

BPHY 290 Directed Studies 1 to 6 Research, 3 to 18 hours. Prerequisite(s): restricted to major(s) Biophysics; graduate standing; or consent of instructor. Explores literature or research topics under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPHY 296 Special Topics in Biophysics 1 to 2 Seminar, 1 to 2 hours. Prerequisite(s): restricted to major(s) Biophysics; graduate standing; or consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each participant. Emphasizes recent advances in topic area and content varies accordingly. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content or topic changes.

BPHY 297 Directed Research 1 to 6 Research, 3 to 18 hours. Prerequisite(s): restricted to major(s) Biophysics; graduate standing; or consent of instructor. Exploratory research toward the development of the dissertation problem or other research not specifically for thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPHY 299 Thesis Or Dissertation 1 to 12 Research, 3 to 36 hours. Prerequisite(s): restricted to major(s) Biophysics; graduate standing; or consent of instructor. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Botany and Plant Sciences

Subject abbreviation: BPS
College of Natural and Agricultural Sciences

Patricia S. Springer, Ph.D., Chair
Department Office, 2132 Batchelor Hall
Graduate Student Affairs (800) 735-0717 or
(951) 827-5688
CNAS Undergraduate Advising Center
(951) 827-7294 or (951) 827-3102

Professors

Julia N. Bailey-Serres, Ph.D. *Distinguished Professor of Genetics*
Meng Chen, Ph.D. *Cell Biology*
Xuemei Chen, Ph.D. *Distinguished Professor of Plant Cell and Molecular Biology*
Sean Cutler, Ph.D. *Distinguished Professor of Plant Cell Biology*
Katayoon Dehesh, Ph.D. *Distinguished Professor of Molecular Biochemistry*
Thomas A. Eulgem, Ph.D. *Plant Cell Biology*
Exequiel Ezcurra, Ph.D. *Distinguished Professor of Ecology*
Thomas Girke, Ph.D. *Bioinformatics*
Venugopala R. Gonehal, Ph.D. *Plant Cell Biology*
Darrel Jenerette, Ph.D. *Landscape Ecology*
Bai-Lian "Larry" Li, Ph.D. *Plant Ecology*
Adam J. Lukaszewski, Ph.D. *Genetics*
Louis Santiago, Ph.D. *Physiological Ecosystems Ecology*
Patricia S. Springer, Ph.D. *Genetics*
Linda L. Walling, Ph.D. *Genetics*
Susan Wessler, Ph.D. *Distinguished Professor of Genetics*
Shizhong Xu, Ph.D. *Distinguished Professor of Genetics*

Professors Emeriti

Edith B. Allen, Ph.D. *Community/Restoration Ecology*
Timothy J. Close, Ph.D. *Genetics*
Darleen A. DeMason, Ph.D. *Botany*
Norman C. Ellstrand, Ph.D. *Distinguished Professor of Genetics*
Janet Franklin, Ph.D. *Distinguished Professor of Biogeography*
Arturo Gómez-Pompa, Ph.D. *Botany*
Anthony E. Hall, Ph.D. *Plant Physiology*
Robert L. Heath, Ph.D. *Plant Physiology and Biophysics*
Jodie S. Holt, Ph.D. *Plant Physiology*
Anthony H. C. Huang, Ph.D. *Plant Physiology*
Elizabeth M. Lord, Ph.D. *Botany/Developmental Biology*
Carol J. Lovatt, Ph.D. *Plant Physiology*
Eugene A. Nothnagel, Ph.D. *Plant Physiology*
Natasha Raikhel, Ph.D. *Distinguished Professor of Plant Cell Biology*
Mikeal L. Roose, Ph.D. *Genetics*
William W. Thomson, Ph.D. *Cell Biology*
Irwin P. Ting, Ph.D. *Plant Physiology*
J. Giles Waines, Ph.D. *Genetics*

Associate Professors

Juan Pablo Giraldo, Ph.D. *Plant Physiology*
Zhenyu Jia, Ph.D. *Quantitative Genetics*
Amy Litt, Ph.D. *Plant Evolution and Development*
David Nelson, Ph.D. *Genetics*
Carolyn G. Rasmussen, Ph.D. *Plant Cell Biology*

Assistant Professors

Daniel Koenig, Ph.D. *Genetics*
Loralee Larios, Ph.D. *Plant Ecology*
Paul D. Nabity, Ph.D. *Plant Insect Ecology*
Dawn Nagel, Ph.D. *Genetics and Genomics*
Danelle Seymour, Ph.D. *Genetics*
Jaimie Van Norman, Ph.D. *Plant Cell and Developmental Biology*

Lecturers/Cooperative Extension Specialists

Mary Lu Arpaia, Ph.D. *Subtropical Horticulture*
James Baird, Ph.D. *Turfgrass Horticulture*
Ashraf El-Kereamy, Ph.D. *Subtropical Horticulture*
Peggy A. Mauk, Ph.D. *Subtropical Horticulture*
Milton E. McGiffen, Jr., Ph.D. *Vegetable Crops/Plant Physiology*
Alan McHughen, Ph.D. *Plant Biotechnology*
Donald J. Merhaut, Ph.D. *Horticulture and Floriculture*
Philippe E. Rolshausen, Ph.D. *Subtropical Crops*

Cooperating Faculty

Jorge Ferreira, Ph.D. (USDA Salinity Lab)
Simon "Niels" Groen, Ph.D. (Nematology)
Hailing Jin, Ph.D. (Microbiology and Plant Pathology)
Robert Jinkerson, Ph.D. (Chemical and Environmental Engineering)
Isgouhi Kaloshian, Ph.D. (Nematology)
Yanran Li (Chemical and Environmental Engineering)
Erin Wilson Rankin, Ph.D. (Entomology)
Joel Sachs, Ph.D. (Evolution, Ecology and Organismal Biology)
Devinder Sandhu, Ph.D. (USDA Salinity Lab)
Jason Stajich, Ph.D. (Microbiology and Plant Pathology)

Major

The mission of the interdepartmental Undergraduate Program in Plant Biology is to provide students with a solid background in modern principles and research practices of basic Plant Biology and in their area of specialization.

Courses prerequisite to the major, courses used to satisfy major requirements, and the 11 units (for B.S. degree) related to the major must be taken for letter grades. Students may elect to take other courses on a Satisfactory (S)/No Credit (NC) basis. Refer to the Academic Regulations section of this catalog for additional information on "S/NC" grading.

Information about this program is available on the CNAS UAAC website at cnasstudent.ucr.edu.

Transfer Students

Students planning to transfer to UCR with a major in Plant Biology must have a minimum GPA of 2.7 in transferable college courses and "C" or higher grades in a year sequence of general chemistry and in courses equivalent to our BIOL 005A, BIOL 005B. We also require that transfer students complete two quarters of college calculus (equivalent to our MATH 007A and 007B or our MATH 009A and MATH 009B) before admission. Exceptions may be granted by the faculty advisor.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

Some of the following requirements for the major may also fulfill some of the college's breadth requirements. Consult with a department advisor for course planning.

Major Requirements

The major requirements for the B.S. and B.A. degrees in Plant Biology are as follows:

1. Life Sciences core requirements (72-77 units)

- Students must complete all required courses with a grade of "C-" or better and with a cumulative GPA in the core courses of at least 2.0. Grades of "D" or "F" in two core courses, either separate courses or repetitions of the same course, are grounds for discontinuation from the major.
- BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C
 - CHEM 001A, CHEM 01LA, CHEM 001B, CHEM 01LB, CHEM 001C, CHEM 01LC
 - CHEM 008A and CHEM 08LA or CHEM 008HA and CHEM 008HLA, CHEM 008B and CHEM 008LB or CHEM 008HB and CHEM 008HLB, CHEM 008C and CHEM 008LC or CHEM 008HC and CHEM 08HLC
 - MATH 007A or MATH 009A, MATH 007B or MATH 009B (MATH 009C recommended)
 - PHYS 002A, PHYS 02LA, PHYS 002B, PHYS 02LB, PHYS 002C, PHYS 02LC
 - STAT 010

g) BCH 100 or BCH 110A (BCH 110A is strongly recommended)

2. Upper-division requirements (36 units for the B.S., 31 units for the B.A.)

A GPA of at least 2.0 in upper-division courses taken in the field of the major is a graduation requirement. A student is subject to discontinuation from the major whenever the GPA in upper-division course work is below 2.0. Students finding themselves in this circumstance must meet with an advisor.

- BIOL 102
- BPSC 104/BIOL 104
- BIOL 132/BPSC 132, BIOL 143/BPSC 143, BPSC 133
- For the B.S. only: Two (2) units of BPSC 195H, BPSC 197, BPSC 198I, or BPSC 199
- BPSC 193 with a grade of C- or better
- For the B.S.** At least 11 additional units from one of the five areas of specialization (consult with a faculty advisor). Students may apply a maximum of 6 units of BPSC 190 and/or BPSC 195H and/or BPSC 197 and/or BPSC 198I and/or BPSC 199.

For the B.A. At least 8 additional units from one of the five areas of specialization (consult with a faculty advisor).

Note: Students planning a B.A. degree should schedule the required language courses in place of a series of electives.

Areas of Specialization

Individual student career goals may be achieved by selecting an area of specialization within the diverse disciplines of botany and plant sciences. Adjustments within these programs can be made to accommodate students' interests. Students must consult with a faculty advisor to clarify educational goals and to plan a program of study.

1. Plant Cellular, Molecular, and Developmental Biology

- BPSC 135
- Additional units from the following to meet either the B.S. or B.A. requirement: BCH 102, BCH 110B, BCH 110C or BIOL 107A, BCH 162, BCH 183/BPSC 183, BIOL 107B, BIOL 113, BIOL 114, BIOL 121/MCBL 121, BIOL 121L/MCBL 121L, MCBL 121LS, BIOL 123/MCBL 123/PLPA 123, BIOL 155/BPSC 155, BIOL 168, BPSC 138/BIOL 138, CBNS 101, CBNS 108, BPSC 109/CBNS 109, BPSC 149

2. Plant Genetics, Breeding, and Biotechnology

- BPSC 150
- Additional units from the following to meet either the B.S. or B.A. requirement: BIOL 105, BIOL 107A, BIOL 107B, BIOL 108, BIOL 119, BIOL 148/BPSC 148, BIOL 155/BPSC 155, BPSC 135, CBNS 108, STAT 011, BPSC 109/CBNS 109, BPSC 149

3. Ecology, Evolution, and Systematics

- BPSC 146
- Additional units from the following to meet either the B.S. or B.A. requirement:

BIOL 105, BIOL 108, BIOL 112/BPSC 112/ENTM 112, BIOL 116, BIOL 116L, BIOL 138/BPSC 138, BIOL 165/BPSC 165, BPSC 134/ENSC 134, BPSC 166, ENSC 100, GEO 151, GEO 153, GEO 169, BPSC 145

4. Plant Pathology, Nematology, and Pest Management

- BIOL 120/MCBL 120/PLPA 120
- Additional units from the following to meet either the B.S. or B.A. requirement:
BCH 183/BPSC 183, BIOL 121/MCBL 121, BIOL 121L/MCBL 121L, MCBL 121LS, BIOL 124/MCBL 124, BPSC 146, BPSC 150, BPSC 166, ENSC 134/BPSC 134, ENTM 100/BIOL 100, ENTM 109, ENTM 124, ENTM 127/BIOL 127, ENTM 129, ENTM 129L, ENSC 100, ENSC 120/NEM 120, NEM 159/BIOL 159, PLPA 120L/BIOL 120L/MCBL 120L, PLPA 123/BIOL 123/MCBL 123, PLPA 134/BIOL 134, PLPA 134L/BIOL 134L, ENSC 104, MCBL 128

5. Individualized specialization

For students who wish to pursue cross-disciplinary education in plant biology. Course selection can be individualized, but needs to be approved by faculty advisor.

Minor

The minor in Plant Biology allows students majoring in other departments to obtain in-depth training in Plant Biology.

Requirements for the minor in Plant Biology are as follows:

- BIOL 104/BPSC 104 (4 units)
- One course (4–5 units) from the following: BIOL 132/BPSC 132, BIOL 138/BPSC 138, BIOL 143/BPSC 143, BPSC 133
- 12 to 20 units from the following: BCH 183/BPSC 183, BIOL 132/ BPSC 132, BIOL 138/BPSC 138, BIOL 143/ BPSC 143, BIOL 148/BPSC 148, BIOL 155/ BPSC 155, BIOL 165/BPSC 165, BPSC 133, BPSC 134/ENSC 134, BPSC 135, BPSC 146, BPSC 150, BPSC 166, BPSC 190, BPSC 195H, BPSC 197, BPSC 198-I, BPSC 199, PLPA 120/BIOL 120/ MCBL 120, BPSC 109/CBNS 109, BPSC 149

Note: No more than 4 units of BPSC 190–199 may be used to fulfill this requirement. The course used to fulfill the requirement in 2 cannot also be used to fulfill the requirement in 3.

See Minors under the College of Natural and Agricultural Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Graduate Program

The Department of Botany and Plant Sciences offers programs leading to the M.S. and Ph.D. degrees in Plant Biology. Research in these programs can focus on basic and/or applied questions.

Admission

Applicants who have a baccalaureate degree and who satisfy the general requirements of the university listed in the Graduate Studies section of this catalog are considered for admission to graduate status. Students applying to the M.S. and Ph.D. program must submit GRE

General Test scores (verbal, quantitative, and analytical).

Regardless of the area of their major for the baccalaureate degree, students must have had, or complete soon after entering graduate school the following:

- A year of course work in general biology
- A year of course work in general chemistry
- A course in genetics
- A course in biochemistry or ecology
- A course in calculus
- Two courses in physics and/or statistics

Credit from these courses does not count toward the graduate degree.

Immediately after being admitted, each student should identify a faculty advisor and consult with that advisor or the graduate advisor regarding educational goals; scheduling initial course work and possible lab rotations; and forming a guidance committee. Further guidance on these matters is provided in the Botany and Plant Sciences Graduate Student Handbook.

Master's Degree

The Department of Botany and Plant Sciences offers programs leading to the M.S. degree in Plant Biology.

The master's degree may be earned under Plan I (Thesis) or Plan II (Comprehensive Examination). Students must meet all general requirements of the Graduate Division. The detailed course program is determined by the guidance committee after considering the specific interests of the student. Department requirements are as follows:

Plan I (Thesis)

- Three courses from Section I are required.** Students who have taken courses comparable to those in Section I during their baccalaureate training may have a portion or all of this section waived. Recommendations for waivers should specify alternative courses and should be sent to the department educational advisory committee for approval. In such instances, however, it is expected that their programs include increased units in courses from Sections II, III, and/or IV.
- Two courses (6 units) from Section II are required.** In fulfilling the Section II requirement, students may use no more than one course cross-listed by Botany and Plant Sciences and another program. If such a cross-listed course is used toward fulfilling the Section II requirement, the same course may not be used toward fulfilling the Section I or III requirements. No more than four units may be in professional development courses.
- At least 6 units from Section III must be taken.**
- Preparation of a thesis: Not more than 12 units from Section V (299 units) may apply toward the degree.** If the student takes research courses (290/297) from Section IV, not more than 6 units may be applied toward the degree. A total of 12 units of 297/299 may be used towards the degree.

Seminar Requirement

All full-time students must enroll in the BPSC 250 seminar during each quarter in which it is offered. Part-time students must take one BPSC 250 seminar for every 12 units of courses. All students must present at least one BPSC 250 seminar and complete at least one quarter of BPSC 240 (or approved similar equivalent that involves substantial student presentations).

Plan II (Comprehensive Examination)

- Three courses from Section I are required.** Students who have taken courses comparable to those in Section I during their baccalaureate training may have a portion or all of this section waived. In such instances, however, it is expected that their programs include increased units in courses from Section II and/or III. Recommendations for waivers should specify alternative courses and should be sent to the educational advisory committee for approval.
- Two courses (6 units) from Section II are required.** In fulfilling the Section II requirement, students may use no more than one course cross-listed by Botany and Plant Sciences and another program. If such a cross-listed course is used toward fulfilling the Section II requirement, the same course may not be used toward fulfilling the Section I or III requirements. No more than 4 units may be in professional development courses.
- At least 3 courses (11-12 units) from Section III are required.**
- Students must complete at least 6 units from Section IV for a research project (297) or literature review (290),** which should be described in a report to be submitted for evaluation by the comprehensive examination committee.
- Comprehensive written and oral examinations**

Seminar Requirement

All full-time students must enroll in the BPSC 250 seminar during each quarter in which it is offered. Part-time students must take one BPSC 250 seminar for every 12 units of courses. All students must present at least one quarter of BPSC 240 (or approved similar equivalent that involves substantial student presentations).

Courses available for fulfilling the requirement for the M.S. degree in Plant Biology:

Section I — Upper-division undergraduate courses: BCH 183/BPSC 183, BIOL 104/BPSC 104, BIOL 112/BPSC 112/ ENTM 112, BIOL 120/MCBL 120/PLPA 120, BIOL 132/BPSC 132, BIOL 134/PLPA 134, BIOL 138/BPSC 138, BIOL 143/BPSC 143, BIOL 148/BPSC 148, BIOL 155/BPSC 155, BIOL 165/BPSC 165, BPSC 109/CBNS 109, BPSC 133, BPSC 134/ ENSC 134/, BPSC 135, BPSC 146, BPSC 148, BPSC 149, BPSC 150, BPSC 166

Section II — Graduate and upper-division undergraduate courses in related departments or programs and professional

development courses (i.e., BPSC 200A - BPSC 200B). Applicable courses are approved by the Graduate Educational Advisory Committee. A minimum of 6 units of course work is required. No more than 4 units may be from professional development classes.

Professional Development Training

Students are required to take BPSC 200A. Students are encouraged to enroll in BPSC 200B. Students may also enroll in BPSC 200C to develop skills in research mentoring in the life sciences.

Section III — BCH 231/BPSC231, BPSC201 (E-Z) (for a maximum of 2 units), BPSC 221, BPSC 222, BPSC 225 (E-Z), BPSC 230, BPSC 231, BPSC 232, BPSC 234, BPSC 237, BPSC 239, BPSC240 (only if taken in addition to the required seminar units; see seminar requirement), BPSC243, BPSC 244, BPSC 245, BPSC 246, and BPSC 247.

Section IV — Research courses: BPSC 290 and BPSC 297

Section V — Thesis research: BPSC 299, Thesis for Plan I

Normative Time to Degree 7 quarters

Doctoral Degree

The Department of Botany and Plant Sciences offers programs leading to the Ph.D. degree in Plant Biology.

The student must meet the general requirements of the Graduate Division.

Admission

Either prior to entering the graduate program or before advancement to candidacy, students must have completed the equivalent of BPSC 104 and one other course from the core plant biology courses (BIOL 107A, BPSC 132, BPSC 135, BPSC 138, BPSC 143, BPSC 146). Course requirements for each student are determined by individual guidance committees and by the educational advisory committee. No later than the second quarter in residence, students meet with a guidance committee to (1) determine a course program to be submitted to the educational advisory committee, and (2) choose a major area of specialization and two minor areas.

Course Work

Guidance committees and students should design individual course programs that meet the specific needs of the student and the requirements of the Ph.D. program. Course programs should prepare students for the qualifying examination and dissertation research. All first-year students must enroll in BPSC 200A and 200B during their first Fall and Spring quarters. Students must take a minimum of 3 graduate-level courses (11-12 units) relevant to the specialization. Graduate courses taken previously may be considered towards fulfilling this requirement. Students' course programs must be approved by the educational advisory committee. At the time of submission of course programs to the educational advisory committee, the area of specialization and two minor areas to be covered on the qualifying examination should be specified. Students may petition to change the course program, area of specialization, or minor areas at any time.

Students entering the Plant Biology Ph.D. program have four choices, as listed below. Students with a general interest in plant biology and/or evolution are encouraged to choose the first.

Ph.D. in Plant Biology

Students who choose to obtain a Ph.D. in Plant Biology without one of the following concentrations are encouraged to – with the advice and consent of their Major Professor and Guidance Committee – select a set of graduate-level courses (11-12 U) that is specifically tailored to their individual research interests and career objectives.

Students can also choose from one of three concentrations:

Ph.D. in Plant Biology (Concentration in Plant Cell, Molecular, and Developmental Biology)

To earn the concentration in Plant Cell, Molecular, and Developmental Biology (appears on the transcript only), students must complete BPSC 231, BPSC 232, and BPSC 237. In addition, the required BPSC 240 course must be on a topic related to the concentration.

Ph.D. in Plant Biology (Concentration in Plant Ecology)

To earn the concentration in Plant Ecology (appears on the transcript only), students must complete BPSC 245, and two additional courses (7-8 units) from the following list: EEOB 211, EEOB 212, EEOB 217, EEOB 230, BPSC 225J, BPSC 243, BPSC 244, BPSC 246, BPSC 247, ENTM 241, ENSC 218, ENSC 232, GEO 260, and GEO 268. In addition, the required BPSC 240 course must be on a topic related to the concentration.

Ph.D. in Plant Biology (Concentration in Plant Genetics)

To earn the concentration in Plant Genetics (appears on the transcript only), students must complete three graduate-level courses (11-12 units) relating to Genetics. Required courses must include two courses from the following list: BPSC 221, BPSC 222, BPSC 225K, BPSC 231, BPSC 234, EEOB 214, BIOL 221/MCBL 221/PLPA 226, GEN 240A. The additional units can be chosen in an area that supports the concentration. In addition, the required BPSC 240 course must be on a topic related to the concentration.

Written and Oral Qualifying Examinations

Advancement to candidacy depends on the student passing written and oral qualifying examinations. The qualifying examination covers the student's area of specialization and two minor areas. Granting of the degree is contingent upon acceptance of the dissertation by the candidate's dissertation committee and satisfactory oral defense of the dissertation.

Seminar Requirement

All candidates must enroll in the BPSC 250 seminar during each quarter in which it is offered until advancement to candidacy. After this time, PhD candidates must enroll in BPSC 250 seminar two quarters per year until conferral of the degree. The dissertation defense is normally presented in the BPSC 250 seminar series; however, if necessary, a special seminar may be scheduled for the defense. Also, students must present at least one BPSC 250 seminar in addition to the defense of the

dissertation. All students must complete at least one quarter of BPS 240 (or approved equivalent that involves substantial student presentations) during the Ph.D. program.

Professional Development Training

Ph.D. graduate students must enroll in BPS 200A and BPS 200B to fulfill their professional development training requirement. Students may enroll in BPS 200C to develop skills in research mentoring in the life sciences.

Foreign Language Requirement None

Teaching Requirement

Students must obtain at least one quarter of teaching experience.

Normative Time to Degree 15 quarters

Normative Time to Candidacy 2 years

Lower-Division Courses

BPS 011 Plants and Human

Affairs 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction for non-science and non-Botany majors to the importance of plants and plant products in the shaping of human affairs and civilization. Covers the origin and practice of agriculture; the utilization of plant products; the latest agricultural advances, including genetic engineering; and the current agricultural and social issues. Plants and plant products are examined during class demonstrations and exercises.

BPS 021 California's Cornucopia: Food From the Field to Your Table 5

Lecture, 3 hours; discussion, 1 hour; outside activities, 30 hours per quarter. Prerequisite(s): none. Examines California's diverse agricultural products. Addresses related contemporary issues such as crop improvement by biotechnology, climate change, pollution, resource use, and nutrition. Also examines how the interplay of geography, history, and culture shapes the cuisine of a region.

BPS 031 Spring Wildflowers 4

Lecture, 3 hours; laboratory, 3 hours; one Saturday field trip. Prerequisite(s): none. General approach to the study of vegetative and floral features of plants as a means of identification and botanical classification of major plant families in Southern California. Secondary emphasis on the field biology of flowering plants.

BPS 050 The Evidence For

Evolution 4 Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. Introduces and explores the extensive evidence supporting evolution as the driver of biological diversity. Designed for non-science majors and/or those with limited prior knowledge about biology. Includes the scientific method, paleontology, natural selection, genetics, speciation, and the importance of sex. Addresses the broader need for scientific literacy in society. Cross-listed with ENTM 050.

BPS 097 Lower-Division Research 1 to 4

Individual Study, 3 to 12 hours. Prerequisite(s): consent of instructor. Involves special research projects in plant biology performed under faculty supervision. Requires a final written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

Upper-Division Courses

BPS 104 Foundations of Plant

Biology 4 Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005C. A study of the plant world from cells to ecosystems. Examines the structure and function of organisms from the major plant groups and their role in the biosphere. The laboratory explores the unique properties of plants. Cross-listed with BIOL 104.

BPS 109 Epigenetics 4

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 102. Introduction to mechanisms that cause a heritable change in phenotype without a change in the genetic code. Covers DNA modifications, histone modifications, and noncoding RNAs that influence the expression, maintenance, and inheritance of traits. Discusses impacts of epigenetics on multicellular life such as learning, memory, disease, and crosstalk with environments. Cross-listed with CBNS 109.

BPS 112 Systematics 4

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005C or equivalent. Principles and philosophy of classification. Topics include phylogenetic and phenetic methods, species concepts, taxonomic characters, evolution, hierarchy of categories, and nomenclature. Cross-listed with BIOL 112, and ENTM 112.

BPS 132 Plant Anatomy 4

Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A and BIOL 005B; BPS 104 or BIOL 104; or consent of instructor. Functional and developmental aspects of plant cell, tissue, and organ structure. Covers all aspects of the flowering plant life cycle from germination to pollination and fruit and seed development. Cross-listed with BIOL 132.

BPS 133 Plant Diversity and

Evolution 5 Lecture, 3 hours; laboratory, 3 hours; field, 30 hours per quarter. Prerequisite(s): BIOL 005C; or consent of instructor. Introduces the principles and methods of identifying, naming, and classifying flowering plants. Surveys selected flowering plant families in California and shows their interrelationships. Introduces the principles and methods of identifying, naming, and classifying flowering plants. Surveys selected flowering plant families in California and shows their interrelationships.

BPS 134 Soil Conditions and Plant Growth 4

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 104/BPS 104 or ENSC 100; or consent of instructor. A study of the chemical, physical, and biological properties of soils and their influence on plant growth and development. Topics include soil-plant water relations; fundamentals of plant mineral nutrition; soil nutrient pools and cycles; soil acidity, alkalinity, salinity, and sodicity; root symbioses; and rhizosphere processes. Cross-listed with ENSC 134.

BPS 135 Plant Cell Biology 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005C; BCH 100 or BCH 110A; or consent of instructor. Explores concepts of dynamic plant cell structures and functions as revealed by modern technologies such as genetic manipulation and live-imaging of cellular structures and molecules.

BPS 138 Plant Developmental

Morphology 4 Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BCH 100 or BCH 110A or BCH 110HA (BCH 100 or BCH 110HA may be taken concurrently), BIOL 005B, BIOL 005C, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, PHYS 002C or PHYS 02HC, PHYS 002LC or PHYS 02HLC; or consent of instructor. Introduces the key areas of research in plant morphology and developmental biology. Emphasizes flowering plants (angiosperms). Cross-listed with BIOL 138.

BPS 143 Plant Physiology 4

Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09HB, PHYS 002C or PHYS 02HC, PHYS 02LC or PHYS 02HLC, BCH 100 or BCH 110A or BCH 110HA (BCH 100 or BCH 110A or BCH 110HA may be taken concurrently), BIOL 104/BPS 104; or consent of instructor. A survey of the fundamental principles of plant physiology including photosynthesis, respiration, water relations, mineral nutrition, growth, morphogenesis, plant hormones, dormancy, and senescence. Cross-listed with BIOL 143.

BPS 145 Geospatial Analytics For

Landscape Ecology 4 Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): PBPL 010; or equivalent; or consent of instructor. Builds on the basic understanding of fundamental concepts of Geographic Information Science (GIScience). Applies spatial data concepts to understand the ecological impacts of human activities across landscapes. Examines the link between landscape patterns and ecological processes at larger spatial scales.

BPS 146 Plant Ecology 4

Lecture, 3 hours; laboratory, 1.8 hours; field, 1.2 hours. Prerequisite(s): BIOL 104 or BPS 104 or BIOL 116; STAT 010; or consent of instructor. A study of the fundamentals of plant ecology. Emphasizes community ecology, environment, life histories, population dynamics, species interactions, succession, ecosystem and landscape ecology, and plant conservation ecology.

BPS 148 Quantitative Genetics 4

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 05LA; BIOL 005B; BIOL 005C; BIOL 102; CHEM 001C or CHEM 01HC; CHEM 008C, CHEM 08LC or CHEM 08HC, CHEM 08HLC; MATH 007B or MATH 009B or MATH 09HB; PHYS 002C or PHYS 02HC, PHYS 02LC or PHYS 02HLC; BCH 100 or BCH 110A or BCH 110HA; STAT 011. Examines approaches to studying the genetic basis of polygenic metric traits. Includes types of gene action, partitioning of variance, response to selection, and inferring the number and location of quantitative trait loci. Cross-listed with BIOL 148.

BPSC 149 Nanobiotechnology 2 Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): BIOL 005C; BIOL 102; CHEM 008C or CHEM 08HC, CHEM 08LC or CHEM 08HLC; PHYS 002C or PHYS 02HC, PHYS 02LC or PHYS 02HLC or PHYS 040C or PHYS 040HC; restricted to class level standing of junior, or senior; or consent of instructor. An Introduction to fundamental concepts of the emergent field of nanobiotechnology and its application to plant and medical sciences. Topics include nanomaterial-mediated genome editing and transformation, targeted and controlled drug delivery, nanosensors for electrical signals and signaling molecules, and cyborg plants and animals with augmented or novel functions.

BPSC 150 Genes, Selection, and Populations 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 102 with a grade of "C-" or better, upper-division standing; or consent of instructor. Considers the conscious manipulation of allelic frequencies in populations as the basis for domestication of crop and animal species. Examines the genetic basis and standard strategies for the improvement of targeted characteristics in populations of plants and animals through selection and introgression of specific genes and gene constructs.

BPSC 155 Chromosomes 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09HB, PHYS 002C or 02HC, PHYS 02LC or PHYS 02HLC, BCH 100 or BCH 110A or BCH 110HA (BCH 100 or BCH 110A or BCH 110HA may be taken concurrently); or consent of instructor. An examination of the structure, function, and behavior of eukaryotic chromosomes. Cross-listed with BIOL 155.

BPSC 165 Restoration Ecology 4 Lecture, 3 hours; field, 8 hours. Prerequisite(s): BIOL 104 or BPSC 104 or BIOL 116 or ENSC 100; CHEM 008B, CHEM 08LB or CHEM 08HB, CHEM 08HLB; STAT 010, may be taken concurrently; or consent of instructor. An examination of the basic ecological principles related to land restoration. Topics include enhanced succession; plant establishment; plant adaptations; ecotype; weed colonization and competition; nutrient cycling; functions and reintroduction of soil microorganisms; restoration for wildlife; and the determination of successful restoration. Includes field trips to restored sites. Cross-listed with BIOL 165.

BPSC 166 Plant Physiological Ecology 4 Lecture, 3 hours; workshop, 1 hour. Prerequisite(s): BIOL 005C or consent of instructor; university-level courses in mathematics, physics, and chemistry are recommended. Topics include plant responses to light, temperature, evaporative demand, and limiting soil conditions. Explores photosynthesis, plant-water relations, and plant-temperature relations. Gives attention to plant adaptation to climates with varying aridity and temperature extremes.

BPSC 183 Plant Biochemistry and Pharmacology of Plant Metabolites 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110A or BCH 110HA, BCH 110B or BCH 110HB; or BCH 100; or consent of instructor. Explores plant biochemistry and the significance of plant metabolites in medicine and pharmacology. Focuses on biotechnology, medicinal plants, and plant-derived drugs as well as the biochemical and pharmacological mode-of-action of secondary plant metabolites. Also addresses plant-specific biochemical processes such as photosynthesis. Cross-listed with BCH 183.

BPSC 190 Special Studies 1 to 5 variable hours. Library, laboratory or field work designed to meet special curricular needs. A written proposal signed by the supervising faculty member must be approved by the major advisor and the Department Vice Chair. A written report must be filed. Course is repeatable, but total credit toward graduation may not exceed 6 units.

BPSC 191 Seminar in Agricultural Careers in the 21st Century 1 Seminar, 1 hour. Prerequisite(s): sophomore or junior standing; or consent of instructor. Introduces students to diverse career options in agriculture and biotechnology through seminars and interviews with industry, government, and academic professionals. Develops skillsets for finding and acquiring jobs in agricultural and biotechnology. Graded Satisfactory (S) or No Credit (NC)

BPSC 193 Senior Seminar 2 Seminar, 1 hour; lecture, 1 hour. Prerequisite(s): senior standing in Plant Biology. Emphasizes thinking across hierarchical levels and understanding structure-function relationships in plant biology. Includes lectures by instructors and presentation of classical or landmark papers by students. Satisfactory (S) or No Credit (NC) grading is not available.

BPSC 195H Senior Honors Thesis 1 to 4 Thesis, 3 to 12 hours. Prerequisite(s): upper division standing; admission to University Honors or consent of instructor. Directed research and completion of a senior Honors thesis under the supervision of a faculty member. Course is repeatable to a maximum of 12 units.

BPSC 197 Research For Undergraduates 1 to 4 Research, 3 to 12 hours. Prerequisite(s): upper-division standing; consent of instructor. Individual research conducted under the direction of a Botany and Plant Sciences faculty member. A written proposal must be approved by the supervising faculty member and undergraduate advisor. A written report must be filed with the supervising faculty member at the end of the quarter. Course is repeatable.

BPSC 198I Individual Internship in Botany and Plant Sciences 1 to 12 Internship, 2 to 24 hours; written work, 1 to 12 hours. Prerequisite(s): upper-division standing; consent of instructor. An off-campus internship related to plant biology. The student conducts the internship in the public or private sector but is jointly supervised by

an off-campus sponsor and a faculty member in Botany and Plant Sciences. Requires an initial written proposal and a final written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

BPSC 199 Senior Research 2 to 4 Laboratory, 6 to 12 hours. Prerequisite(s): senior status; a GPA of 3.2 or better in upper-division courses in Botany/Plant Science and Biology; or consent of instructor. Individual research on a problem relating to Botany/Plant Science. A written proposal signed by the supervising faculty member must be approved by the major advisor and the Department Vice Chair. A written report must be filed with the supervising faculty member. Course is repeatable, but total credit toward graduation may not exceed 9 units.

Graduate Courses

BPSC 200A Plant Biology Core 2 Lecture, 1 hour; practicum, 3 hours. Prerequisite(s): graduate standing in Plant Biology or consent of instructor. Explores plant biology research approaches. Emphasizes critical thinking and advanced planning of hypothesis testing, as well as experimental/descriptive/theoretical caveats, trade-offs, and options. Presents topics in a case-study approach. Also addresses professional development.

BPSC 200B Plant Biology Core 2 Lecture, 1 hour; practicum, 3 hours. Prerequisite(s): BPSC 200A. Builds on material covered in BPSC 200A. Focuses on creating complete grant proposals based upon the guidelines of an actual funding source. Presents topics in a case-study approach. Includes peer review of completed proposals.

BPSC 200C Plant Biology Core 2 Lecture, 0.5 hour; discussion, 0.5 hour; written work, 3 hours. Prerequisite(s): restricted to major(s) Plant Biology; graduate standing; or consent of instructor. Teaches how to become a reflective and effective research mentor. Includes designing and implementing an effective strategy to mentoring. Addresses learning how to critically evaluate student learning and the effectiveness of mentoring initiatives. Creates a mentoring community where challenges and solutions can be shared among students with diverse backgrounds. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

BPSC 201 (E-Z) Plant Molecular Biology 1 to 2 Laboratory, 3 hours. Prerequisite(s): graduate standing. Explores the theory and principles of instruments and laboratory techniques applicable to research in the plant sciences. Experiments provide experience in the use of laboratory instruments and techniques including applications and limitations. E. Plant Molecular Biology; F. Plant Ecology; G. Plant Systematics; I. Plant Microscopy; J. Plant Physiology; K. Plant Genetics; M. Plant Cell Biology; N. Plant Cytogenetics. Course is repeatable to a maximum of units.

BPSC 208 Product Design and Entrepreneurship For Agricultural and Biological Applications 3 Lecture, 3 hours. Prerequisite(s): graduate standing; or consent of instructor. Examines the discovery, design, and evaluation processes for biological and agricultural products through team study and project design. Includes participation from various disciplines working together to broaden knowledge and enhance communication skills key to tackling challenges related to agriculture, the environment, human health, and other needs. May be Taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D. Cross-listed with CEE 208.

BPSC 221 Advanced Plant Breeding 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 148/BPSC 148 or consent of instructor; BPSC 150. Advanced treatment of plant breeding theory and practice including development and use of information on inheritance of traits; choice of breeding plans; breeding for yield, quality, and disease and stress resistance; and use of biotechnology.

BPSC 222 Origins of Agriculture and Crop Evolution 3 Lecture, 3 hours. Prerequisite(s): BIOL 102, BIOL 104/BPSC 104; or consent of instructor. Analysis of origins of agriculture in the Near East, China, the New World, and Africa. Survey of domestication and evolution of major crop plants and animals.

BPSC 225 (E-Z) Advanced Topics in Plant Biology 2 Lecture, 2 hours. Prerequisite(s): graduate standing; or consent of instructor. An in-depth examination of selected topics in plant biology. E. Agricultural Plant Biology; F. Plant Cell Biology; G. Plant Development; I. Plant Evolution And Systematics; J. Plant Ecology; K. Plant Genetics; M. Plant Molecular Biology; N. Plant Biochemistry And Physiology; P. Nanobiotechnology. Course is repeatable as content or topic changes.

BPSC 230 Molecular Plant-Microbial Interactions 3 Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BCH 100, BIOL 120/ MCBL 120/PLPA 120, or equivalents. A study of the physiology of host-pathogen interactions with emphasis on the metabolism of diseased plants, nature of pathogenicity, and defense mechanisms in plants. Cross-listed with PLPA 230, CMDB 230, and GEN 230.

BPSC 231 The Plant Genome 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 100, BIOL 107A; or BCH 110A or BCH 110HA, BCH 110B or BCH 110HB, BCH 110C or BCH 110HC; or consent of instructor. Gives students an appreciation for the structure of the plant nuclear, chloroplast, and mitochondrial genomes. Gene structure, regulation of gene expression, transposons, and methods of gene introduction are also emphasized. Cross-listed with BCH 231.

BPSC 232 Plant Development 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BCH 110HC or BIOL 107A; BIOL 102; BIOL 104/BPSC 104; or consent of instructor. An examination of plant development, with emphasis on the genetic mechanisms used in

patterning plant forms. Topics are taken from current literature and focus on molecular and cellular mechanisms.

BPSC 234 Statistical Genomics 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 102, STAT 231B; or consent of instructor. Examines statistical methods of genome analysis. Topics include screening for genetic markers, linkage analysis, linkage disequilibrium, and mapping genes for complex diseases and quantitative traits. Covers statistical techniques including analysis of least squares and maximum likelihood, Bayesian analysis, and Markov chain Monte Carlo algorithm. Cross-listed with GEN 234.

BPSC 237 Plant Cell Biology 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 107A or BIOL 143/BPSC 143 or BCH 100 or CBNS 101 or their equivalents, or consent of instructor. Studies the structure, function, and dynamics of plant cell division, expansion, and specialization. Emphasis on aspects unique to plants including cytoskeletal and cell plate dynamics during cytokinesis; intracellular trafficking and wall-dynamics during expansion; and targeting to chloroplasts and vacuoles during specialization.

BPSC 239 Advanced Plant Physiology 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 143/BPSC 143 or consent of instructor. Examines advances in plant physiology, with emphasis on carbon and nitrogen metabolism, mineral nutrition, solute transport and phloem translocation, plant growth regulators, and secondary compounds in relation to growth and development.

BPSC 240 Special Topics in Plant Biology 2 Seminar, 2 hours. Prerequisite(s): graduate standing; or consent of instructor. Discussion of current literature within special areas of plant science. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content or topic changes.

BPSC 243 Plant Physiological Ecology 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 143/BPSC 143; BPSC 146 or equivalent; or consent of instructor. Analyzes adaptations and responses of plants to their environment, with emphasis on the physical environment, photosynthesis, temperature and water relations, growth and allocation, and plant interactions.

BPSC 244 Species Distribution Modeling 4 Lecture, 2 hours; discussion, 1 hour; activity, 3 hours. Prerequisite(s): graduate standing; or consent of instructor. Overview of species distribution modeling, also called environmental niche modeling or habitat suitability modeling. Addresses biogeographical theories of species niche, data models for species and environmental data, and data analysis and model validation. Applies modern regression (Generalized Linear Models) and other modeling techniques (GAMs, classification trees, MaxEnt) using R software. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

BPSC 245 Advanced Plant Ecology 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009C or MATH 09HC; STAT 110 or STAT 231A or equivalent; an undergraduate course in ecology; or consent of instructor. Explores the fundamental ecological concepts, theoretical developments, quantitative methods, and experimental results involved in multiscale plant ecological studies. Emphasizes plant strategies, vegetation processes, ecosystem properties, and terrestrial landscapes and their interaction with environmental change and human land use.

BPSC 246 Landscape Ecology 4 Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 116 or BPSC 146; STAT 231A; or consent of instructor. Introduces landscape ecology both as a sub-discipline of ecology and an interdisciplinary approach for environmental research. Includes identification of spatial patterns, pattern-process relationships, and scaling. Analyzes population, community, and ecosystem dynamics in connection with landscape functioning. Evaluates landscape theory and methods for applications in species conservation, pollution, and climate changes.

BPSC 247 Ecological Theory and Modeling 4 Lecture, 2 hours; discussion, 2 hours. Prerequisite(s): MATH 009C or MATH 09HC; STAT 110 or STAT 231B or equivalent; an undergraduate course in ecology; or consent of instructor. Explores the fundamental ecological theory and modeling methodology with emphasis on the ecosystem and landscape levels. Synthesizes current research developments in the context of their classic works.

BPSC 250 Seminar in Plant Biology 1 Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Intensive study of selected topics in plant biology. Includes lectures by students, faculty, and invited scholars on subjects related to the principles of plant biology. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

BPSC 252 Special Topics in Botany/Plant Science 1 Seminar, 1 hour. Prerequisite(s): graduate standing and consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each staff member. Course content will emphasize recent advances in the special topic area and will vary accordingly. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 261 Seminar in Genetics, Genomics, and Bioinformatics 1 Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports by visiting scholars, faculty, and students on current research topics in Genetics, Genomics, and Bioinformatics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 261, BIOL 261, ENTM 261, PLPA 261, and GEN 261.

BPSC 290 Directed Studies 1 to 6 Individual Study, 3 to 18 hours. Prerequisite(s): consent of instructor. Library, laboratory, or field studies conducted under the direction of a faculty member. Designed to meet specific curricular needs in areas of plant biology not covered by formal course work and outside of required directed dissertation or thesis research. Not intended to replace BPSC 297 or BPSC 299.

BPSC 291 Individual Study in Coordinated Areas 1 to 6 Prerequisite(s): graduate standing. A program of study designed to advise and assist candidates who are preparing for examinations. Up to 6 units may be taken prior to the master's degree. Up to 12 units may be taken prior to advancement to candidacy for the Ph.D. Graded Satisfactory (S) or No Credit (NC). Course is repeatable upon recommendation of the instructor.

BPSC 292 Concurrent and Advanced Studies in Botany and Plant Sciences 1 to 4 Research, 3 to 12 hours. Prerequisite(s): consent of instructor. Elected concurrently with an appropriate undergraduate course, but on an individual basis. Devoted to one or more graduate projects based on research and criticism related to the course. Faculty guidance and evaluation is provided throughout the quarter.

BPSC 297 Directed Research 1 to 6 Research, 3 to 18 hours. Prerequisite(s): graduate standing or consent of instructor. Individual research conducted under the direction of a Botany and Plant Sciences faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 299 Research For Thesis Or Dissertation 1 to 12 Thesis, 3 to 36 hours. Prerequisite(s): graduate standing. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Business Administration

Subject abbreviation: BUS
The School of Business

Yunzeng Wang, Ph.D., Dean
Office, 142 Anderson Hall
(951) 827-2932

Undergraduate Business Programs Office
2340 Olmsted Hall
(951) 827-4551; fax: (951) 827-5061
business.ucr.edu

Professors

Subramanian 'Bala' Balachander, Ph.D.
Albert O. Steffey Chair (Marketing)
Margaret Campbell, Ph.D. *Department Chair, and A. Gary Anderson Family Foundation Endowed Presidential Chair in Business Administration* (Marketing)
Y. Peter Chung, Ph.D. (Finance)
Elodie Goodman, Ph.D. (Operation and Supply Chain Management)
Mohsen El-Hafsi, Ph.D. (Operations and Supply Chain Management)

Jerayr 'John' Haleblian, Ph.D. *Associate Dean, and A. Gary Anderson Family Foundation Endowed Presidential Chair in Business Administration* (Management)
Jean Helwege, Ph.D. *A. Gary Anderson Family Foundation Endowed Presidential Chair in Finance* (Finance)
Thomas Kramer, Ph.D. *Associate Dean for the Academic Undergraduate Programs* (Marketing)
Birendra Mishra, Ph.D. (Accounting)
Theodore Mock, Ph.D. *Distinguished Professor* (Accounting)
Ashutosh Prasad, Ph.D. (Marketing)
Richard Smith, Ph.D. *Philip L. Boyd Chair* (Finance)
Yunzeng Wang, Ph.D. *Dean's Distinguished Scholar* (Operations and Supply Chain Management)
Rami Zwick, Ph.D. *Associate Dean for the Academic Graduate Programs* (Marketing)

Professors Emeriti

Bajis M. Dodin, Ph.D. (Operations and Supply Chain Management)
Woody Liao, Ph.D. (Accounting)
Kathleen Montgomery, Ph.D. *Distinguished Professor* (Management)
Michael Moore, Ph.D. (Accounting)
Amnon Rapoport, Ph.D. *Distinguished Professor* (Management)
Waymond Rodgers, Ph.D. (Accounting and Information Systems)
David Stewart, Ph.D. *Distinguished Professor* (Marketing)

Associate Professors

Hai Che, Ph.D. (Marketing)
Long Gao, Ph.D. (Operations and Supply Chain Management)
Michael Haselhuhn, Ph.D. (Management)
Hyun 'Shana' Hong, Ph.D. (Accounting)
Yawen Jiao, Ph.D. (Finance)
Boris Maciejovsky, Ph.D. (Management)
Marlo Raveendran, Ph.D. (Management)
Ashish Sood, Ph.D. (Marketing)
Danko Turcic, Ph.D. (Operations and Supply Chain Management)
Elaine Wong, Ph.D. (Management)
Ivy Zhang, Ph.D. (Accounting and Information System)

Assistant Professors

Eric Allen, Ph.D. (Accounting)
Alexander Barinov, Ph.D. (Finance)
Richard Carrizosa, Ph.D. (Accounting)
Mengmeng Dong, Ph.D. (Finance)
Mingyu 'Max' Joo, Ph.D. (Marketing)
Demetrius Lewis, Ph.D. (Management)
Haibo Liu, Ph.D. (Management)
Adem Orsdemir, Ph.D. (Operations and Supply Chain Management)
Charles Zhang, Ph.D. (Marketing)

Assistant Professor of Teaching

Neman Desai, Ph.D. (Accounting)
Kyle Ingram, Ph.D. (Management)
Jonathan Lim, Ph.D. (Marketing)
Sanjoy Moulik, Ph.D. (Information Systems)
Adrienne Reynolds, Ph.D. (Management)
Greg Richey, Ph.D. (Finance)
Rich Yueh, Ph.D. (Information Systems)

Lecturers

Sean Jasso, Ph.D. (Management and Marketing)
Raj Singh, Ph.D. (Management and Marketing)

Majors

The B.S. in Business Administration is a two-year upper-division major offered by the School of Business. Students can enroll in a Pre-Business status and are advised in CHASS during their freshman and sophomore years. The Pre-Business curriculum includes the prerequisites to the major and the college breadth requirements. After admission to the major, students are advised by the School of Business through its Undergraduate Business Programs Office located at 2340 Olmsted Hall. The B.S. degree in Business Administration is conferred by the School of Business.

The program is accredited by the AACSB International - The Association to Advance Collegiate Schools of Business.

Admission

A limited number of students are accepted into the Business Administration major, chosen according to overall GPA. Students must apply for the major when they have completed not fewer than 75 and not more than 100 quarter units of college work. Final acceptance into the major is based on completion of all prerequisites and breadth requirements within a 100-quarter-unit limit, a GPA of 2.50 or above in major prerequisites, and cumulative GPA of at least 2.70. (Students who have not completed the foreign language breadth requirement, ENGL 001C, or one Social Science course of their breadth requirement, may be accepted into the program, but they must complete the requirement before graduation.) Exceptions to the 100-quarter-unit maximum must be requested by petition.

UCR Students (excluding Pre-Business students) interested in changing major to Business Administration will be admissible to the Business Preparatory (BSPR), (which is not a major in UCR, but a holding group of transfer students who appear to be qualified for admission into business administration, but have some deficiencies which need to be completed before admission into business administration) status only if they can complete their deficiencies in breadth and/or major prerequisites within one quarter (the first quarter after admission into Bus-Preparatory).

The same rule will apply to students transferring in from a community college or a four-year school. In the event these students fail to meet this one quarter requirement, they will not be admitted into the BSPR category, and will be advised to find another major at UCR.

Students are encouraged to participate in at least one internship during their junior or senior year. Students interested in international business are encouraged to participate in Education Abroad, which has programs affiliated with more than 150 institutions in 35 countries worldwide. For details, visit Education Abroad at ea.ucr.edu or call (951) 827-4113.

Outstanding academic achievement is recognized by the awarding of the Delta Sigma Pi Scholarship Key to a graduating senior. Other awards, presented on an annual basis, include the Bank of America Business Leaders Scholarship, Deloitte and Touche Scholarship, Gordon Blunden/Provident Savings Bank Business Scholarship, and the Ernst & Young Scholarship.