, Wilber	RLGN
Aloia, Roland C.	BCHM
Anderson, Godfrey T.	HIST
Andersson, Knut	BIOL, GEOL
Andreasen, Niels-Erik	RLGN
Andress, Vern	MFAM
Anholm, J. Milford	DENT
Arendt, Kenneth A.	PHSL
Bakland, Leif, K.	DENT
Baldwin, Dalton D.	HIST, RLGN
Barnard, Logan W.	DENT
Baylink, David J.	BCHM
Beltz, Richard E.	BCHM
Blankenship, James W.	NUTR
Bogle, Gary C.	DENT
Boyne, Philip J.	DENT
Brace, Robert A.	PHSL
Bradley, Gary L.	BIOL
Brand, Leonard R.	BIOL, GEOL
Brandon, Antonius D.	MFAM
Brauer, Floyd	DENT
Briggs, Cordell	ENGL
Britt, E. Evelyn	SPPA
Buchheim, Paul H.	BIOL, GEOL
Bullas, Leonard R.	BIOL, MICR
Burgess, Audrey L.	NRSG
Burgraff, Roger I.	SPPA
Burke, Kenneth I.	NUTR
Butler, Jonathan M.	HIST, RLGN
Byrd, Bernard C.	DENT
Carrigg, Karen G.	NRSG
Carter, Norman S.	DENT
Caruso, Joseph M.	DENT
Cavanaugh, Sandra R.	PETH
Case, Norman M.	ANAT, BIOL
Chand, Ian P.	MFAM, SOCI
Chase, Alden B.	DENT
Cheung, Cecelia Y.	PHSL
Chilson, Robert A.	BIOL
Clausen, Conrad D.	BIOL
Coffin, Harold G.	BIOL
Cohen, Melvin S.	SPPA

Comm, Dorothy M.	ENGL
Connell, Bertrum C.	NUTR
Craig, Winston J.	NUTR
Crane, Earl R.	DENT
Cress, C. Raymond	PHRM
Crigger, Max	DENT
Cummings, Raleigh R.	DENT
Dalgleish, Arthur E.	ANAT, BIOL
Damerell, J. Mickey	DENT
Davis, W. Howard	DENT
Davis, M. Jerry	MFAM, RLGN
Day, Lawrence D.	DENT
deVincenzo, John P.	DENT
Dunn, Robert P.	ENGL
Eby, William C.	MICR
Eddleman, C. Douglas	ANAT
Egelberg, Jan H.	DENT
Ehrler, Delan G.	DENT
Elick, John W.	SOCI
Engen, Paul C.	ANAT
Evans, Harrison S.	MFAM
Evard, Rene	BCHM
Everett, J. Burton	DENT
Farley, John R.	BCHM
Fattic, Grosvenor R.	ENGL
Fickess, Frances L.	NRSG
Fisk, Lanny	BIOL, GEOL
Ford, Robert	BUAD
Ford, Robert E.	ANTH
Foster, Patricia C.	NRSG
Fraser, Ian M.	PHRM
Gamboa, George C.	DENT
Garrett, John S.	DENT
Gauntt, Lloyd E.	DENT
Gilbert, Raymond D.	PHSL
Gillespie, V. Bailey	RLGN
Gongloff, Richard K.	DENT
Gonzalez, Ramon R.	PHSL
Haddad, Anees A.	MFAM, SOCI
Haddad, Ella	NUTR
Hagelgantz, Opal I.	ENGL
Hall, Raymond G., Jr.	PHSL
Hamer, Don R.	RLGN
Hamerslough, Walter S.	PETH
Harrison, Charles W.	ANAT
Heinrich, Virgil V.	DENT
Henken, Herbert W.	ANAT
Herrmann, E. Clifford	BCHM
Hessinger, David A.	BIOL, PHRM, PHYS
Ho, Yuk Lin	BIOL
Holmes, Ivan G.	GEOL
Hooker, William M.	ANAT
Hoyt, Frederick G.	HIST
Hubbard, Reuben A.	RLGN
Hunt, Guy M.	ANAT
Irwin, Bernadine L.	NRSG
Jarvis, William T.	DENT
Javor, George T.	MICR
Jenkins, Janene	NRSG
Johnson, Darlene B.	NRSG
Johnson, Katherine	MFAM
Johnston, Patricia	NUTR
Jolley, Weldon B.	PHSL
Kaminishi, Ronald M.	DENT
Kappel, Robert	BUAD
Karlow, Edwin A.	GEOL
Kelln, Elmer E.	DENT
Kettering, James D.	MICR
Khoo, Keiko I.	SPPA
Kiger, Robert D.	DENT
King, Helen E.	NRSG
Klein, Arthur	BUAD
Klooster, Judson	DENT
Kosier, Gail	BUAD
Kovitz, Benjamin	MFAM
Landa, Paul J.	HIST, RLGN
Larson, David R.	RLGN
Lathrop, Earl W.	BIOL
Lau, Benjamin H. S.	MICR
Lee, Jerry W.	ANTH
Leonora, John	PHSL
Lessard, George M.	BCHM
Lewis, Lucile	NRSG
Lewis, Richard B.	ENGL
Little, Helen F.	ENGL
Little, Thomas A.	ENGL
Longo, Lawrence D.	PHSL
Lonnstrom, Betty T.	NRSG
Lowry, Jean B.	SPPA
Mackett, Walter C.	HIST
Mallery, F. Lynn	RLGN
Mashchak, Leon I.	RLGN
Matthews, Kenneth E.	ENGL
Mattison, Gordon R.	RLGN
Maxwell, A. Graham	RLGN
Mazat, Alberta S.	MFAM
McCluskey, Elwood S.	BIOL, GEOL, PHSL
McEwen, Lawrence E.	DENT
McMillan, Paul J.	ANAT, BIOL
Miller, Frances P.	NRSG
Mitchell, Daniel A., Jr.	ANAT
Mitchell, Norman L.	BIOL
Moline, Mary E.	MFAM
Moline, S. Douglas	MFAM, NRSG
Moncrieff, Robert E.	MTCH
Morgan, Arthur J.	DENT
Mortensen, Raymond A.	BCHM
Murphy, Lee A.	BCHM
Nava, P. Benigno	ANAT
Neilsen, Ivan R.	PHSL
Nelson, Deane	RLGN
Nutter, Robert L.	BIOL, MICR
Olsen, Lee E.	DENT
Olsen, V. Norskov	HIST
O'Neill, Joyce A.	SPPA
Osbourn, Fred H.	MFAM
Parker, Ronald C.	DENT
Patrickson, John W.	ANAT
Pearson, John K.	DENT

Peters, Donald L.	DENT
Peters, Marvin A.	BIOL, PHRM
Peterson, Donald I.	PHRM
Peterson, John E., Jr.	DENT
Plata, Roger L.	PHSL
Power, Gordon G.	PHSL
Pride, L. Frances	MFAM, NRSG
Provonsha, Jack W.	RLGN
Rafuse, Donald D.	BIOL, PHSL
Ratcliff, Ann E.	SPPA
Reiswig, Joyce E.	NRSG
Register, U. D.	BCHM, NUTR
Reynolds, Lee	BUAD
Rice, T. Richard	HIST, RLGN
Rick, Gordon M.	DENT
Ricketts, Robert M.	DENT
Rippon, W. Barton	BCHM
Roberts, Walter H. B.	ANAT
Robertson, Thomas L.	DENT
Ross, Delmer G.	HIST
Roth, Ariel A.	BIOL, GEOL
Rouse, Ivan E.	GEOL
Roy, Ira	MICR
Ryckman, Raymond E.	BIOL, GEOL, MICR
Sanchez, Albert	NUTR
Schlenker, Willis L.	DENT
Scheffel, Vernon L.	PETH
Schmidt, Merrill E.	DENT
Schneider, Robert K.	PETH
Schultz, Robert L.	ANAT
Scott, Garland E.	DENT
Scriven, Louise M.	SPPA
Seheult, Russell O.	DENT
Seifert, Laurence A.	DENT
Shryock, Harold	ANAT
Shultz, Terry D.	BCHM, NUTR
Simon, James H.	DENT
Slattery, Charles W.	BCHM
Smith, A. Dwight	ANAT
Smith, Marilyn C.	NRSG
Specht, Walter F.	RLGN
Stauffer, J. Paul	ENGL
Stirling, James H.	SOCI
Stringer, Dale E.	DENT
Strother, Allen	PHRM
Strutz, Peter G.	MFAM, BUAD
Sugiyami, Raymond M.	DENT
Taylor, Barry L.	BCHM
Taylor, D. Taylor	DENT
Taylor, Guy D.	DENT
Taylor, Wm. Holmes	ANAT
Teel, Charles W., Jr.	RLGN, SOCI
Teel, Robert W.	PHSL
Teele, Marilyn C.	ENGL
Thomas, Nelson E.	PETH
Thompson, Dana	BUAD
Tilton, Bernard E.	PHRM
Tinberg, Harold	BCHM
Tkachuck, Richard D.	BIOL, MICR
Tomlinson, John L.	DENT
Torabinejad, Mahmoud	DENT
Venden, Louis	RLGN
Vine, Kenneth L.	RLGN
Wagner, Edward D.	MICR
Wagner, William	ANAT
Waldron, Mary J.	NRSG
Walters, James W.	RLGN
Walters, Roland D.	DENT
Weber, Ruth S.	NRSG
Wergedahl, Jon E.	BCHM
Wical, Kenneth E.	DENT
Wilcox, R. Bruce	BCHM
Will, Lawrence W.	DENT
Willey, T. Joe	BIOL, PHSL
Wise, James R.	DENT
Woodward, Clarice W.	NRSG
Yacoub, Ignatius	BUAD
Yahiku, Paul Y.	BIOL
Yoon, Won K.	MFAM, SOCI
Young, James	DENT
Young, William L.	DENT
Zolber, Kathleen K.	NUTR
Zuccarelli, Anthony J.	BIOL, MICR

ALUMNI FEDERATION

The Alumni Federation was organized in 1958. This organization provides an avenue by which the several alumni associations, distinctive of emphasis represented by curriculums of the University, join their common concern for the continued welfare of the institution. In turn, through the 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 Alumni 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—

1. To foster the natural bond among alumni of each individual school, maintaining the right of alumni to direct their own group activities.
2. To assist the University and its schools in their duty to provide for the continuing general welfare of all students, faculty, and alumni.
3. To encourage alumni through constituent associations to assist in providing adequate and dependable financial support both for the University and for alumni activities.

ACCREDITATION

The University

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 curriculums started and approved as indicated.

ARTS AND SCIENCES: Founded in 1922 as La Sierra Academy, a secondary school; in 1927 became Southern California Junior College; in 1946 was accredited as the four-year La Sierra College; in 1967 became College of Arts and Sciences of the University.

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 ASSISTING: Started in 1969. Approved by the Commission on Accreditation of Dental and Dental Auxiliary Programs since May 19, 1970.

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.

EDUCATION: School of Education organized in 1968 and approved by the California State Board of Education June 12, 1969; approval of programs is maintained with the California State Commission for Teacher Preparation and Licensing.

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 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.

PUBLIC HEALTH SCIENCE: Started in 1974. Approved through University accreditation.

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.

SOCIAL WORK: Started in 1972. Accredited by the Council on Social Work Education May 1980.

INSTRUCTIONAL RESOURCES

LIBRARIES

The University has two main libraries (one on the Loma Linda campus and one on the La Sierra campus), and one branch library (located in the School of Dentistry, on the Loma Linda campus). The joint holdings are as follows:

Books, bound periodicals, audiovisual materials	515,596
Current periodical subscriptions	3,629

Bus service is provided on schedule each weekday between the two campus libraries so that students and faculty can have access to both libraries. Immediate information can be obtained and lending arrangements made by telephone or mail.

Materials unavailable in either campus library or in the immediate community are obtainable through interlibrary loan. At Loma Linda an electronic mail system is used for interlibrary communication. Computerized search services are also available to offer computer-printed bibliographies on medical-related subjects through the Medline and other data bases in which the Loma Linda library participates.

LA SIERRA CAMPUS	
Books, bound periodicals, audiovisual materials	241,802
Current periodical subscriptions	1,242

The La Sierra campus library is a general liberal arts collection, with concentrations in history, religion, English, and education. A collection of nineteenth-century Seventh-day Adventist books and pamphlets is in the Heritage Collection. In addition to the microfiche Library of American Civilization already purchased (21,000 titles), the library is augmenting microform holdings.

LOMA LINDA CAMPUS

Books, bound periodicals, audiovisual materials	273,794
Current periodical subscriptions	2,387

The acquisitions of the Del E. Webb Memorial Library on the Loma Linda campus are in medicine, dentistry, allied health professions, and graduate programs; and included in the acquisitions is a liberal arts undergraduate collection in support of certain graduate and professional programs. About half of the resources are in medical and related fields. Some rare materials in the history of medicine are included in the holdings.

Since 1957 this library has been the official west coast depository for Seventh-day Adventist literature regularly provided by church publishing houses in North America. The publications are in the Heritage Collection established in 1971. Here also are the Ellen G. White source materials, University archives, and an in-process collection of published and unpublished works pertaining to the early Adventist movement.

The Human Relations Area Files on microfiche make available primary source materials on most of the known cultures of the world.

The Jorgensen Memorial Library, established in 1978, serves the Loma Linda University School of Dentistry through extensive holdings in the current literature of the profession, a circulating inventory of audiovisual equipment, the acquisition of instructional media and the hardware for its use, and the performance of on-line bibliographic searches.

Consortium The following colleges and universities have formed a consortium under the name Inland Empire Academic Library Cooperative to give full borrowing privileges to students and faculty members of the following institutions:

Azusa Pacific College, Azusa
California Baptist College, Riverside
California State College, San Bernardino
California State Polytechnic University, Pomona
La Verne College, La Verne
Loma Linda University, Loma Linda and La Sierra campuses
University of California, Riverside
University of Redlands, Redlands
Community colleges in the area

Community Within driving distance of the University campuses are other collections accessible to faculty and students: the University of California (Los Angeles and Irvine campuses), the University of Southern California, the Los Angeles public library, the inland area public libraries, and the unique holdings of the Henry E. Huntington Library and Art Gallery.

INSTRUCTIONAL COMPUTER

La Sierra campus The College of Arts and Sciences, in cooperation with the School of Education and the University Libraries, maintains an instructional computer system on the La Sierra campus. It is available without cost and easily accessible to Loma Linda University faculty, staff, and students for various educational activities. The system serves as a laboratory for the computer science major and for classes in computer programming. In addition the Departments of Business and Economics, Chemistry, Mathematics and Computing, Modern Languages, Physics, and Psychology use the computer to enhance their classes.

An example of this use is the computer-supervised vocabulary drills in German, English, French, and Spanish used by the Department of Modern Languages and the prelaboratory calculations of general chemistry and physics students. The user has access to the system through any one of 51 terminals, including terminals placed strategically in each dormitory.

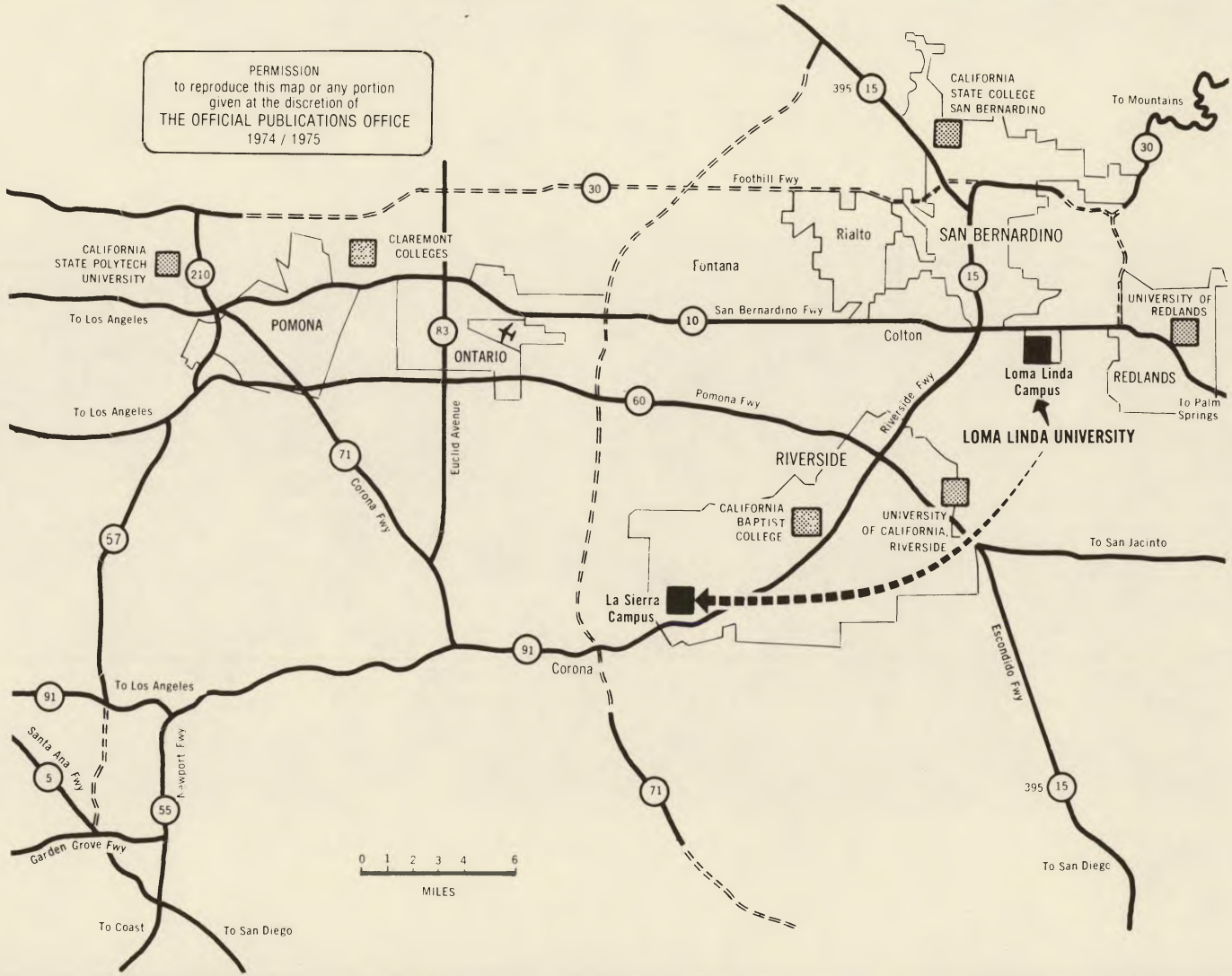
These terminals include 35 video terminals (5 of which are capable of color graphics), 16 hard-copy terminals, and 3 dial-up lines. The terminals are as easy to use as a typewriter, with the user essentially carrying on a dialogue with the computer. The system's timesharing capability permits up to 64 simultaneous users and boasts a file-processing system that permits easy storage and retrieval of programs and data. An inexperienced user can easily do significant problem solving because the system software was designed with the novice in mind.

The primary programming language — BASIC-PLUS — has the simplicity of the original Dartmouth college BASIC but is enhanced with many specialized and powerful features. In addition to BASIC-PLUS, the more advanced user has available the languages of APL, C, COBOL, FORTH, FORTRAN, PASCAL, PDP-11 Assembler, LISP, and the BMD statistical package. The computer is a PDP 11/44 manufactured by Digital Equipment Corporation, equipped with one and a half million bytes of memory, an industry-standard tape drive, a state-of-the-art 121 million byte Winchester disk drive, a plotter, and a document reader.

In addition to the main academic computer just described, the Departments of Biology, Chemistry, Mathematics and Computing, Modern Languages, Physics, and Psychology have microcomputers for specialized academic use.

COMPUTER

Loma Linda campus The University has an extensive computer complex serving students and faculty in both academic and scientific functions. Available facilities span the range from small-scale to large-scale systems. Particular emphasis has been given to providing real-time data acquisition and graphical output capabilities. An advanced and very powerful computing system facilitates the modeling and simulation of complex systems. Programming aids are available to expedite the man-machine dialogue and to assist in applying the computer to the solution of problems in a variety of disciplines. An extensive program library serves many routine needs, but researchers are encouraged to write their own specialized programs for their own particular needs. Programming instruction and assistance are provided for this purpose.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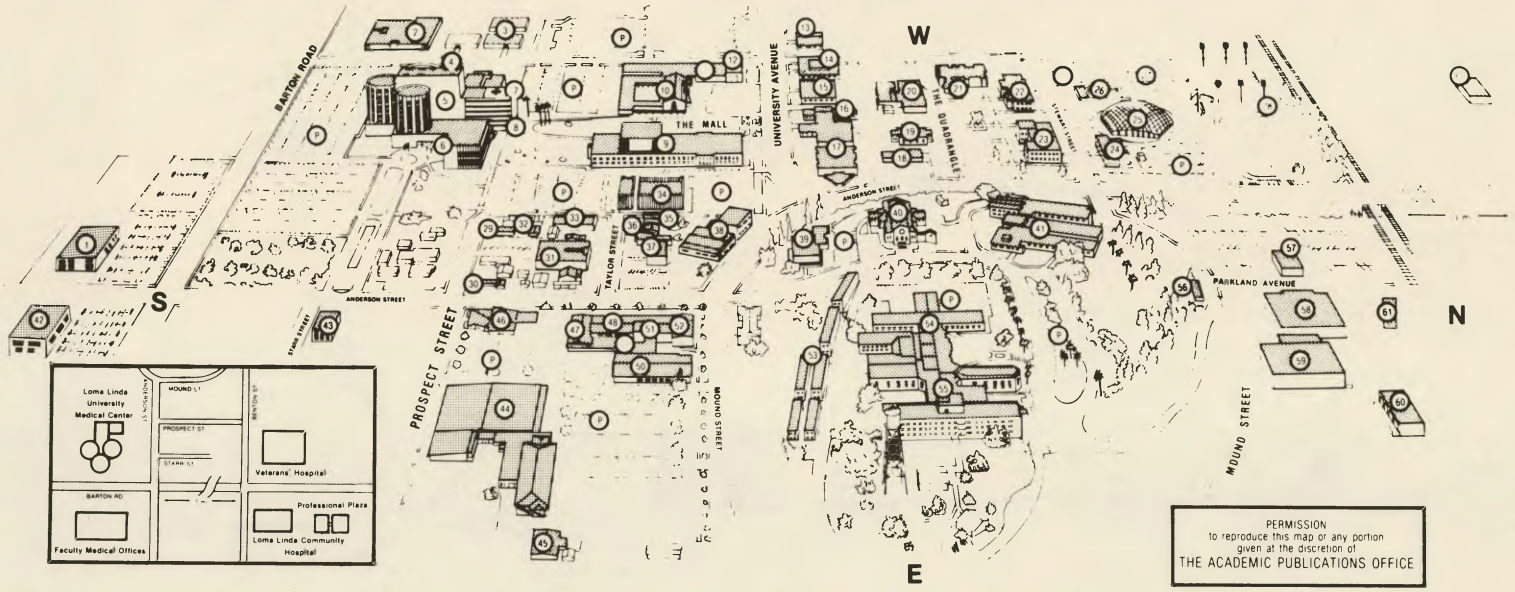
CALIFORNIA STATE POLYTECH UNIVERSITY
210
CLAREMONT COLLEGES
30
Foothill Fwy
395
15
CALIFORNIA STATE COLLEGE SAN BERNARDINO
To Mountains
30
Rialto
SAN BERNARDINO
Fontana
15
UNIVERSITY OF REDLANDS
To Los Angeles
POMONA
83
ONTARIO
10
San Bernardino Fwy
Colton
Loma Linda Campus
REDLANDS
To Palm Springs
To Los Angeles
60
Pomona Fwy
Riverside Fwy
LOMA LINDA UNIVERSITY
71
Corona Fwy
Euclid Avenue
RIVERSIDE
57
CALIFORNIA BAPTIST COLLEGE
UNIVERSITY OF CALIFORNIA RIVERSIDE
To San Jacinto
La Sierra Campus
91
Corona
To Los Angeles
91
Santa Ana Fwy
5
Newport Fwy
55
Garden Grove Fwy
Escondido Fwy
395
15
71
0 1 2 3 4 6
MILES
To San Diego
To Coast
To San Diego



LOMA LINDA CAMPUS MAP

NUMERICAL LEGEND

1 Loma Linda University Faculty Medical Offices
2 West Hall: MC Accounting / MC Assistant VP for Finance / MC Budget and Reimbursement / MC Clinical Engineering / MC Cost Reporting / Counseling Center / MC Internal Audit / Psychiatry / School of Nursing
3 Nelson Apartments: Cytology Laboratory / Histology Laboratory
4 Hospital Dentistry / Medical Center offices
5 Medical Center / School of Medicine / Health Service (student. employee) / Medical Affairs VP
6 Medical Center (main entrance)
7 Heliport
8 Medical Center (student entrance)
9 Prince Hall: School of Dentistry / Jorgensen Memorial Library
10 University Church
11 Child Care Center / Fellowship Hall
12 Campus Chapel. University Church
13 Orthotic and Prosthetic Service
14 Mortensen Hall (biochemistry)
15 Griggs Hall: Biology / Division of Religion / General Conference representative / Graduate School / Marriage and Family Therapy
16 Magan Hall: The President / Academic Administration VP / Development and Public Relations VP / Financial Administration VP /Corporate Relations / Faculty Records / Gift Records / Geoscience Research Institute
17 University Library
18 Microbiology Annex
19 Burden Hall: Academic Publications / Alumni Federation / Auditorium / News offices / Nursing Alumni Association / University Relations / University Protype
20 Risley Hall (physiology, pharmacology)
21 Basic Science Building (pathology, microbiology)
22 Shryock Hall (anatomy, museum)
23 Evans Hall (School of Medicine, departmental offices)
24 Audiovisual Service
25 Gentry Gymnasium
26 Swimming pool
27 Tennis courts
28 Recreation field
29 Hospital Collection
30 Loma Linda Center for Health Promotion
31 University Arts Building: Foundation Real Estate / Medical Center Assistant VP / Medical Center Personnel / Medical Center Purchasing / Private practice office / University Personnel / University Quik Copy
32 Medical Center Forms Management
33 Dentistry faculty practice
34 Power Plant
35 Dentistry research
36 Graphics Studio. School of Dentistry
37 Medical Center Information Systems
38 Business / City Hall / Internal Audit. University / Justice Court
39 Linda Hall / Welfare Center. Campus Hill Church
40 Campus Hill Church
41 Lindsay Hall (women's residence)
42 Dialysis Center
43 Alumni Center: Nursing Staff Development / School of Dentistry Alumni / School of Medicine Alumni / Trust Development / Walter Macpherson Society / Women's Auxiliary
44 Convenience Center. Bakery / Bookstore / Camera Shop / Campus Store / General Conference Auditors / Hardware / Market / Patio Pantry / Pharmacy, University / Florist / Risk Management
45 University Mail and Addressograph
46 Security Pacific National Bank
47 U.S. Post Office
48 Dean of Students / Student Aid / Student Finance / University Admissions and Records / University Computing
49 Foundation Affairs / Grants Management / University Accounting / Campus Controller / University Payroll
50 Campus Cafeteria
51 Campus Business Administration / Physical Plant Administration
52 La Loma Credit Union
53 Daniells residence complex
54 Nichol Hall: School of Health / Preventive Medicine Clinic
55 Nichol Hall: School of Allied Health
56 Campus Security
57 Construction / Housekeeping / Radiation Safety
58 Campus Maintenance / Machine Shop / Radiation Engineering Shop
59 Stores and Receiving
60 University storage
61 Campus Maintenance garage
62 Hospital storage

ALPHABETICAL LEGEND

Academic Administration VP. 16
Academic Publications. 19
Accounting. MC. 2
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Cafeteria. Medical Center. 5
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Medical Center (student entrance). 8
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Orthotics and Prosthetics. 13

Pathology. 21
Patio Pantry. 44
Payroll. MC. 31
Payroll. University. 49
Personnel. MC. 31
Personnel. University. 31
Pharmacology. 19
Pharmacy. University. 44
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Power Plant. 34
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Preventive Medicine Clinic. 54
Prince Hall. 9
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Public Relations and Development VP. 16
Purchasing. MC. 31
Purchasing. University. 59

Quik Copy Service. University. 31

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Radiation Safety. 57
Receiving. 59
Records. University. 48
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Student Finance. 48
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University Pharmacy. 44
University Protype. 19
University Quik Copy Service. 31
University Relations. 19
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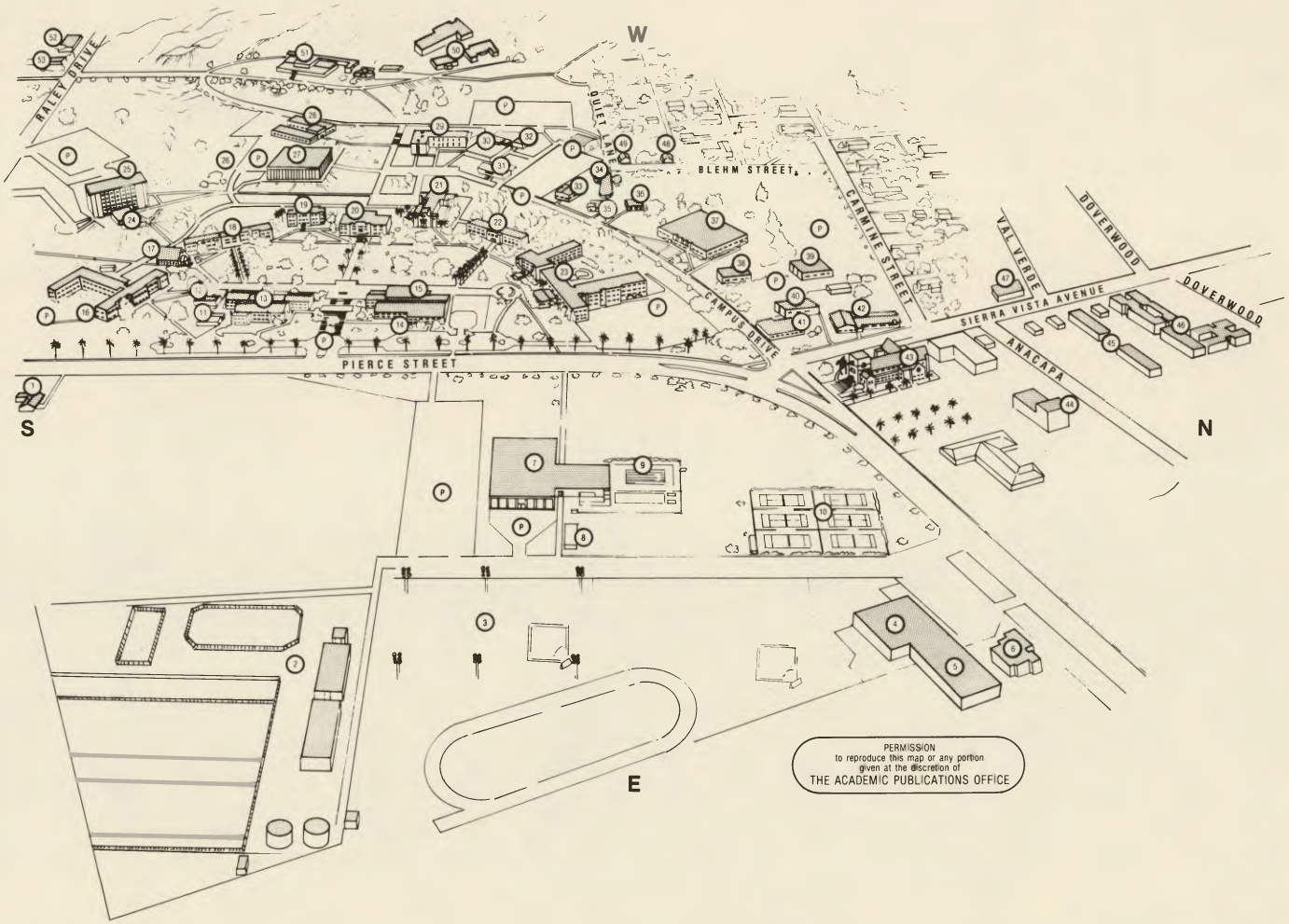
Vice President. Financial Administration. 16
Vice President. Medical Affairs. 5
Vice President. Public Relations and Development. 16

Walter Macpherson Society. 43
Welfare Center. 39
West Hall. 2
Women's Auxiliary. 43
Women's residence hall. 41


W
S
N
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RALEY DRIVE
PIERCE STREET
BLEHM STREET
QUIET LANE
CARMINE STREET
CAMPUS DRIVE
VAL VERDE
DOVERWOOD
SIERRA VISTA AVENUE
ANACAPA
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LA SIERRA CAMPUS MAP

NUMERICAL LEGEND

1 Agriculture
2 Dopp Equestrian Center
3 Recreation fields
4 College Market / Bookstore
5 Convenience Center
6 Soup Stone Restaurant
7 Alumni Pavilion / Gymnasium
8 Physical Education office
9 Swimming pool
10 Tennis courts
11 Safety and Security
12 Administrative Annex
13 Administration Building (academic, financial): The President / Provost / Vice Presidents for Academic Administration, Development and Public Relations, Financial Administration / Accounting Service / Alumni Affairs / Dean of Students / Departments of Business and Economics, Secretarial and Business Education / Graduate School Dean / Offices of Admissions and Records, Business, News and Public Information, Payroll, Personnel, Purchasing / Student Admissions, Affairs, Aid, Employment, Finance, Loans, Recruitment
14 Student Center
15 The Commons / Food Service (cafeteria)
16 Calkins Hall: men
17 Matheson Chapel
18 South Hall: women
19 San Fernando Hall: Physics
20 La Sierra Hall: Counseling Center / Division of Religion / English / History and Political Science / Mathematics / Modern Languages / School of Education
21 Hole Memorial Auditorium: Auditorium / Education / Music / Testing
22 Gladwyn Hall: women
23 Angwin Hall: women
24 Meier Chapel
25 Sierra Towers: men
26 John Clough Park
27 University Library: Learning Advancement Program / Media Services
28 Ambs Hall: Industrial Studies
29 Consumer Related Sciences / Child Development Learning Center
30 Communication / KSGN / Nursing
31 Art
32 Nursing
33 Mail Service / Custodial Service
34 Cossentine Hall
35 Health Service
36 Animal quarters
37 Palmer Hall: Biology / Chemistry / Geological Sciences / World Museum of Natural History
38 Biology Annex
39 Geological Sciences Annex
40 Behavioral Sciences Annex
41 Behavioral Sciences: Anthropology / Psychology / Social Work / Sociology
42 Sierra Vista Chapel / Welfare Center
43 La Sierra Collegiate Church
44 Geological Sciences Research Center
45 Walnut Grove Apartments
46 Sierra Vista Apartments
47 Sierra Vista House
48 Child Development Preschool
49 Geological Sciences
50 Visual Arts Center
51 Physical Plant Services (maintenance)/ Receiving
52 Rhoads House
53 Raley House

ALPHABETICAL LEGEND

UNIVERSITY INFORMATION

BOTH CAMPUSES

General University interests	The President
Admission	Admissions Office
Student welfare, housing, visas	Student Affairs Office
Student accounts	Student Accounting Office
Financial aid	Student Financial Aid Office
Records	Office of University Admissions and Records

LA SIERRA CAMPUS

MAIL: Riverside California 92515	TELEPHONE (area 714): Riverside
College of Arts and Sciences	Dean 785-2210
School of Education	Dean 785-2266
Division of Religion	Dean 785-2041

LOMA LINDA CAMPUS

MAIL: Loma Linda California 92350	TELEPHONE (area 714):
School of Dentistry	796-0141 Redlands 824-0030 Riverside, San Bernardino
All other Schools	796-3741 Redlands 824-4300 Riverside, San Bernardino
School of Allied Health Professions	Dean 824-4545
CLINICAL LABORATORY SCIENCE	824-4966
HEALTH INFORMATION ADMINISTRATION	824-4976
NUTRITION AND DIETETICS	824-4593
OCCUPATIONAL THERAPY	824-4628
PHYSICAL THERAPY	824-4632
PUBLIC HEALTH SCIENCE	824-4630
RADIOLOGIC TECHNOLOGY	824-4931
RESPIRATORY THERAPY	824-4932
School of Dentistry	Dean 824-4683
DENTISTRY	
DENTAL HYGIENE	
DENTAL ASSISTING	
School of Health	Dean 824-4578
School of Medicine	Dean 824-4462
School of Nursing	Dean 824-4360
Division of Religion	Dean 824-4536
The Graduate School	Dean 824-4528

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