



NATIONAL  
UNIVERSITY

## **ADDENDUM D**

TO THE NATIONAL UNIVERSITY GENERAL CATALOG 81

*Effective June 1, 2018*

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National University Academic Headquarters  
11255 North Torrey Pines Road  
La Jolla, CA 92037-1011  
(858) 642-8800

## TUITION FEES

Effective July 1, 2018 (July courses), tuition will change as follows:

### 4.5 Quarter-Unit Classes

Undergraduate courses: \$370 per unit or \$1,665.00 per course

Graduate courses: \$430 per unit or \$1,935.00 per course

If you would like to apply for financial aid, please call the Financial Aid offices at (858) 642-8500.

The university will bill students at the new rates for the July courses beginning July 9, 2018.

## TECHNOLOGY FEES

The following courses utilize a third party technology. Accessing the third-party technology is a required component of your course. The technology fee will be applied to the student's account at the time tuition is applied.

### Bachelor of Science Information Technology Management

ITM 435 \$43.00

ITM 434 \$43.00

## COLLEGE OF LETTERS AND SCIENCES UNDERGRADUATE PROGRAMS

### BACHELOR OF ARTS

#### MAJOR IN PSYCHOLOGY

Academic Program Director: Nicole Polen-Petit; (916) 855-4303; npolen-petit@nu.edu

The Bachelor of Arts in Psychology program offers a comprehensive introduction to the contemporary discipline of psychology. Graduates of this program are well prepared to seek employment in personnel, vocational counseling, criminal justice, journalism, or entry-level counseling in the context of a county-funded agency or hospital. They are also prepared to seek admission to graduate programs at the master's or doctoral level.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Articulate major theories, concepts, and historical trends in psychology.
- Explain behavior, cognition, and emotion from multiple schools of thought and multicultural perspectives.
- Identify a problem in psychology, examine available evidence, analyze assumptions, and apply research methods to solve the problem. This includes the ability to interpret numbers and apply basic statistical procedures.
- Write papers in psychology using different literary formats, e.g., narrative, exposition, critical analysis, and APA format.
- Perform information searches relevant to psychology and organize and evaluate the soundness of the information.
- Use current technologies in both research and communication

#### Degree Requirements

To receive a Bachelor of Arts in Psychology degree, students must complete at least 180 quarter units as articulated below, 76.5 units of which must be completed at the upper-division level, 45 units which must be completed in residence at National University and a minimum 70.5 units of the University General Education requirements. The following courses are specific degree requirements. In the absence of transfer credit, students may need to take additional general electives to satisfy the total units for the degree. Students should refer to the section on undergraduate admission procedures for specific information on admission and evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

#### Preparation for the Major

(2 courses; 9 quarter units)

MTH 210\* Probability and Statistics

*Prerequisite: Accuplacer test placement evaluation, or MTH 12A, and MTH 12B*

PSY 100\* Introduction to Psychology

\*May be used to satisfy general education requirements.

#### Requirements for the Major

(11 courses; 49.5 quarter units)

PSY 426 History & Philosophy of Psych

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 427 Biological Psychology

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 428 Developmental Psychology

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 429 Intro to Personality Theory

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 430 Intro to Psychopathology

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 432 Social Psychology

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 433 Cognitive Psychology

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 441 Global Psychology

*Prerequisite: PSY 100*

HUB 441 Research Design and Analysis

*Prerequisite: ENG 100, ENG 101, MTH 210, and PSY 100*

CHD 440 Drugs, Values and Society

PSY 480 Senior Project

*Prerequisite: All other courses required for the major must be completed prior to enrolling in this course.*

or

PSY 491 Guided Study for Honors Student (1.5 variable units)

*Prerequisite: Satisfactory completion of core courses with a GPA of 3.75 or higher*

#### Upper-Division Electives

(5 courses; 22.5 quarter units)

BIO 420 Animal Behavior

*Prerequisite: BIO 161, BIO 162, BIO 163, BIO 100A*

BIS 301 Intro to Interdisc. Studies

CJA 400 Gangs in America

CJA 431 Criminology

CJA 448 Violence and Society

HUB 400 Group Structure & Dynamics

*Prerequisite: ENG 100, ENG 101, and PSY 100*

HUB 401 Conflict Resolution

*Prerequisite: ENG 100, ENG 101, and PSY 100*

HUB 410 Psychology for Managers

*Prerequisite: ENG 100, ENG 101, and PSY 100*

HUB 420 Human Communication

*Prerequisite: ENG 100, ENG 101, and PSY 100*

HUB 440 Organizational Development

*Prerequisite: ENG 100, ENG 101, and PSY 100*

HUB 500 Cross-Cultural Dynamics

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 302 Foundation of Sport Psychology

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 340A Counseling Techniques I

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 431	Psychological Testing <i>Prerequisite: ENG 100, ENG 101, and PSY 100</i>
PSY 445	Applied Sport Psychology <i>Prerequisite: PSY 100, PSY 302</i>
PSY 446	Positive Psychology <i>Prerequisite: ENG 100, ENG 101, and PSY 100</i>
PSY 454	Psychology of Religion <i>Prerequisite: PSY 100 with a minimum grade of C, ENG 100 with a minimum grade of C</i>
PSY 455	Psychology of Bereavement <i>Prerequisite: ENG 100, ENG 101, and PSY 100</i>
PSY 457	Forensic Psychology <i>Prerequisite: ENG 100, PSY 100</i>
PSY 458	Health Psychology <i>Prerequisite: ENG 100, PSY 100, ENG 101</i>
PSY 469	Human Sexuality
SOC 344	Marriage, Sex and the Family <i>Prerequisite: ENG 100, and ENG 101</i>
SOC 443	Sociology of Deviance <i>Prerequisite: ENG 100, ENG 101, and SOC 100</i>
SOC 445	Contemporary Social Problems <i>Prerequisite: ENG 100, and ENG 101</i>

Other electives must be approved by the department chair or regional full-time or associate faculty. Students may not take PSY 301 as an Upper-Division Elective.

## MAJOR IN SPORT PSYCHOLOGY

Academic Program Director: Sarah Castillo; (760) 268-1584; scastillo@nu.edu

The Bachelor of Arts in Sport Psychology program offers a comprehensive introduction to the contemporary discipline of sport psychology. Graduates of this program are well prepared to seek employment in entry-level coaching positions and admission to graduate psychology programs at the master's or doctoral level.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Discuss current trends in psychological research in both individual and team contexts within sport psychology.
- Analyze how psychological factors influence performance in sport, and techniques to increase performance and reduce anxiety.
- Examine the history of sport psychology and its role in contemporary psychological theories and systems.
- Discuss the influences of diversity and multiculturalism on group interactions and performance.
- Apply psychological theory to coaching situations.
- Communicate orally and in writing using proper sport and psychology terminology.
- Discuss the legal and ethical issues in sport psychology and performance enhancement.
- Discuss the physiological and motoric principles of performance in sport and physical activity

### Degree Requirements

To receive a Bachelor of Arts in Sport Psychology degree, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Students should refer to the section on undergraduate admission procedures for specific information on admission and evaluation. All

students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

### Preparation for the Major

(2 courses; 9 quarter units)

MTH 210\* Probability and Statistics

*Prerequisite: Accuplacer test placement evaluation, or MTH 12A, and MTH 12B*

PSY 100\* Introduction to Psychology

\*May be used to satisfy general education requirements.

### Requirements for the Major

(13 courses; 58.5 quarter units)

PSY 302 Foundation of Sport Psychology

*Prerequisite: ENG 100, and ENG 101, PSY 100*

PSY 448 History of Sport & Sport Psych

*Prerequisite: PSY 100, PSY 302*

PSY 300 Social Psychology of Sport

*Prerequisite: ENG 100, ENG 101, PSY 100*

HUB 441 Research Design and Analysis

*Prerequisite: ENG 100, ENG 101, MTH 210, and PSY 100*

PSY 303 Motor Learning

*Prerequisite: ENG 100, and ENG 101, PSY 100*

PSY 440 Sport Psychology for Coaches

*Prerequisite: PSY 100, PSY 302*

PSY 443 Culture and Sport Psychology

*Prerequisite: PSY 100, PSY 302*

BIO 385 Biomechanics of Sport

*Prerequisite: BIO 100, and BIO 100A*

BIO 386 Exercise Physiology

*Prerequisite: BIO 100, and BIO 100A*

PSY 340A Counseling Techniques I

*Prerequisite: ENG 100, ENG 101, and PSY 100*

PSY 445 Applied Sport Psychology

*Prerequisite: PSY 100, PSY 302*

PSY 442 Case Studies Sport Psychology

*Prerequisite: Successful completion of 10 courses in the BA Sport Psychology program.*

PSY 485 Sport Psychology Sr. Project

*Prerequisite: satisfactory completion of ALL Major requirements*

### Upper Division Electives

(3 courses; 13.5 quarter units)

Choose three upper division electives from available offerings within the College of Letters and Sciences. It is STRONGLY RECOMMENDED that students select AT LEAST 2 of their required electives from the following 7 courses:

PSY 427 Biological Psychology

*Prerequisite: ENG 101, and PSY 100, ENG 100*

PSY 428 Developmental Psychology

*Prerequisite: ENG 101, and PSY 100, ENG 100*

PSY 429 Intro to Personality Theory

*Prerequisite: ENG 101, and PSY 100, ENG 100*

PSY 430 Intro to Psychopathology

*Prerequisite: ENG 101, and PSY 100, ENG 100*

PSY 432 Social Psychology

*Prerequisite: ENG 101, and PSY 100, ENG 100*

PSY 433 Cognitive Psychology

*Prerequisite: ENG 101, and PSY 100, ENG 100*

PSY 446 Positive Psychology

*Prerequisite: ENG 101, and PSY 100, ENG 100*

## GRADUATE DEGREE

### MASTER OF FINE ARTS IN CREATIVE WRITING

Academic Program Director: Frank Montesonti; (301) 662-2159; fmontesonti@nu.edu

The Master of Fine Arts in Creative Writing is a studio degree where students produce creative work and refine it through workshops that focus on developing craft in fiction, creative nonfiction, poetry, or screenwriting. In online workshops, students write constructive critiques of the work of their classmates, read modern texts from the writer's perspective, and participate in generative writing activities.

Courses are taught by established writers in the field who share their perspective and expertise in the craft. Participating in seminars and workshops, students build valuable skills in their chosen concentration. The culmination of the program is the thesis project, a publishable quality final project in the student's chosen specialty that demonstrates a critical application of knowledge in the field which should make an independent contribution to existing work in that area. During the thesis process, students work one-on-one with a faculty mentor in drafting and revising a publishable quality thesis.

This program is excellent preparation for a professional career in writing, working in the areas of publishing or filmmaking, and is the minimal academic qualification appropriate for those who desire to teach creative writing at the college or university level.

Students are expected to focus in one genre, but are required to take seminar workshops in different genres in order to broaden the scope of their reading and writing. Students are encouraged to take graduate courses in English Literature as electives, as the critical study of literature goes hand in hand with its composition. Interested students may submit to, or volunteer to work on, the student literary journal, the GNU.

The Master of Fine Arts in Creative Writing program is entirely online with no on-ground residency requirement.

#### Application Requirements

To be considered for admission, applicants must meet the University graduate admission requirements listed in the general information. In addition, applicants in creative writing should submit portfolios of their writing directly to: fmontesonti@nu.edu. The portfolio should include 20-30 pages of fiction or literary nonfiction (usually two to three short stories or essays), 10-20 pages of poetry, a completed screenplay, or a substantial sample of work in several forms. Based on the portfolio, applicants may be advised to complete one or more of the following undergraduate courses prior to enrolling in the advanced writing workshops:

- ENG 401 Fiction Workshop
- ENG 402 Poetry Workshop
- ENG 403 Screenwriting Workshop

#### BA English to MFA Transition Program

Students who are in the process of completing a BA with a major in English and concentration in creative writing at National University may be eligible for the BA to MFA transition program. Requirements for the transition program are listed under the Bachelor's Degree with a major in English in the catalog.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Evaluate various aesthetic theories of fiction, literary nonfiction, poetry, or screenwriting.
- Formulate practical and theoretical models of teaching and learning the writing of fiction, literary nonfiction, poetry and screenwriting.
- Critique specific works of literature and screenwriting.
- Develop publishable-quality writing in fiction, literary nonfiction, poetry, or screenwriting.
- Evaluate different literary formats.
- Implement craft principles of plot, characterization, style, point of view, narrative technique, and language in the creation of fiction.

- Implement craft principles of plot, characterization, style, point of view, narrative technique, and language in the creation of literary nonfiction.
- Implement craft principles of language, style, themes, technique, rhythm, and form in the creation of poetry.
- Implement craft principles of plot, characterization, style, point of view, narrative technique, language, form, dialogue, and other issues of screenwriting.

#### Degree Requirements

To receive the MFA in Creative Writing, students must complete at least 58.5 quarter units; a total of 13.5 quarter units may be granted for equivalent work completed at another institution, as it applies to this degree, and provided the units were not used in earning another advanced degree. Students should refer to the General Catalog section on graduate admission requirements for specific information regarding admission and evaluation.

#### Core Requirements

(5 courses; 22.5 quarter units)

Students are required to take MCW 600 and MCW 610, one seminar in their chosen specialty, and two (2) additional courses of their choice in different areas.

Students are encouraged to begin the program with:

MCW 610 Textual Strategies

#### and

Choose **three (3)** of the following courses:

MCW 630 Seminar in Fiction

MCW 645 Seminar in Poetry

MCW 650 Seminar in Creative Nonfiction

MCW 685 Basics of Screenwriting

Students should preferably conclude the core requirements with:

MCW 600 Pedagogy of Creative Writing

MCW 600 and MCW 610 are four week courses; all other MCW courses are eight weeks in duration.

#### Core Specialized Study

(2 courses; 9 quarter units)

Students are expected to take two advanced workshops in their specialty. All advanced creative writing courses are conducted by teachers who are accomplished creative writers sensitive to the efforts of writing. Classes are conducted as workshops, with student work comprising much of the text for the course.

MCW 630A Advanced Workshop in Fiction

*Prerequisite: MCW 630*

#### and

MCW 630B Adv Workshop in Fiction

*Prerequisite: MCW 630*

#### or

MCW 640A Advanced Workshop in Poetry

*Prerequisite: MCW 645*

#### and

MCW 640B Advanced Workshop in Poetry

*Prerequisite: MCW 645*

#### or

MCW 650A Adv Workshop in Lit Nonfiction

*Prerequisite: MCW 650*

#### and

MCW 650B Adv Workshop in Lit Nonfiction

*Prerequisite: MCW 650*

#### or

MCW 680A Adv Workshop in Screenwriting  
*Prerequisite: MCW 685*

**and**

MCW 680B Adv Workshop in Screenwriting  
*Prerequisite: MCW 685, and MCW 680A*

### **Elective Requirements**

(4 courses; 18 quarter units)

A minimum of two electives should be chosen from the list below. All graduate courses with the prefix ENG except the capstone courses are approved electives for the MCW program.

MCW 635 Writing for Young Adults

MCW 636 Genre Fiction Workshop

ENG 600 Seminar in Literary Theory

ENG 610 Multicultural Literature

ENG 620A Literary Period or Movement I

ENG 620B Literary Period or Movement II

ENG 640 Seminar in Poetry

ENG 655 Composition Pedagogy

ENG 656 History of Rhetoric

ENG 657 Modern Rhetoric

ENG 660 Seminar in Literary Hypermedia

ENG 665 Film Theory

ENG 666 Film History: The Silents

ENG 667 Film History: American Film

ENG 668 Film Genre Studies

ENG 669 World Film

ENG 670 Comparative Literary Studies

ENG 680A Seminar in a Theme I

ENG 680B Seminar in a Theme II

ENG 685 Great Directors: American

ENG 686 Great Directors: International

ENG 689 Intro to Grad English Studies

ENG 690A Major Author Seminar I

ENG 690B Major Author Seminar II

The remaining two electives may be from the above list or if the student wants to take more workshop courses, additional advanced MCW writing workshops that the student has not already taken as part of her/his specialized study may be taken as electives. These include:

MCW 630A Advanced Workshop in Fiction  
*Prerequisite: MCW 630*

MCW 630B Adv Workshop in Fiction  
*Prerequisite: MCW 630*

MCW 640A Advanced Workshop in Poetry  
*Prerequisite: MCW 645*

MCW 640B Advanced Workshop in Poetry  
*Prerequisite: MCW 645*

MCW 650A Adv Workshop in Lit Nonfiction  
*Prerequisite: MCW 650*

MCW 650B Adv Workshop in Lit Nonfiction  
*Prerequisite: MCW 650*

MCW 680A Adv Workshop in Screenwriting  
*Prerequisite: MCW 685*

MCW 680B Adv Workshop in Screenwriting  
*Prerequisite: MCW 685, and MCW 680A*

### **Thesis Courses**

(2 courses; 9 quarter units)

Thesis: The thesis must be a mature, substantial body of work e.g. a collection of stories, essays, or poems, a novel, or a full-length screenplay. The thesis will include an aesthetic statement (minimum 2000 words) in which the writer discusses her/his evolution as an artist and the evolution of the work. The student will choose a mentor for the thesis, and will work with the mentor in an individualized manner, decided upon through conference with the mentor.

MCW 660 Thesis I (Practicum)

*Prerequisite: Requires completion of MFA CW portfolio all core, specialized study and elective courses*

MCW 670 Thesis II (Revision)

*Prerequisite: MCW 660*

### **Language Requirement**

There is no language requirement for this program. It is possible, however, to pursue a series of electives in a particular language when such study is demonstrably essential to the student's creative work. The candidate must work out a specific program in conjunction with the lead program faculty.

## **SCHOOL OF BUSINESS MANAGEMENT**

### **TERMINATED UNDERGRADUATE CERTIFICATES**

Undergraduate Certificate in Basic Sales and Marketing

Undergraduate Certificate in Marketing

## **UNDERGRADUATE DEGREE**

### **ASSOCIATE OF SCIENCE**

#### **Associate of Science Major in Business**

Academic Program Director: Michael Pickett; (909) 919-7631; mpickett@nu.edu

The Associate of Science in Business program is designed to prepare students for entry level management positions. The degree completion provides a transition path to a Bachelor of Business Administration (B.B.A.) degree. The curriculum includes courses in general business, accounting, economics, legal studies, management and marketing. With a goal to maximizing student success, the program is designed with two prerequisites as part of general education requirements: introductory business mathematics and internet literacy. Other courses may be taken in any sequence.

#### **Program Learning Outcomes**

Upon successful completion of this program, students will be able to:

- Describe the types of business organizations and their basic functions.
- Describe the legal structure and tax implications of different types of business organizations such as sole proprietorship, partnership and corporation.
- Explain the functions of basic management relating to planning and implementing an organization's strategic behavior.
- Explain the changing nature of business in a global economy.
- Explain the basic accounting, finance, and management functions of business organizations.
- Explain how marketing decisions can help maximize profits.
- Describe the legal and ethical issues surrounding the business community.

#### **Degree Requirements**

To receive an Associate of Science in Business degree, students must complete at least 90 quarter units consisting of all courses as articulated below along with the required minimum 34.5 units of the Associate of Science General Education. In the absence of transfer credit, students may need to take additional general electives to satisfy total units for the degree. Refer to the section on undergraduate admission procedures for specific information regarding application and evaluation.

## Prerequisites for the Major

(2 courses; 9 quarter units)

MNS 205 must be taken if student does not have transfer credits for MNS 205 or MTH 210 or MTH 215 or MTH 220.

ILR 260\* Information Literacy

*Prerequisite: ENG 100, and ENG 101*

and

MNS 205\* Intro to Quantitative Methods

\* May be used to meet General Education requirements

## Requirements for the Major

(8 courses; 36 quarter units)

### Foundation Courses

BUS 100 Intro to Business

ACC 201 Financial Accounting Funds.

ACC 202 Managerial Accounting Funds.

*Prerequisite: ACC 201*

ECO 100 Intro to Economics

### Core Courses

LAW 204 Legal Aspects of Business I

MKT 200 Basic Marketing

FIN 310 Business Finance

*Prerequisite: ACC 201*

MGT 309C Prin. of Mgmt & Organizations

## BACHELOR OF ARTS

### MAJOR IN MANAGEMENT

Academic Program Director: Timothy Pettit; (858) 642-8687; tpettit@nu.edu

The Bachelor of Arts in Management provides students a business related degree with an emphasis on managing organizations and personnel in a multicultural and global setting. To achieve maximum flexibility, the major in management program minimizes prerequisites, enabling students to take the required courses in any sequence. Students are also offered several areas of concentration.

### The Bachelor of Arts in Management/Master of Global Management (BAM/MGM) Transition Program

The Bachelor of Arts in Management/Master of Global Management (BAM/MGM) Transition Program allows currently enrolled BAM students with a cumulative grade point average of at least a 3.0, who are within completing their last six courses, to register for two MGM courses as electives for their BAM degree. Students can take the following two courses: MGT601M and IBU606. The number of additional courses to complete to earn the MGM is reduced from 13 to 11 courses. To be eligible for the Transition Program, students must apply for the MGM and begin their program of study within six months after completing their final BAM course. Students must complete the 13-course MGM program (including the two courses in the Transition Program) within four years with no break exceeding 12 months. Students must complete graduate-level course work taken as part of the BAM degree with a grade of B or better. The course work will not transfer as graduate-level credit to National University or any other institution as it is part of an undergraduate degree program.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Describe the basic functions of management and their practical implications on the operations of the organization.
- Analyze and evaluate management, leadership, and motivation theories.
- Identify organizational behavior, communications, and change theories and their practical implications.
- Explain the effect of international business environmental factors (legal, economic, and cultural) on the conduct of global business.

- Explain the principles and theories of ethical decision-making and their practical implications in the everyday conduct of business.

## Degree Requirements

To receive a Bachelor of Arts in Management, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Refer to the section of undergraduate admission procedures for specific information regarding admission and evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

### Preparation for the Major

(3 courses; 13.5 quarter units)

ECO 203 Principles of Microeconomics

ECO 204 Principles of Macroeconomics

LAW 204 Legal Aspects of Business I

### Requirements for the Major

(10 courses; 45 quarter units)

BIM 400 Info Mgmt in Organizations

MGT 309C Prin. of Mgmt & Organizations

MGT 400 Ethics in Law, Business & Mgmt

MKT 302A Marketing Fundamentals

IBU 430 Survey of Global Business

*Prerequisite: ECO 203, and ECO 204*

MGT 451 Production & Ops Management I

ODV 420 Intro to Organizational Behavior

LED 400 Introduction to Leadership

HRM 409B Survey in HRM & OD

MGT 442 Business Management

### Upper-Division Electives

(6 courses; 27 quarter units)

Students may choose to take any one of the concentrations listed below or appropriate elective courses to satisfy the total upper-division units for the degree in the following prefix areas: ACC, BKM, ECO, FIN, HRM, LAW, MGT, MKT, MNS, LED, and ODV. Students planning to do an internship for academic credit must take BUS 491 as an elective.

### Concentrations Associated with MAJOR IN MANAGEMENT

- A. Concentration in Alternative Dispute Resolution Concentration
- B. Concentration in Economics Concentration
- C. Concentration in Entrepreneurship Concentration
- D. Concentration in Human Resource Management Concentration
- E. Concentration in Marketing Concentration
- F. Concentration in Project Management Concentration

### Concentration in Business Law Concentration

Academic Program Director: Bryan Hance; (310) 662-2115; bhance@nu.edu

This concentration is designed for students undertaking the Bachelor of Business Administration (BBA) or BA Management (BAM) degree. The concentration will provide students who have an interest in a career in law, business or government, with an understanding of the complex legal issues that exist in today's business environment.

### Prerequisite

(1 course; 4.5 quarter units)

LAW 204 Legal Aspects of Business I

### Requirements for the Concentration

(6 courses; 27 quarter units)

Choose **six (6)** courses from the following:

- LAW 305 Legal Aspects of Business II  
*Prerequisite: LAW 204*
- LAW 400 Current Legal Issues
- LAW 440 Comparative International Law
- LAW 445 Administrative Law for Business
- LAW 455 Public Contracting
- ADR 400 Alternative Dispute Resolution
- ADR 405 Negotiation Fundamentals

## BACHELOR OF BUSINESS ADMINISTRATION

Academic Program Director: Nelson Altamirano; (858) 642-8428; naltamirano@nu.edu

The Bachelor of Business Administration (BBA) degree prepares students for career opportunities and advancement in business and industry. Successful completion of lower- and upper-division BBA requirements ensures that graduates comprehend the relationships among marketing, quantitative theory, accountancy, economic principles and financial, human and organizational management. The BBA gives students an opportunity to specialize in designated fields by pursuing concentrations and minors, or to choose an individualized set of general BBA electives.

### Bachelor of Business Administration/Master of Business Administration (BBA/MBA) Transition Program

Students must complete graduate-level coursework taken as part of the BBA degree with a grade of B or better. This coursework, which counts as electives, will not transfer as graduate-level credit to National University or any other institution as it is part of an undergraduate degree program. Grades earned in graduate level courses will be calculated as part of the student's undergraduate grade point average. Students must be within completing their last six courses in their undergraduate program and have a cumulative GPA of at least a 3.00 to be eligible. Lastly, students must apply for and begin the MBA program within six months after completing their final BBA course. Students must complete their MBA program within four years with no break exceeding 12 months.

Students in the BBA transition program may take up to three MBA classes as electives during the BBA. Students may choose from the following courses: MKT 602, MGT 605, ECO 607, IBU 606, MGT 608 and MNS 601.

The number of courses required to earn an MBA degree for transition program students is reduced from 14 to as few as 11 courses, depending on classes selected and grades earned.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Apply ethical and legal principles to a business environment.
- Demonstrate skills and knowledge in the areas of business math, economics, accounting, finance, and operations management needed to make sound business decisions.
- Apply knowledge in the fields of management, information systems, and marketing to different business environments.
- Apply the knowledge acquired in the program for the analysis of strengths, weaknesses, and potential improvements in a business.
- Demonstrate written, presentation and research skills expected of a business-school graduate.
- Develop a global business perspective based on the knowledge of foreign business environments and cultures.

### Degree Requirements

To receive a BBA, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Refer to the section on

undergraduate admission procedures for specific information regarding admission and evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

### Preparation for the Major

(6 courses; 27 quarter units)  
MNS 205 must be taken if student does not have transfer credits for MNS 205 or MTH 210 or MTH 215 or MTH 220.

- MNS 205 \* Intro to Quantitative Methods
- ECO 203 \* Principles of Microeconomics
- ECO 204 \* Principles of Macroeconomics
- ACC 201 Financial Accounting Funds.
- ACC 202 Managerial Accounting Funds.  
*Prerequisite: ACC 201*

LAW 204 Legal Aspects of Business I

\* May be used to meet General Education requirements

### Requirements for the Major

(9 courses; 40.5 quarter units)

- BIM 400 Info Mgmt in Organizations
- MGT 309C Prin. of Mgmt & Organizations
- MGT 400 Ethics in Law, Business & Mgmt
- FIN 310 Business Finance  
*Prerequisite: ACC 201*
- MNS 407 Management Science  
*Prerequisite: MNS 205*
- MKT 302A Marketing Fundamentals
- IBU 430 Survey of Global Business  
*Prerequisite: ECO 203, and ECO 204*
- MGT 451 Production & Ops Management I
- BUS 480 Capstone: Integrated Bus Policy  
*Prerequisite: Completion of at least 9 BBA preparation and upper-division core courses*

### Upper-Division Electives

(7 courses; 31.5 quarter units)

Students may choose to take one of the BBA Concentrations listed below and/or appropriate elective courses to satisfy the total units for the degree with the following prefixes: ACC, BIM, BUS, ECO, FIN, HRM, LAW, LED, MGT, MKT, ODV, or HUB.

### Recommended Electives

- BUS 491 Internship Project  
*Prerequisite: 31.5 quarter units in business or business related courses and a 2.5 GPA*
- FIN 446 International Financial Mgmt  
*Prerequisite: FIN 310*
- FIN 440 Financial Institutions  
*Prerequisite: FIN 310*
- HRM 409B Survey in HRM & OD
- HRM 432 Recruit, Selection, Promo, Ret
- HRM 439 Legal, Reg, & Labor Relation C
- IBU 540 International Experience
- LAW 305 Legal Aspects of Business II  
*Prerequisite: LAW 204*
- MGT 422 Team Bldg, Interpers Dynamics
- MKT 430 Intro to Global Marketing  
*Prerequisite: MKT 302A*

MKT 434 Intro to Market Research  
*Prerequisite: MKT 302A*

MKT 443 Introduction to Advertising  
*Prerequisite: MKT 302A*

#### **Concentrations Associated with Bachelor of Business Administration**

Concentration in Accountancy  
Concentration in Alternative Dispute Resolution  
Concentration in Economics  
Concentration in Entrepreneurship  
Concentration in Finance  
Concentration in Human Resource Management  
Concentration in Marketing Concentration  
Concentration in Project Management Concentration

#### **Concentration in Business Law Concentration**

Academic Program Director: Bryan Hance; (310) 662-2115; bhance@nu.edu

This concentration is designed for students undertaking the Bachelor of Business Administration (BBA) or BA Management (BAM) degree. The concentration will provide students who have an interest in a career in law, business or government, with an understanding of the complex legal issues that exist in today's business environment.

#### **Prerequisite**

(1 course; 4.5 quarter units)

LAW 204 Legal Aspects of Business I

#### **Requirements for the Concentration**

(6 courses; 27 quarter units)

Choose six (6) courses from the following:

LAW 305 Legal Aspects of Business II  
*Prerequisite: LAW 204*

LAW 400 Current Legal Issues

LAW 440 Comparative International Law

LAW 445 Administrative Law for Business

LAW 455 Public Contracting

ADR 400 Alternative Dispute Resolution

ADR 405 Negotiation Fundamentals

## **BACHELOR OF SCIENCE**

### **Major in Accountancy**

Academic Program Director: Consolacion Fajardo; (916) 855-4137; cfajardo@nu.edu

The major in Accountancy academically prepares students for a wide range of accounting-related careers, including public accounting, corporate accounting, internal audit, accounting in not-for-profit organizations, and job opportunities with state, local, and federal government agencies. The curriculum aligns with content specifications for various professional exams including CPA, CMA, and CIA. All students are advised to contact a full-time faculty member for a brief interview by phone or personal visit for the purpose of reviewing the student's career objectives.

### **Bachelor of Science in Accountancy to Master of Business Administration (BS ACC/MBA) Transition Program**

Students who are currently enrolled in the Bachelor of Science in Accountancy program, have at least a cumulative GPA of 3.0, and are within six courses of graduation may register for the BS ACC/MBA transition program. Students in the BS ACC/MBA transition program may take up to three MBA classes as electives during the BS ACC. Students can select any three graduate-level accounting courses for which required course prerequisites (if any) have been met, or may select from the following MBA core courses: ECO 607, IBU 606, and MGT 605. Students must complete graduate-level coursework taken as part of the BS ACC degree with a grade of B or better. This coursework, which counts as electives in the BS ACC, will not transfer as graduate-level credit to National University or any other institution as it is part of an undergraduate degree program. Grades earned in graduate level courses will be calculated as part of the student's undergraduate grade point average. Students must apply for and begin the MBA program within six months after completing their

final BS ACC course. The number of courses required to earn a MBA degree for transition program students is reduced from 14 to as few as 11 courses, depending on classes selected and grades earned. Students must complete their MBA program within four years with no break exceeding 12 months.

### **Online Course Availability**

All of the coursework in this program can be taken online. Most online courses offer one or two live voice/visual evening sessions per week, in which instructors orally explain important concepts, visually illustrate problem-solving techniques, and respond to student questions. These sessions are recorded so that students who are unable to attend at the scheduled time can play back the video recording at a convenient time.

### **Program Learning Outcomes**

Upon successful completion of this program, students will be able to:

- Utilize current technologies for presenting and analyzing accounting information.
- Demonstrate mastery of a common body of accounting knowledge.
- Develop ethical sensitivity to accounting scenarios.
- Employ effective communication of accounting information.
- Demonstrate awareness of International Financial Reporting Standards.
- Research issues to support critical assessment of accounting information.

### **Degree Requirements**

To receive a Bachelor of Science with a major in Accountancy, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Refer to the section of undergraduate admission requirements for specific information regarding admission and evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

Students who have completed the California Community College Associate in Science in Business for Transfer (AS-T) degree by completing the Transfer Model Curriculum (TMC) for business, will have completed the lower division requirements of the University General Education requirements and the Preparation for the Major.

### **Preparation for the Major**

(6 courses; 27 quarter units)

MNS 205 Intro to Quantitative Methods

or

MTH 215 College Algebra & Trigonometry

*Prerequisite: Accuplacer test placement evaluation, or MTH 12A, and MTH 12B*

ECO 203 Principles of Microeconomics

ECO 204 Principles of Macroeconomics

LAW 204 Legal Aspects of Business I

ACC 201 \* Financial Accounting Funds.

ACC 202 Managerial Accounting Funds.

*Prerequisite: ACC 201*

\* Eligible for Credit-by-exam waiver: Contact Program Director

### **Prerequisite for all Accounting Courses**

Students must have completed ACC 201 or its equivalent with a minimum grade of "C" within two years of taking any of the following accounting courses, unless a grade of 75 or better is received on an appropriate challenge exam.

### **Core Business Requirements**

(4 courses; 18 quarter units)

BIM 400 Info Mgmt in Organizations



MGT 309C Prin. of Mgmt & Organizations

FIN 310 Business Finance  
*Prerequisite: ACC 201*

**and**

MKT 302A Marketing Fundamentals

**or**

IBU 430 Survey of Global Business  
*Prerequisite: ECO 203, and ECO 204*

**or**

MNS 407 Management Science  
*Prerequisite: MNS 205*

(Recommended for students considering the CPA or CMA designation)

### Core Accounting Requirements

(11 courses; 49.5 quarter units)

ACC 410A Intermediate Accounting I  
*Prerequisite: ACC 201*

ACC 410B Intermediate Accounting II  
*Prerequisite: ACC 410A*

ACC 410C Intermediate Accounting III  
*Prerequisite: ACC 410B*

ACC 431 Advanced Accounting  
*Prerequisite: ACC 410C*

ACC 432A Taxation-Individual  
*Prerequisite: ACC 431*

ACC 432B Taxation-Business  
*Prerequisite: ACC 432A*

ACC 433 Managerial Accounting  
*Prerequisite: ACC 202*

ACC 434 Government and Nonprofit Acct  
*Prerequisite: ACC 201*

ACC 435A Auditing I  
*Prerequisite: ACC 431*

ACC 435B Auditing II  
*Prerequisite: ACC 435A*

ACC 436 Applied Tech for Accountants  
*Prerequisite: ACC 201*

### Required Electives

(2 courses; 9 quarter units)

ACC 515 Accounting Ethics

ACC 5500X Business Professional Develop

As an alternative of the required electives, students may enroll in the Concentration in Accounting Professional Skills.

### Concentration in Accounting Professional Skills

Academic Program Director: Sharon Lightner; (858) 642-8663; [slightner@nu.edu](mailto:slightner@nu.edu)

Academic Program Director: Connie Fajardo; (916) 855-4137; [cfajardo@nu.edu](mailto:cfajardo@nu.edu)

This concentration is designed for students to obtain additional coursework and skills necessary for many professional opportunities in the field of accounting. For instance, to be a licensed CPA in the state of CA, students need 180 quarter units (150 semester units). Units may be obtained at the undergraduate or graduate level. The only units that are specified is 4.5 quarter units (3 semester units) of Accounting Ethics. The specialization introduces accounting ethics into our curriculum in addition to other courses that will assist students in preparing for professional exams. Interviewing for internships or jobs, networking, and obtaining data analytic skills.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Identify key issues and recognize alternative viewpoints when presented with ethical problems and dilemmas.
- Evaluate ethical decision processes between professional accountants and major stakeholders in various areas or professional accounting.
- Enhance skills to effectively recruit and network within a professional accounting environment.
- Demonstrate and apply accounting knowledge to real world situations or professional examination boards.
- Manage, communicate and analyze information using advance technology skills.

### Requirements for the Concentration

(4 courses; 18 quarter units)

ACC 515 Accounting Ethics

ACCX 5500X Business Professional Develop.

Choose two (2) of the following:

ACCX 5200X Professional Exam Review 1

*Recommended: Prior completion of: Should have completed approximately 72 quarter units of accounting and/or business.*

ACCX 5250X Professional Exam Review 2

*Prerequisite: ACC 520*

ACC 555 Data Analytics

ACC 591 Accounting Internship

### MAJOR IN FINANCIAL MANAGEMENT

Academic Program Director: Gurdeep Chawla; (415) 321-9400; [gchawla@nu.edu](mailto:gchawla@nu.edu)

The Major in Financial Management is designed to prepare students for positions in the field of corporate financial management and related areas. The program provides both practical and theoretical training in financial decision-making and the creation of wealth through the art and science of managing financial resources. Students also develop a broad perspective of the global economic and financial environment.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Explain the financial objectives of an organization and apply quantitative, qualitative and problem-solving skills in order to achieve those objectives.
- Describe ethical, legal, and global issues that impact an organization's financial position.
- Discuss the theoretical and practical aspects of corporate finance.
- Explain the structure and operation of financial markets domestically and internationally.
- Demonstrate oral and written communication skills needed by financial managers.
- Examine the financial position of an organization and make financial decisions.

### Degree Requirements

To receive a Bachelor of Science with a major in Financial Management, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Refer to the section of undergraduate admission procedures for specific information regarding admission and evaluation.

## Preparation for the Major

(6 courses; 27 quarter units)

MNS 205 must be taken if student does not have transfer credits for MNS 205 or MTH 210 or MTH 215 or MTH 220.

ECO 203\* Principles of Microeconomics

ECO 204\* Principles of Macroeconomics

ACC 201 Financial Accounting Funds.

ACC 202 Managerial Accounting Funds.  
*Prerequisite: ACC 201*

LAW 204 Legal Aspects of Business I

MNS 205\* Intro to Quantitative Methods

\* May be used to satisfy general education requirements.

## Requirements for the Major

(16 courses; 72 quarter units)

### Core Business Requirements

(5 courses; 22.5 quarter units)

MGT 309C Prin. of Mgmt & Organizations

FIN 310 Business Finance  
*Prerequisite: ACC 201*

MKT 302A Marketing Fundamentals

ACC 410A Intermediate Accounting I  
*Prerequisite: ACC 201*

ACC 410B Intermediate Accounting II  
*Prerequisite: ACC 410A*

### Core Finance Courses

(11 courses; 49.5 quarter units)

FIN 440 Financial Institutions  
*Prerequisite: FIN 310*

FIN 442 Investments  
*Prerequisite: FIN 310, and FIN 440*

FIN 443 Working Capital Management  
*Prerequisite: FIN 310*

FIN 444 Risk Management & Insurance  
*Prerequisite: FIN 310*

FIN 446 International Financial Mgmt  
*Prerequisite: FIN 310*

FIN 447 Financial Planning  
*Prerequisite: FIN 310, and FIN 442*

FIN 449 Analysis of Financial Statement  
*Prerequisite: FIN 310*

FIN 453 Finance and Banking  
*Prerequisite: FIN 310*

FIN 454 Capital Structure & Financing  
*Prerequisite: FIN 310*

FIN 455 Valuation of a Corporation  
*Prerequisite: FIN 310*

FIN 456 Financial Project (Capstone)  
*Prerequisite: FIN 310, FIN 440, FIN 442, FIN 443, FIN 444, FIN 446, FIN 447, FIN 449, FIN 453, FIN 454, FIN 455*

## MAJOR IN ORGANIZATIONAL LEADERSHIP

Academic Program Director: Michelle Browning; (661)674-5706; mbrownin@nu.edu

The Bachelor of Science in Organizational Leadership provides students who are interested in starting, or who are currently working in, business enterprises with theoretical and applied knowledge of leadership theories and frameworks. Building understanding of the difference between leading small organizations and more traditional large corporations and agencies will be examined.

The premise that leadership is a process and can be learned through understanding theory, analyzing scenarios, case studies and complex problems will provide the opportunity for students to acquire their learning experientially.

The Bachelor of Science in Organizational Leadership is designed to give students the opportunity to develop the skills needed to be an effective leader in team and group settings within organizations. It is intended to help students move from an authoritarian paradigm to one of collaboration and integration.

## Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Develop a personal leadership approach.
- Identify challenges and advantages of diverse groups in organizations within a global environment.
- Analyze negotiating styles of leaders, and compare and contrast the concepts of leadership and power.
- Examine the strategies leaders use to motivate and evaluate members of groups and teams.
- Evaluate the ethical implications of leadership decisions and strategies.
- Compare and analyze strategies and frameworks used by leaders to make decisions and initiate change within organizations.
- Explain how the classic studies have informed the understanding and application of leadership and organizational theory.
- Communicate orally and in writing using proper business communication formats.

## Degree Requirements

To receive a Bachelor of Science in Organizational Leadership, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Refer to the section on undergraduate admission procedures for specific information regarding application and evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

## Non-Leadership Course Requirements

(4 courses; 18 quarter units)

LAW 204 Legal Aspects of Business I

MGT 309C Prin. of Mgmt & Organizations

HRM 409B Survey in HRM & OD

or

ODV 410 OD, Career Systems, & Training

COM 334 Persuasion  
*Prerequisite: ENG 101*

or

COM 354 Professional Presentations  
*Prerequisite: ENG 101*

or

MKT 442A Intro to Public Relations

## Leadership Courses in the Major

(10 courses; 45 quarter units)

LED 400 Introduction to Leadership

LED 410 Leading Diverse Groups & Teams  
LED 420 Adaptive Leadership in Change  
LED 430 Conflict/Negotiation for Ldrs  
LED 440 Ldrship Overview of Org. Func.  
LED 450 Advanced Group Dynamic Theory  
*Prerequisite: LED 400, and LED 410*

LED 460 Ethics and Decision Making  
LED 470 Classic Studies of Leadership  
LED 480 Research for Leaders  
*Prerequisite: LED 410, and LED 420*

LED 490 Leadership Capstone Project  
*Prerequisite: Completion of six of the preceding courses*

### Upper Division Electives

(3 courses; 13.5 quarter units)

Students select from upper-division courses with the following prefixes: ECE, ECO, FIN, HCM, HRM, MGT, ODV, and SOC.

## GRADUATE DEGREES

### MASTER OF SCIENCE

#### Master of Science in Business Analytics

Academic Program Director: Farnaz Sharifrazi; (858) 642-8468; fsharifrazi@nu.edu

The Master of Science in Business Analytics is designed to prepare students to apply scientific knowledge to Big Data to find practical patterns for decision making. Organizations measure their operations, forecasting, and future strategic plans scientifically through analyzing data in marketing, sales, finances, and supply chain areas.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Analyze components of data and analytics environment.
- Evaluate methods and technologies to organize and normalize data for use in statistical analysis.
- Construct data files and statistical models to find patterns for competitive decision making.
- Design an analytical model to forecast prices based on the previous data patterns.
- Apply security, privacy and ethical measures using data and analytical models to improve organizations' due diligence.
- Utilize previous financial data to predict future effects.
- Apply the appropriate data model to analyze the performance of supply chain processes.
- Construct analytical models to business data to achieve targeted results.

#### Degree Requirements

To receive a Master of Science in Business Analytics, students must complete 54 quarter units of graduate coursework. A total of 13.5 quarter units of graduate work completed at another regionally accredited institution may be transferred to meet stated requirements in the program provided those units were not used in earning another advanced degree. Please refer to the General Catalog section on graduate admission requirements for specific information regarding application and evaluation.

#### Core Requirements

(12 courses; 54 quarter units)

BAN 600 Fundamentals of Analytics  
ANA 605 Analytic Models & Data Systems  
*Prerequisite: BAN 600*

ANA 610 Data Management for Analytics  
ANA 615 Data Mining Techniques  
ANA 620 Continuous Data Methods, Appl  
*Prerequisite: ANA 615*  
ANA 625 Categorical Data Methods, Appl  
*Prerequisite: ANA 620*  
ANA 630 Advanced Analytic Applications  
*Prerequisite: ANA 625*  
BAN 640 Performance MGT & SCM Process  
*Prerequisite: ANA 625, BAN 600*  
BAN 645 Prediction in Marketing  
*Prerequisite: BAN 640*  
BAN 650 Probabilistic Finance Models  
*Prerequisite: BAN 645*  
BAN 655 Analytical Security & Ethics  
*Prerequisite: BAN 650*  
BAN 660 Business Analytics Capstone  
*Prerequisite: BAN 655*

## SANFORD COLLEGE OF EDUCATION

### CREDENTIAL PROGRAMS

#### Preliminary Education Specialist Authorization Teaching Credential

Academic Program Director: Suzanne Evans; (858) 642-8438; sevans@nu.edu

The Preliminary Education Specialist Authorization Teaching Credential is designed to address both the Education Specialist Standards and the program specific standards, including the Teacher Performance Expectations and California Standards for the Teaching Profession.

For additional information on credential requirements, please see the School of Education Credential Information section of the catalog.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Integrate professional, legal, and ethical practices when instructing students with disabilities.
- Teach students who are diverse learners including those who are English language learners.
- Communicate effective case management and collaborative practices with parents, professionals, and other stake holders, in order to facilitate access to the core curriculum for students with disabilities.
- Assess students using a variety of standardized and non-standardized assessments in order to make appropriate educational decisions for students with disabilities
- Develop evidence-based curriculum and instruction including the use of educational and assistive technology to provide access to the core standards for students with disabilities.
- Transition students between educational environments and programs into successful post school experiences.

#### Degree Requirements

To receive a California Preliminary Education Specialist: Mild/Moderate, Moderate/Severe, or Language and Academic Development teaching credential candidates are required to successfully complete core courses, specific program (advanced) courses, and a clinical practice path to supervised teaching (student teaching or internship).

Candidates choosing the Internship option to obtain the Preliminary Education Specialist: Mild/Moderate, Moderate/Severe or Language and Academic Development teaching credential will need to meet the Internship Eligibility requirements.

The CTC mandates approved internship programs require a minimum of 120 hours of pre-service coursework prior to becoming the teacher of record. Forty clock hours are

equal to 4.5 quarter units. These pre-service courses must be successfully completed prior to eligibility for completing the internship option.

### Requirements for the Credential

(19-21 courses; 81-90 quarter units)

#### Prerequisite

(2 courses; 9 quarter units)

HEDX 2301X Intro Health Ed: K-12

EDX 6001X Computer Tech in Classroom

#### Core Requirements

(10 courses; 45 quarter units)

TED 602 Educational Foundations

SPD 604 Psychological Fdns of Educ.

TED 606 Equity and Diversity

SPD 608 \* Exceptionalities

TED 621A Lang. Dev. Methods: Elem. Sch.

*Prerequisite: SPD 604, SPD 608, TED 602, TED 606, Pass CBEST and CSET*

or

TED 623 Lang. Dev. Methods: Secondary

*Prerequisite: TED 602, SPD 604, TED 606, SPD 608, Pass CBEST and CSET*

TED 621B \* Reading/Lang. Arts Methods

*Prerequisite: TED 621A*

SPD 614 \* Classroom and Behavior Mgmt

SPD 616 Law, Collaboration & Transition

SPD 622 Assessment

*Prerequisite: TED 621B or equivalent, and Pass CBEST and CSET*

SPD 628 Teaching Reading/Lang Arts

*Prerequisite: TED 621B or equivalent, and Pass CBEST and CSET.*

\* Internship Pre-Service course.

Students must also complete one of the following specializations

#### Specialization in Language and Academic Development

Academic Program Director: Bonnie Plummer; (916) 855-4107; bplummer@nu.edu

The Language and Academic Development specialization prepares educators to address the language development needs of a large number of P-12 students with disabilities who have difficulty in the following areas: language development, social communication, school readiness skills, literacy development, and with academic competencies across the curriculum in listening, speaking, reading, writing as well as communication and language literacy skills.

Candidates completing this credential specialization are prepared to teach students with disabilities in classrooms and inclusive settings as teachers, co-teachers and consultants. Candidates have the option of completing a traditional student teaching or participating in an internship to fulfill the final clinical practice requirement.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Analyze the implications of the characteristics of students with language and academic development needs including academic competencies across the curriculum in listening, speaking, reading, writing and who demonstrate lack of communication and language literacy skills to access and benefit from academic instruction.
- Analyze students' language development across disabilities and the life span including typical and atypical language development, communication skills, social pragmatics as it relates to the acquisition of academic knowledge and skills.

- Differentiate between language disorders, disabilities, and language difference in order to identify and utilize current research based strategies, methods, and materials for the development of fluent reading in students across ages and across an array of environments, including speakers of English and English Language learners.
- Assess the impact of sensory deficits on the development and application of language, verbal and non-verbal communication abilities and needs in order to identify and implement effective intervention techniques for social communication and activities to engage students with communication disabilities in classroom and social activities.
- Utilize and interpret a variety of assessments for students with communication disabilities in order to collaborate with educators and parents to make educational decisions based on the data and apply instructional models and strategies that align with ongoing assessment results.
- Select and implement evidence-based curricula and instructional methods that are effective with students with language and communication disabilities including specially designed curricula and methods for language and literacy development, quantitative reasoning, and reading/ language arts instruction to enable individuals to access the core curriculum.

#### Degree Requirements

To receive a California Preliminary Education Specialist Teaching Credential, candidates are required to successfully complete core courses, specific program (advanced) courses, and a clinical practice path to supervised teaching (student teaching or internship).

Candidates choosing the Internship option to obtain the Preliminary Education Specialist: Mild/Moderate, Moderate/Severe or Language and Academic Development (LAD) teaching credential will need to meet the Internship Eligibility requirements.

The CTC mandates that all approved internship programs require a minimum of 120 hours of pre-service coursework prior to becoming the teacher of record. Forty clock hours are equal to 4.5 quarter units. These pre-service courses must be successfully completed prior to eligibility for completing the internship option.

The CTC mandates that interns must be supported during their entire internship experience.

#### Specialization Requirements

(4 courses; 18 quarter units)

LAD 632 Speech & Language Development

LAD 633 Academic Language Assessment

LAD 634 Curriculum and Instruction

LAD 635 Intensive Lang. Intervention

#### Clinical Practice Requirements

Students will need to choose from one (1) of the following options: Internship or Student Teaching

#### Internship

(4 courses; 13.5 quarter units)

LAD 692A Internship LAD

*Prerequisite: SPD 608, and SPD 614, and TED 621B with a minimum grade of B, Candidates must be admitted to university internship program.*

LAD 692B Internship LAD

*Prerequisite: SPD 608, and SPD 614, and TED 621B, and Candidates must be admitted to university internship program.*

SPD 698A Internship Seminar (2.25 quarter units)

*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must also complete all pre-requisite requirements for the internship credential as outlined by CTC.*

SPD 698B Internship Seminar (2.25 quarter units)  
*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must also complete all pre-requisite requirements for the internship credential as outlined by CTC.*

### Additional Requirements

This course may be required to fulfill internship hour requirements. It may be taken a maximum of three (3) times to complete internship hours. Does not grant graduate units towards graduate degree, however tuition is applied for each attempt.

SPD 692C Internship Support (2.25 quarter units)  
*Prerequisite: SPD 692B with a minimum grade of S*

or

### Student Teaching

(4 courses; 13.5 quarter units)

LAD 682A Student Teaching I

LAD 682B Student Teaching II

SPD 688A Clinical Practice Seminar (2.25 quarter units)  
*Corequisite: SPD 682A, or SPD 684A or LAD 682A*

SPD 688B Clinical Practice Seminar (2.25 quarter units)  
*Corequisite: SPD 682B, or SPD 684B or LAD 682B*

### Optional

For the Multiple or Single Subject Credential Requirements, please choose one of the following options.

### Multiple Subject Credential

(3 courses; 13.5 quarter units)

TED 635 Methods:History/SS-Heal-PE-Art  
*Prerequisite: TED 621A with a minimum grade of C*

TED 636 Methods: Mathematics-Science  
*Prerequisite: TED 621A with a minimum grade of C*

TED 626 Classroom Management  
*Prerequisite: TED 623, or TED 621A*

or

### Single Subject Credential

(3 courses; 13.5 quarter units)

TED 632 Content Area Curriculum  
*Prerequisite: TED 623*

TED 633 Content Area Instruct-Assess  
*Prerequisite: TED 623 with a minimum grade of C*

TED 626 Classroom Management  
*Prerequisite: TED 623, or TED 621A*

Choose from one (1) of the following options:

### Student Teaching Option

(3 courses; 9 quarter units)

TED 530A Student Teaching I  
*Corequisite: TED 531A*

TED 531A Student Teaching Seminar I (2.25 quarter units)  
*Corequisite: TED 530A*

TED 531B Student Teaching Seminar II (2.25 quarter units)  
*Prerequisite: TED 530A with a minimum grade of S, and  
Corequisite: TED 530B, TED 531A with a minimum grade of S*

or

### Internship Option

(5 courses; 18 quarter units)

TED 610 Best Internship Practices  
*Prerequisite: Admission to the intern program, SPD 608*

TED 628A Internship Clinical Practice I  
*Corequisite: TED 610, TED 631A*

TED 628B Internship Clinical Pract. II  
*Prerequisite: TED 628A, Corequisite: TED 631B*

TED 631A Internship Seminar I (2.25 quarter units)  
*Prerequisite: TED 610*

TED 631B Internship Seminar II (2.25 quarter units)  
*Prerequisite: TED 631A, TED 628A, Corequisite: TED 628B*

### Additional Requirement

This course may be required to fulfill internship hour requirements. It may be taken a maximum of eight times to complete internship hours. Does not grant graduate units towards graduate degree, however tuition is applied for each attempt.

TED 628C Clinical Practice III (2.25 quarter units)  
*Prerequisite: TED 628A, TED 631A, TED 631B, TED 628B*

### Specialization in Mild/Moderate

Academic Program Director: Nilsa Thorsos; (310) 662-2140; nthorsos@nu.edu

The Specialization in Mild/Moderate is designed for educators and other professionals who want to become knowledgeable about teaching strategies to enhance individuals with mild/moderate disabilities.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Analyze the implications of characteristics of students with M/M disabilities and autism for service delivery such as placement decisions, IEP development, and instruction.
- Evaluate a variety of appropriate assessments procedures and communicate results in order to use evidence based strategies and the core curriculum in the development of IEP goals and instructional plans for students with M/M disabilities and autism.
- Maintain appropriate educational environments and positive behavioral support to include the school-wide behavior support process for students with M/M disabilities and autism.
- Implement effective methods for teaching reading, speaking, listening, written language, and mathematics to ensure access to the general education curriculum across instructional settings for students with M/M disabilities and autism.
- Exhibit collaborative case management to coordinate the IEP process and address the legal and instructional requirements based on the individual needs of the student with M/M disabilities and autism.

### Degree Requirements

To receive a California Preliminary Education Specialist Teaching Credential, candidates are required to successfully complete core courses, specific program (advanced) courses, and a clinical practice path to supervised teaching (student teaching or internship).

Candidates choosing the Internship option to obtain the Preliminary Education Specialist: Mild/Moderate, Moderate/Severe or Language and Academic Development (LAD) teaching credential will need to meet the Internship Eligibility requirements.

The CTC mandates that all approved internship programs require a minimum of 120 hours of pre-service coursework prior to becoming the teacher of record. Forty clock hours are equal to 4.5 quarter units. These pre-service courses must be successfully completed prior to eligibility for completing the internship option.

The CTC mandates that interns must be supported during their entire internship experience.

### Specialization Requirements

(4 courses; 18 quarter units)

SPD 632 Charac/Instr Stds w/ M/M Disab  
SPD 634 Assess of Std w/ M/M Disab  
SPD 636 Teaching Math/Writing for M/M  
SPD 638 Content Differentiation

### Clinical Practice Requirements

Students will need to choose from one of the following options: Internship or Student Teaching.

#### Internship Option

(4 courses; 13.5 quarter units)

SPD 692A Internship M/M

*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must be admitted to the University internship program.*

SPD 692B Internship M/M

*Prerequisite: SPD 692A*

SPD 698A Internship Seminar (2.25 quarter units)

*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must also complete all pre-requisite requirements for the internship credential as outlined by CTC.*

SPD 698B Internship Seminar (2.25 quarter units)

*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must also complete all pre-requisite requirements for the internship credential as outlined by CTC.*

#### Additional Requirements

This course may be required to fulfill internship hour requirements. It may be taken a maximum of three (3) times to complete internship hours. Does not grant graduate units towards graduate degree, however tuition is applied for each attempt.

SPD 692C Internship Support (2.25 quarter units)

*Prerequisite: SPD 692B with a minimum grade of S*

or

#### Student Teaching Option

(4 courses; 13.5 quarter units)

SPD 682A Student Teaching M/M

*Corequisite: SPD 688A*

SPD 682B Student Teaching M/M

*Corequisite: SPD 688B*

SPD 688A Clinical Practice Seminar (2.25 quarter units)

*Corequisite: SPD 682A, or SPD 684A or LAD 682A*

SPD 688B Clinical Practice Seminar (2.25 quarter units)

*Corequisite: SPD 682B, or SPD 684B or LAD 682B*

#### Optional

For the Multiple or Single Subject Credential Requirements, please choose one of the following options.

#### Multiple Subject Credential

(3 courses; 13.5 quarter units)

TED 635 Methods:History/SS-Heal-PE-Art

*Prerequisite: TED 621A with a minimum grade of C*

TED 636 Methods: Mathematics-Science

*Prerequisite: TED 621A with a minimum grade of C*

TED 626 Classroom Management

*Prerequisite: TED 623, or TED 621A*

or

#### Single Subject Credential

(3 courses; 13.5 quarter units)

TED 632 Content Area Curriculum

*Prerequisite: TED 623*

TED 633 Content Area Instruct-Assess

*Prerequisite: TED 623 with a minimum grade of C*

TED 626 Classroom Management

*Prerequisite: TED 623, or TED 621A*

and

Choose from one (1) of the following options:

#### Student Teaching Option

(3 courses; 9 quarter units)

TED 530A Student Teaching I

*Corequisite: TED 531A*

TED 531A Student Teaching Seminar I (2.25 quarter units)

*Corequisite: TED 530A*

TED 531B Student Teaching Seminar II (2.25 quarter units)

*Prerequisite: TED 530A with a minimum grade of S and*

*Corequisite: TED 530B, TED 531A with a minimum grade of S*

or

#### Internship Option

(5 courses; 18 quarter units)

TED 610 Best Internship Practices

*Prerequisite: Admission to the intern program, SPD 608*

TED 628A Internship Clinical Practice I

*Corequisite: TED 610, TED 631A*

TED 628B Internship Clinical Pract. II

*Prerequisite: TED 628A, Corequisite: TED 631B*

TED 631A Internship Seminar I (2.25 quarter units)

*Prerequisite: TED 610*

TED 631B Internship Seminar II (2.25 quarter units)

*Prerequisite: TED 631A, TED 628A, Corequisite: TED 628B*

#### Additional Requirement

This course may be required to fulfill internship hour requirements. It may be taken a maximum of eight times to complete internship hours. Does not grant graduate units towards graduate degree, however tuition is applied for each attempt.

TED 628C Clinical Practice III (2.25 quarter units)

*Prerequisite: TED 628A, TED 631A, TED 631B, TED 628B*

#### Specialization in Moderate/Severe

Academic Program Director: Mary Lynn Ferguson; (858) 642-8346; mferguson@nu.edu

The Specialization in Moderate/Severe program meets the professional program specific standards required by CTC for credentials. Candidates will meet California Standards for the Teaching Profession and Teacher Performance Expectations.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Analyze the implications of the characteristics of students with Moderate/Severe/Profound disabilities for service delivery impacting assessments, IEP development, instruction, and program options.
- Analyze students' verbal and non-verbal communication abilities to develop needed augmentative, alternative or signed systems including assistive technology, to enhance communication, social interaction, academic performance and skill development.
- Evaluate a variety of assessments and procedures to maximize students' participation in standards and evidence-based, academic/life skills/wellness curriculum within IEP goals and objectives across school/community settings.
- Establish and maintain educational environments based upon positive behavior support processes at the individual and school-wide levels.
- Analyze the movement, mobility, sensory, and specialized health

care needs to access school and community to the fullest extent using appropriate techniques, procedures, materials, assistive technology, and adaptive equipment.

- Exhibit collaborative case management to coordinate the IEP process and the various transitions experienced by students with Moderate/Severe/Profound disabilities, while addressing the legal and instructional requirements of their IEPs.

### Degree Requirements

To receive a California Preliminary Education Specialist Teaching Credential, candidates are required to successfully complete core courses, specific program (advanced) courses, and a clinical practice path to supervised teaching (student teaching or internship).

Candidates choosing the Internship option to obtain the Preliminary Education Specialist: Mild/Moderate, Moderate/Severe or Language and Academic Development (LAD) teaching credential will need to meet the Internship Eligibility requirements.

The CTC mandates that all approved internship programs require a minimum of 120 hours of pre-service coursework prior to becoming the teacher of record. Forty clock hours are equal to 4.5 quarter units. These pre-service courses must be successfully completed prior to eligibility for completing the internship option.

The CTC mandates that interns must be supported during their entire internship experience.

### Specialization Requirements

(4 courses; 18 quarter units)

SPD 642 Academic Instruction M/S

SPD 644 Life Skills & Transitions M/S

SPD 646 PBS, Comm & Social Skills M/S

SPD 648 Medical & Asst Tech Issues M/S

### Clinical Practice Requirements

Students will need to choose from one of the following options: Internship or Student Teaching

### Internship

(4 courses; 13.5 quarter units)

SPD 694A Internship M/S

*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must be admitted to the University internship program.*

SPD 694B Internship M/S

*Prerequisite: SPD 694A*

SPD 698A Internship Seminar (2.25 quarter units)

*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must also complete all pre-requisite requirements for the internship credential as outlined by CTC.*

SPD 698B Internship Seminar (2.25 quarter units)

*Prerequisite: SPD 608, SPD 614, TED 621B, Candidates must also complete all pre-requisite requirements for the internship credential as outlined by CTC.*

### Additional Requirements

This course may be required to fulfill internship hour requirements. It may be taken a maximum of three (3) times to complete internship hours. Does not grant graduate units towards graduate degree, however tuition is applied for each attempt.

SPD 692C Internship Support (2.25 quarter units)

*Prerequisite: SPD 692B with a minimum grade of S*

or

### Student Teaching

(4 courses; 13.5 quarter units)

SPD 684A Student Teaching M/S

*Corequisite: SPD 688A*

SPD 684B Student Teaching M/S

*Corequisite: SPD 688B*

SPD 688A Clinical Practice Seminar (2.25 quarter units)

*Corequisite: SPD 682A or SPD 684A or LAD 682A*

SPD 688B Clinical Practice Seminar (2.25 quarter units)

*Corequisite: SPD 682B or SPD 684B or LAD 682B*

### Optional

For the Multiple or Single Subject Credential Requirements, please choose one of the following options.

### Multiple Subject Credential

(3 courses; 13.5 quarter units)

TED 635 Methods:History/SS-Heal-PE-Art

*Prerequisite: TED 621A with a minimum grade of C*

TED 636 Methods: Mathematics-Science

*Prerequisite: TED 621A with a minimum grade of C*

TED 626 Classroom Management

*Prerequisite: TED 623, or TED 621A*

or

### Single Subject Credential

(3 courses; 13.5 quarter units)

TED 632 Content Area Curriculum

*Prerequisite: TED 623*

TED 633 Content Area Instruct-Assess

*Prerequisite: TED 623 with a minimum grade of C*

TED 626 Classroom Management

*Prerequisite: TED 623, or TED 621A*

and

Choose from one (1) of the following options:

### Student Teaching Option

(3 courses; 9 quarter units)

TED 530A Student Teaching I

*Corequisite: TED 531A*

TED 531A Student Teaching Seminar I (2.25 quarter units)

*Corequisite: TED 530A*

TED 531B Student Teaching Seminar II (2.25 quarter units)

*Prerequisite: TED 530A with a minimum grade of S and*

*Corequisite: TED 530B, TED 531A with a minimum grade of S*

or

### Internship Option

(5 courses; 18 quarter units)

TED 610 Best Internship Practices

*Prerequisite: Admission to the intern program, SPD 608*

TED 628A Internship Clinical Practice I

*Corequisite: TED 610, TED 631A*

TED 628B Internship Clinical Pract. II

*Prerequisite: TED 628A, Corequisite: TED 631B*

TED 631A Internship Seminar I (2.25 quarter units)

*Prerequisite: TED 610*

TED 631B Internship Seminar II (2.25 quarter units)

*Prerequisite: TED 631A, TED 628A, Corequisite: TED 628B*

### Additional Requirement

This course may be required to fulfill internship hour requirements. It may be taken a maximum of eight times to complete internship hours. Does not grant graduate units towards graduate degree, however tuition is applied for each attempt.

TED 628C Clinical Practice III (2.25 quarter units)  
*Prerequisite: TED 628A, TED 631A, TED 631B, TED 628B*

## SCHOOL OF ENGINEERING AND COMPUTING

### Terminated Programs

Master of Science in Sustainability Management  
Master of Science Information Technology Management  
Specializations previously associated with MSCS:  
Specialization in Advanced Computing  
Specialization in Database Engineering  
Specialization in Enterprise Architecture  
Specialization in Software Engineering

## UNDERGRADATE PROGRAMS

### BACHELOR OF SCIENCE

#### MAJOR IN ELECTRICAL AND COMPUTER ENGINEERING

Academic Program Director: Peilin Fu; (858) 309-3432; pfu@nu.edu

The Electrical and Computer Engineering program involves the study of hardware, software, communications, and the interactions between them. Its curriculum focuses on the theories, principles, and practices of traditional electrical engineering and mathematics and applies them to the design of computers and computer-based devices. Electrical and Computer Engineering students study the design of digital hardware systems including communications systems, computers, and devices that contain computers. They study software development, focusing on software for digital devices and their interfaces with users and other devices. The program emphasizes a balanced approach between hardware and software, both built on an engineering and mathematics foundation. Currently, a dominant area within Electrical and Computer engineering is embedded systems, the development of devices that have software and hardware embedded within. For example, devices such as cell phones, digital audio players, digital video recorders, alarm systems, x-ray machines, and laser surgical tools all require integration of hardware and embedded software and all are the result of computer engineering. The undergraduate program is structured to establish analytical thinking and design skills in areas such as computer architecture, digital logic design, circuits analysis, computer communication networks, digital computer control, integrated circuit engineering, project management, VLSI design, digital signal processing and embedded systems.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Apply knowledge of mathematics, science, and engineering to solve problems.
- Analyze and interpret data.
- Design a component, a system, or a process to meet desired needs within realistic constraints.
- Function on a team and be able to communicate orally and in writing to accomplish a common goal.
- Identify, formulate, and solve engineering problems.
- Use professional ethics in making engineering decisions.
- Identify the impact of engineering solutions in a global, and economic environment.
- Use the techniques, skills, and modern engineering tools necessary for engineering practice.

### Degree Requirements

To receive a Bachelor of Science in Electrical and Computer Engineering, students must complete at least 180 quarter units to include a minimum of 70.5 units of the University General Education requirements; 76.5 quarter units must be completed at the upper-division level, and 45, including the senior project courses (CEE498, CEE499A and CEE499B), must be taken in residence at National University. In the absence of transfer credit, students may need to take additional general electives to satisfy the total units for the degree. Students should refer to the section on undergraduate admission procedures for specific information on admission and

evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

### Prerequisites for the Major

(8 courses; 33 quarter units)

- MTH 215 College Algebra & Trigonometry  
*Prerequisite: Accuplacer test placement evaluation, or MTH 12A, and MTH 12B*
- PHS 104 Introductory Physics  
*Prerequisite: 2 years of high school algebra, and MTH 204, or MTH 215, or MTH 216A, and MTH 216B*
- PHS 130A Physics Lab for Engineering (1.5 quarter units)
- CSC 208 Calculus for Comp. Science I  
*Prerequisite: MTH 215*
- CSC 209 Calculus for Comp. Science II  
*Prerequisite: CSC 208*
- CSC 220 Applied Probability & Stats.  
*Prerequisite: MTH 215*
- CSC 242 Intro to Programming Concepts  
*Prerequisite: MTH 215*
- CSC 252 Programming in C++  
*Prerequisite: CSC 242*

### Requirements for the Major

(24 Courses; 93 quarter units)

- CSC 300 Object Oriented Design  
*Prerequisite: CSC 252*
- CSC 310 Linear Algebra and Matrix Comp  
*Prerequisite: CSC 300*
- CEE 300 Engineering Numerical Methods  
*Prerequisite: CSC 209, and CSC 310*
- PHS 231 Calculus-based Physics 1  
*Prerequisite: PHS 104, and MTH 220, or CSC 208, and MTH 221, or CSC 209*
- PHS 232 Calculus-based Physics 2  
*Prerequisite: PHS 104, PHS 231, MTH 220 or CSC 208, and MTH 221 or CSC 209*
- CSC 331 Discrete Structures and Logic  
*Prerequisite: CSC 252, and CSC 310*
- CEE 310 Circuit Analysis  
*Prerequisite: CEE 300*
- CEE 310L Circuit Analysis Lab (1.5 quarter units)  
*Corequisite: CEE 310*
- CSC 340 Digital Logic Design  
*Prerequisite: CSC 208, or EGR 220*
- CSC 340L Digital Logic Design Lab (1.5 quarter units)  
*Corequisite: CSC 340*
- CSC 342 Computer Architecture  
*Prerequisite: CSC 340, and CSC 340L*
- CSC 350 Computer Ethics
- CSC 436 Comp. Communication Networks  
*Prerequisite: CSC 335, or CSC 340, and CSC 340L*
- CEE 340 Embedded Systems  
*Prerequisite: CSC 208, and CSC 252, or CSC 262*



- CEE 340L Embedded Systems Lab (1.5 quarter units)  
*Corequisite: CEE 340*
- CEE 324 Linear Systems and Signals  
*Prerequisite: CSC 208, or MTH 220, CEE 310*
- CEE 324L Linear Systems and Signals Lab (1.5 quarter units)  
*Corequisite: CEE 324*
- CEE 420 Microelectronics  
*Prerequisite: CEE 310*
- CEE 420L Microelectronics Lab (1.5 quarter units)  
*Corequisite: CEE 420*
- CEE 430 Digital Signal Processing  
*Prerequisite: CEE 420*
- CEE 440 VLSI Design  
*Prerequisite: CEE 430*
- CEE 498 Capstone Design Project I  
*Prerequisite: Complete all core courses except CEE499 OR  
Permission of the program lead.*
- CEE 499A Capstone Design Project II  
*Prerequisite: CEE 498*
- CEE 499B Capstone Design Project III  
*Prerequisite: CEE 499A*

## GRADUATE PROGRAMS

### MASTER OF SCIENCE

#### MASTER OF SCIENCE IN COMPUTER SCIENCE

Academic Program Director: Mudasser Wyne; (858) 309-3433; mwyne@nu.edu

The Master of Science in Computer Science (MSCS) degree program at National University provides students with a solid foundation in advanced programming, operating systems, computer security, user interface design, software engineering, and database design and implementation. The program exposes students to best practice methodologies using a variety of tools and techniques required for solving real-world problems.

National University's computer science students are taught to put theory into practice thus preparing them for the fast-growing, rapidly evolving opportunities in the field. MSCS students will complete a three-course capstone project in which they apply what they have learned to solve some of the current technological problems facing society today. In addition, graduates are prepared to clearly discuss issues, trends, and solutions with both technical and non-technical audiences. Every part of the curriculum is devoted to developing required communication skills, ethics, and standards of professionalism.

The Master of Science in Computer Science (MSCS) curriculum is designed for professionals currently working in business, government, or industry who want to advance their careers. People without a previous computer science degree who want to prepare for a career as a working computer science professional can meet with an advisor to discuss pathways into the program. National University's approach prepares graduates to immediately become highly productive members of a real-world computing team.

#### Integration

Three master's project classes provide an integrating mechanism for acquiring realistic experience through building a computationally complex project. It is a three-month project solving a real problem for a real client against a time deadline using all available tools and resources as students work together in teams. This component addresses the need to integrate a broad range of technologies and skills. Students are given the opportunity to crystallize the ideas learned earlier and to implement comprehensive systems across an organization.

#### Career Tracks

In the MSCS program, graduates are proficient in analytical and critical thinking skills, have a sense of professionalism, and are instilled with a strong set of values essential for success in computer science. This program reflects current and future

industry needs, and graduates are trained and prepared to assume a leadership role in the field.

#### Admission Requirements

Candidates seeking admission to the program should possess a baccalaureate degree in Computer Science (CS), Computer Engineering (CE), Software Engineering (SE), or Information Systems (IS). Students from other undergraduate majors can fulfill the program prerequisites either by taking CSC 242, CSC 252 and CSC 262 or by demonstrating proficiency through additional equivalent coursework or taking a course challenge exam for CSC 242, CSC 252 and CSC 262 before starting MSCS program.

#### MSCS Transition Program

National University students who completed a transition program as part of their undergraduate degree and who satisfy MSCS transition program requirements described in the catalog must complete a minimum of 45 quarter units for their MSCS degree. The number of units required for the MSCS program is dependent on the coursework completed in the Bachelor's transition program and the grades earned.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Create software requirements specifications, and design and develop complex software systems.
- Evaluate computer security vulnerabilities and threats, and counter measures that are effective and ethical.
- Analyze, design and develop database solutions by translating database modeling theory into sound database design and implementation.
- Analyze and design complex front-end applications and integrate them with backend databases.
- Compare and contrast computing concepts and systems.
- Demonstrate ability to conduct in-depth research, both individually as well as in teams, in a specific computer science area.
- Demonstrate critical thinking and ability to analyze and synthesize computer science concepts and skills with ethical standards.

#### Degree Requirements

To receive a Master of Science in Computer Science, students must complete 58.5 quarter units of graduate coursework. A total of 13.5 quarter units of graduate credit may be granted for equivalent graduate work completed at another accredited institution, as it applies to this degree, and provided the units were not used in earning another advanced degree. The degree program consists of ten courses and a three-part MSCS graduate project (three courses, 4.5 quarter units each) that cannot be taken until CSC 603, CSC 607, CSC 670 and CSC 680 courses have been completed. It is important to note that capstone course sequence CSC 686, CSC 687 and CSC 688 needs to be taken in the consecutive months. In case a student is not able to complete this course sequence in consecutive months, he/she will be required to start with the CSC 686 course in the future, whenever this course sequence is offered.

#### Program Prerequisites

(3 courses; 13.5 quarter units)

Candidates seeking admission to the program should possess a baccalaureate degree in Computer Science (CS), Computer Engineering (CE), Software Engineering (SE), or Information Systems (IS). Students from other undergraduate majors can fulfill the program prerequisites either by taking CSC 242, CSC 252 and CSC 262 courses or by demonstrating proficiency through additional equivalent coursework or taking a course challenge exam for CSC 242, CSC 252 and CSC 262 before starting MSCS program.

#### Complete the following program prerequisites:

- CSC 242 Intro to Programming Concepts  
*Prerequisite: MTH 215*
- CSC 252 Programming in C++  
*Prerequisite: CSC 242*
- CSC 262 Programming in JAVA  
*Prerequisite: MTH 215*

## Core Requirements

(13 courses; 58.5 quarter units)

- CSC 600 Advanced Programming  
*Prerequisite: CSC 242, and CSC 252, and CSC 262, Students with a baccalaureate degree in Computer Science (CS), Computer Engineering (CE), Software Engineering (SE), or Information Systems (IS) do not need these prerequisites.*
- CSC 603 Software Eng Fundamentals
- CSC 605 Software Architecture Principl  
*Prerequisite: CSC 603*
- CSC 606 Modern Operating Systems  
*Prerequisite: CSC 600*
- CSC 607 Security in Computing  
*Prerequisite: CSC 606*
- CSC 670 User Interface Engineering  
*Prerequisite: CSC 600*
- CSC 675 Database Design and Impl.  
*Prerequisite: CSC 600 (CSC600 course prerequisite is not required for students registered for MSMIS program)*
- CSC 678 Advanced Database Programming  
*Prerequisite: CSC 675*
- CSC 680 Database Web Interface  
*Prerequisite: CSC 678*
- CSC 685 Topics in Computing
- CSC 686 Computer Science Project I  
*Prerequisite: CSC605, CSC607, CSC670 and CSC680*
- CSC 687 Computer Science Project II  
*Prerequisite: CSC 686*
- CSC 688 Computer Science Project III  
*Prerequisite: CSC 687*

## Master of Science in Data Science

Academic Program Director: Jodi Reeves; (858) 309-3426; jreeves@nu.edu

The Master of Science in Data Science program is designed to provide students with a comprehensive foundation for applying statistical methods to solve real-world problems. One goal of this program is to prepare students for careers in data science with a broad knowledge of the application of statistical tools, techniques, and methods as well as the ability to conduct in-depth analysis, synthesis, and evaluation. Another goal is to prepare students for careers with analytical database knowledge, the ability to apply analytical database tools, techniques, and methods, and the ability to design, develop, implement, program, and maintain data marts and data warehouses.

To address the spectrum of issues in data science, this curriculum has been designed to include core courses in statistical topics as well as areas for advanced applications of data science in unique fields. Core topics include data modeling, data management, data mining, continuous and categorical data methods and applications, teamwork, and communication. Advanced topics include how to develop, implement, and maintain the hardware and software tools needed to make efficient and effective use of big data including databases, data marts, data warehouses, machine learning, and analytic programming. State-of-the-art analytical software will be used in all courses.

The culmination of this program is a three-month capstone project where real data from sponsoring organizations or publicly available data will be used to solve specialized problems in analytical database design, programming, implementation, or optimization.

Previous academic studies or industrial experience in such areas as math, statistics, computer programming, engineering, or science are helpful prerequisites for this master's program. This degree is appropriate for both experienced professionals as well as recent college graduates.

## Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Integrate components of data science to produce knowledge-based solutions for real-world challenges using public and private data sources.
- Evaluate data management methods and technologies used to improve integrated use of data.
- Construct data files using advanced statistical and data programming techniques to solve practical problems in data analytics.
- Design an analytic strategy to frame a potential issue and solution relevant to the community and stakeholders.
- Develop team skills to ethically research, develop, and evaluate analytic solutions to improve organizational performance.
- Design data marts.
- Analyze complex database queries for real-world analytical applications.
- Design medium to large data warehouses.
- Evaluate machine learning methods and strategies for advanced data mining.

## Degree Requirements

To obtain the Master of Science in Data Science, students must complete at least 54 graduate units. A total of 13.5 quarter units of graduate credit may be granted for equivalent graduate work completed at another regionally accredited institution, as it applies to this degree, and provided the units were not used in earning another advanced degree. Please refer to the graduate admissions requirements for specific information regarding application and evaluation.

## Core Requirements

(13 courses; 58.5 quarter units)

- BAN 600 Fundamentals of Analytics
- ANA 605 Analytic Models & Data Systems  
*Prerequisite: BAN 600*
- ANA 610 Data Management for Analytics
- ANA 615 Data Mining Techniques
- ANA 620 Continuous Data Methods, Appl  
*Prerequisite: ANA 615*
- ANA 625 Categorical Data Methods, Appl  
*Prerequisite: ANA 620*
- ANA 630 Advanced Analytic Applications  
*Prerequisite: ANA 625*
- ANA 650 Database Design for Analytics
- ANA 655 Data Warehouse Design & Devel  
*Prerequisite: ANA 650*
- ANA 660 Advanced SQL Programming  
*Prerequisite: ANA 655*
- ANA 665 Data Mining & Machine Learning  
*Prerequisite: ANA 660*
- ANA 699A Analytic Capstone Project I  
*Prerequisite: All core and specialization courses in an analytics program with a minimum GPA of 3.0 or approval of Lead Faculty.*
- ANA 699B Analytic Capstone Project II  
*Prerequisite: ANA 699A*

## Master of Science in Electrical Engineering

Academic Program Director: Mohammad Amin; (858) 309-3422; mamin@nu.edu

The Master of Science in Electrical Engineering (MSEE) program will provide students with the mathematical and theoretical foundation and hands-on skills

required for solving real world problems in electrical engineering and other related fields. The MSEE program provides a balanced approach to studying core topics in electrical engineering along with specializations in wireless communication and computer engineering. Core topics include engineering mathematics, advanced engineering computing, digital signal processing, network systems and security, and engineering economics. In addition to the core topics, students will be able to study a specific specialization such as wireless communication or computer engineering. The wireless communication specialization topics include electromagnetic field theory, communications standards and protocols, and wireless sensor networks. The computer engineering specialization topics include computer architecture, system modeling and simulation, real-time systems, digital image processing, and information storage and retrieval.

Candidates seeking admission to the program need to have a baccalaureate degree in electrical engineering, computer engineering, physics, or a related engineering field from a regionally accredited university. No other baccalaureate degrees are eligible for admission into the MSEE program.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Integrate theoretical ideas and practical electrical engineering and computing skills to design and develop new applications in the engineering field.
- Design and conduct engineering experiments or simulations for new product development.
- Analyze engineering problems with both mathematical principles and scientific theories.
- Evaluate the impact of evolving engineering systems on the global economy.
- Design specifications and implement, analyze and solve engineering problems.
- Analyze advanced network systems to meet technological demands, ethical values, and legal standards.
- Assemble a team to work productively and successfully on a technical project.

### Degree Requirements

To obtain the Master of Science in Electrical Engineering (MSEE), students must complete 54 graduate units. A total of 13.5 quarter units of graduate credit may be granted for equivalent graduate work completed at another regionally accredited institution, as it applies to this degree, and provided the units were not used in earning another advanced degree. All students must complete the seven core courses and five specialization courses in one area of specialization. Please refer to the graduate admissions requirements for specific information regarding application and evaluation.

### Program Prerequisites

(2 courses; 9 quarter units)

Students with a physics or engineering baccalaureate degree in a field other than electrical engineering can qualify for admission to the program by taking one or both of the following courses, or receive permission from the Academic Program Director based on equivalent coursework supported by verifiable documented proof:

- EEC 501 Application Software Dev.  
*Recommended Preparation: Baccalaureate degree in electrical engineering, computer engineering, or related field from a regionally accredited university.*
- EEC 502 Electronic Circuits & Systems  
*Recommended Preparation: Baccalaureate degree in electrical engineering, computer engineering, or related field from a regionally accredited university.*

### Core Requirements

(5 courses; 22.5 quarter units)

- EEC 605 Adv Engr Problem Solving  
*Prerequisite: EEC 501, and EEC 502*

EEC 610 Advanced Engineering Math  
*Prerequisite: EEC 605*

EEC 615 Digital Signal Processing  
*Prerequisite: EEC 610*

EEC 620 Network Systems & Security  
*Prerequisite: EEC 615*

EEC 625 Engr Economics & Ecosystems

All students must choose one (1) specialization and complete the specialization courses before enrolling in the capstone project courses.

### Project Capstone Requirements

(2 courses; 9 quarter units)

The following courses can only be taken after the completion of the core courses and the required area of specialization:

EEC 690 Master's Research Project I  
*Prerequisite: EEC 659, or EEC 669*

EEC 695 Master's Research Project II  
*Prerequisite: EEC 690*

### Specialization in Computer Engineering

Academic Program Director: Mohammad Amin; (858) 309-3422; mamin@nu.edu

This specialization is designed to prepare students for a dynamic computer industry as well as for post-graduate students in the field of computer engineering and other related fields. Students take courses to analyze computer architecture, modeling and simulation of real time systems, image processing, and information storage and retrieval. This specialization emphasizes the use of simulation tools to understand various computer engineering concepts.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Compare various computer architectures and evaluate their benefits.
- Evaluate various simulation models for engineering problems.
- Analyze real-time systems.
- Analyze current technologies and various algorithms used for image processing.
- Synthesize principles and functionality of information storage and retrieval systems.

Students must successfully complete the core requirements before starting the specialization.

### Requirements for the Specialization

(5 courses; 22.5 quarter units)

EEC 661 Advanced Computer Architecture  
*Prerequisite: EEC 620*

EEC 663 System Modeling & Simulation  
*Prerequisite: EEC 620*

EEC 665 Real-Time Systems  
*Prerequisite: EEC 661*

EEC 667 Digital Image Processing  
*Prerequisite: EEC 663*

EEC 669 Info Storage & Retrieval  
*Prerequisite: EEC 661*

### Specialization in Wireless Communication

Academic Program Director: Mohammad Amin; (858) 309-3422; mamin@nu.edu

Students in this specialization will develop skills to analyze different communication systems, apply electromagnetic signal propagation principles, modulation techniques, coding, standards and technologies to build secure and efficient wireless communication systems.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Analyze electromagnetic radiation and propagation principles and apply to wireless communication systems.
- Analyze wireless communication systems for improvement to meet technological, business, and consumer demands.
- Evaluate modulation and demodulation techniques for constructing coding/decoding schemes and detecting and filtering wireless communication signals.
- Evaluate wireless networking, protocols, architectures, and standards to the development and design of wireless communication systems.
- Create a strategic analysis to develop different wireless sensor networks and applications.

Students must successfully complete the core requirements before starting the specialization.

### Requirements for the Specialization

(5 courses; 22.5 quarter units)

EEC 651	Electromagnetic Theory, Appl <i>Prerequisite: EEC 620</i>
EEC 653	Wireless Principles & Systems <i>Prerequisite: EEC 651</i>
EEC 655	Wireless Mod Theories & Coding <i>Prerequisite: EEC 653</i>
EEC 657	Wireless Standards & Protocol <i>Prerequisite: EEC 653</i>
EEC 659	Wireless Sensor Networks <i>Prerequisite: EEC 653</i>

### Master of Science in Engineering Management

Academic Program Director: Shekar Viswanathan; (858) 309-3416; sviswana@nu.edu

Engineering Management leadership has become a highly sought skill in today's competitive global technological marketplace. The Master of Science in Engineering Management program is designed to bring the benefits of modern technology and high quality graduate-level instruction to engineers/scientists/technologists interested in furthering their skills in engineering management with specialization in the following areas:

- Project Management to become effective future project managers.
- Systems Management to manage the life cycle of systems including definition, development, deployment and decommissioning.
- Technology Management to manage and lead technology in global marketplace.

These specializations offer practical business perspectives necessary for engineering management. Unlike traditional MBA programs, these programs emphasize management skills that are specifically built on the students' technical backgrounds and experience. The custom-designed mix of management concepts and technical expertise will help prepare professionals to direct major public and private organizations in the increasingly complicated managerial environment of today's competitive global, technical environment. In this program, engineering management principles are broadly based and draw from many different disciplines such as applied sciences, engineering, natural sciences, mathematics, economics, business and social sciences.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Demonstrate quantitative analytical and critical thinking skills and techniques to manage projects and processes (products and services).
- Examine a multidisciplinary approach involving the integration of engineering, management, quality and risk analysis in projects, and processes (products and services).
- Identify, prioritize and select relevant solutions in solving complex engineering problems and processes.
- Assess tools and techniques, resources, organizational systems, and decision making processes for the successful management of projects and processes (products and services).
- Apply global mindset and a detailed knowledge of business environments in engineering management solutions.
- Demonstrate organizational and team skills needed to manage projects and processes.
- Communicate effectively using graduate-level oral and writing skills.
- Demonstrate professional and ethical responsibility in engineering management.

### Degree Requirements

To receive a Master of Science in Engineering Management, students must complete at least 58.5 quarter units of required courses. A total of 13.5 quarter units of graduate credit may be granted for equivalent graduate work completed at another accredited institution, as it applies to this degree, and provided the units were not used in earning another advanced degree. Students should refer to the section in the graduate admission requirements for specific information regarding application and matriculation.

### Program Prerequisites

(2 courses; 9 quarter units)

Candidates for the program must possess a Bachelor's degree in engineering, engineering technology, or physical sciences or a closely related area from an accredited university. Interested students from other disciplines may be admitted to the program but may be required to complete additional courses. Non-degree students will not be allowed to enter this program. For those who have a general non-science and non-engineering degree, admission would be based on relevant experience and the following program prerequisites:

MGT 309C Prin. of Mgmt & Organizations

CSC 220 Applied Probability & Stats.  
*Prerequisite: MTH 215*

or

MNS 205 Intro to Quantitative Methods

### Core Requirements

(9 courses; 40.5 quarter units)

ENM 600 Engineering Mgmt Concepts

ENM 601 Project Management Principles

ENM 602 Risk, Contracts, and Legal Issues

PME 602 Skills Management

ENM 604 Quality Management

TMG 610 Global Trends in Technology

ENM 607A Capstone Course I

*Prerequisite: All core classes in program.*

ENM 607B Capstone Course II

*Prerequisite: ENM 607A*

ENM 607C Capstone Course III

*Prerequisite: ENM 607B*

All students must choose one Area of Specialization defined below:

### Specialization in Project Management

Academic Program Director: Shekar Viswanathan; (858) 309-3416; sviswana@nu.edu

From small companies to giant global institutions, project managers are fueling much of the successful development of exciting technical enterprises. Talented and knowledgeable project managers command the best assignments, salaries, other compensation and bonuses. They are the future leaders and entrepreneurs. Good project managers are not born, but are nurtured from a combination of experience, time, talent, and training. Successful projects do not happen spontaneously; they require preparation, planning, and organization. This specialization is designed to provide systematic training to those would like to pursue an engineering project management career.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Apply a multidisciplinary approach involving the integration of engineering, management, quality, and cultural analysis to the conduct of project management engineering.
- Evaluate the financial impact of projects on corporations and businesses and develop appropriate action plans through project management engineering.
- Integrate state-of-the-art technological advances to the practice of project management engineering.
- Achieve agreed upon scope, budget and schedule requirements using resources, organizational systems, and decision-making processes.

### Specialization Requirements

(4 courses; 18 quarter units)

ENM 603 Operation Management

*Prerequisite: ENM 600*

PME 601 Advanced Project Management

*Prerequisite: ENM 600, ENM 601, ENM 602, and ENM 603*

PME 603 Product Management

*Prerequisite: ENM 600, ENM 601, ENM 602, and ENM 603*

PME 604 Project Financing Management

*Prerequisite: ENM 600, ENM 601, ENM 602, ENM 603*

### Specialization in Systems Engineering

Academic Program Director: Shekar Viswanathan; (858) 309-3416; sviswana@nu.edu

This specialization focuses on complex technology systems that have a far reaching effect on society and its people. These systems are comprised of three types of entities: a) complex products such as aircraft, ships, land vehicles, and military hardware; b) networks of information and infrastructure such as air traffic control, highways, and public works and environmental processes; and, c) the organizations that design, build, and maintain these products, systems and related services, i.e., businesses (public and private, for-profit and non-profit), military command, and government agencies. The systems engineering program provides knowledge in the activities related to the life cycle of systems including definition, development, deployment, and decommission.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Comprehend the fundamentals of systems and general systems theory.
- Design discrete and continuous systems utilizing appropriate systems theory, operational requirements, and component integration.
- Validate system performance with testing and evaluation methods.
- Maintain system operations at optimal conditions through the application of systems management fundamentals.

### Specialization Requirements

(4 courses; 18 quarter units)

SYE 600 Introduction to Systems Design

SYE 601 Systems Analysis & Design Eval

*Prerequisite: SYE 600*

SYE 602 Advanced System Design

*Prerequisite: SYE 601*

SYE 603 System Dynamics

*Prerequisite: SYE 602*

### Specialization in Technology Management

Academic Program Director: Shekar Viswanathan; (858) 309-3416; sviswana@nu.edu

This specialization prepares individuals to manage and lead the technology in any organizations. Information technology has expanded the technological management responsibilities beyond desks, offices, labs, manufacturing sites, cities, and countries. Technology has become the essential force in any industry. Over the past decade the synergy of business, technology, and people have created the abundance of opportunities in all fields of technology management, especially information technology.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Implement and manage technologies aligned with the business of an organization.
- Perform organizational systems analysis, design, planning, and integration of technology.
- Evaluate hardware, software, and systems applications that support technologies.
- Develop strategic technology management policies and procedures required by the organization.

### Specialization Requirements

(4 courses; 18 quarter units)

TMG 620 Principles of Technology Mgmt.

TMG 635 Mgmt. of Tech & Innovation

TMG 640 Managing Technology Change

TMG 625 Systems Analysis and Design

## SCHOOL OF HEALTH AND HUMAN SERVICES

### UNDERGRADUATE PROGRAMS

#### BACHELOR OF SCIENCE

##### Bachelor of Science in Clinical Laboratory Science

Academic Program Director: Patric Schiltz; (858) 309-3476; pschiltz@nu.edu

##### Bachelor of Science in Radiation Therapy

Academic Program Director: Cheryl Young; (714) 429-5118; cyoung2@nu.edu

The Bachelor of Science in Radiation Therapy builds on a broad-based foundation in liberal arts and sciences designed to strengthen critical thinking and communication skills to work with a diverse population in multiple healthcare settings. Graduates of this major will be able to understand all aspects of radiation therapy including effective patient care and education, treatment planning and radiation physics as well as the biological effects of radiation in a rapidly advancing high touch, highly technical profession. This program is offered at the Kearny Mesa (San Diego), Costa Mesa, and Sacramento campuses through distance education technology.

The Radiation Therapy major combines classroom with clinical experiences to prepare graduates for an entry level position in the profession as an integral member of the healthcare team using radiation to treat cancer and some benign diseases. Clinical internships are assigned by the Program and may require driving up to 100 miles from designated campus. This mileage is based on distance to the clinical setting from National University at each geographic site. Clinical internships require 40 hours per week in a clinical setting. Working while in the program is not encouraged. Graduates will use their competencies to assess the physical, emotional and educational needs of the patients they serve, determine the efficacy of a prescribed treatment and carry out the accurate delivery and documentation of treatment.

The Radiation Therapy major is a full-time, lock-step program in which each cohort of students' progress in unison, taking each of the courses in a sequenced manner. Courses in the program build on knowledge from courses previously completed with

medical terminology as an integral component of all courses. Students will also take two courses in one month as scheduled. Students must pass each course with a C (75%) or better to progress in the program. Once the program is completed, students will be eligible to apply to sit for the American Registry of Radiologic Technologists (ARRT) national examination and apply for certification from the California Department of Public Health, Radiologic Health Branch. The Radiation Therapy Program has received accreditation by the California Department of Public Health, Radiologic Health Branch and has received accreditation by Joint Review Committee on Education in Radiologic Technology (JRCERT), 20 N. Wacker Drive, Suite 2850, Chicago, IL 60606 (312) 704-5300. [www.jrcert.org](http://www.jrcert.org)

The Radiation Therapy Program prepares the graduate to be able to fulfill the following outcomes as an entry-level professional.

### **Mission Statement**

The mission of the Radiation Therapy major is to prepare students to assume the professional role of a radiation therapist. Graduates of the major will be skilled in critical thinking to provide the highest quality of patient care, education and treatment.

### **Goals**

1. Students will be competent in the delivery of radiation therapy treatments and simulation.
2. Students will communicate effectively.
3. Students will utilize critical thinking and problem solving skills.
4. Students will demonstrate professional and ethical behavior.

### **Student Learning Outcomes**

- 1.1 Demonstrate safe practice in all aspects of radiation therapy and simulation.
- 1.2 Demonstrate clinical competence in all entry level aspects of radiation therapy.
  - 2.1 Effectively communicate with patients and their families.
  - 2.2 Effectively communicate with health providers.
- 3.1 Formulate priorities in daily clinical practice.
- 3.2 Demonstrate the ability to think critically by applying knowledge to new situations.
- 4.1 Demonstrate the concepts of teamwork.
- 4.2 Demonstrate attitudes and behaviors congruent with professional standards.

### **Admission Requirements**

Students seeking to study radiation therapy at National University must:

- A. Meet all requirements for admission to an undergraduate degree program at the University as outlined in the University Catalog.
- B. Have obtained a 2.5 cumulative GPA from all regionally accredited institutions attended.
- C. Students must complete a minimum of 40 hours of observation in a radiation therapy department. A completed time sheet must be signed by the therapist at the observation site. Time sheets are available in the radiation therapy office. Observation site placement is the student's responsibility and can be completed at any radiation therapy department.
- D. Submit a minimum of 2 letters of reference forms from radiations therapists in the department where the student observed, and 1 letter of reference form from a teacher, and/or an employer. Reference forms are available from the radiation therapy office. All letters of reference must use the reference form. No other letters will be accepted. All letters of reference must be mailed to National University/Radiation Therapy, 3390 Harbor Blvd., Costa Mesa, CA 92626.
- E. Submit a separate application for admissions to the Department of Health Science, Radiation Therapy major.
- F. Complete the written essay describing motivation to be a radiation therapist. Maximum one page, 12 point font, 1.5 spacing.
- G. Submit a current resume with application.
- H. Interview with the Radiation Therapy Admissions Committee.
- I. Have been formally evaluated by the University Office of the Registrar.
- J. Completed all General Education in all Areas A-G prior to the start of the program.
- K. Completed all preparation for major courses with a "C" grade or better.

\* Application is found in the student portal under e-forms.

\*Note: According to California Department of Public Health requirements, a student must be at least 18 years of age to participate in Clinical Internship.

\*Note: Meeting the minimum requirements, as listed above, does not guarantee admissions into the radiation therapy program.

### **Admission Process**

Admission to the radiation therapy program is a three-step process: 1) Application to the University; 2) Application to the respective radiation therapy major; and 3) Participation in an interview with the Radiation Therapy Admission Committee.

Prospective students should follow the University application requirements listed in the "General Admission Procedures" section of this catalog. In addition, prospective radiation therapy students will complete a separate application for admission. These applications, with supporting documentation, are accepted on January 30th of each year. A minimum GPA of 2.50 is required for entry into the Radiation Therapy Program.

A prospective student should first meet with an Admissions Advisor. The advisors are located at each of the University campus offices. The prospective student will arrange to have transcripts from all other Colleges and Universities sent to National University. These courses will be evaluated by the Registrar's Office for equivalency. All prospective students will enroll in RTT 201 Introduction to Radiation Therapy. This course will review all aspects of the Radiation Therapy curriculum, major and profession to provide applicants with a knowledge base to form their decision to enter the program.

A Calculation Worksheet will be used to evaluate each prospective student's application packet by the Radiation Therapy Admissions Committee. The prospective student will be ranked in comparison to the other applicants during that application year. Application deadline is January 30th.

### **The scoring will be based on:**

- Quality of grades in the prerequisite courses.
- Ranking of the recommendation letters.
- Knowledge of the profession.
- Written essay included with the application packet.
- Ranked interview.

Once all prospective students for a given year have been interviewed, the Radiation Therapy Admissions committee will rank applicants based on the interview and application materials. The highest ranked individuals will be invited to enter the program at San Diego, Costa Mesa or Sacramento educational sites. While student education site preference is followed, students may be accepted to another educational site based on the number of spaces available. If a student is unwilling to relocate to the education site for which they were accepted, the student will not be able to join the program. Based on ranking, a student may be invited to enter the program at their second or third preferred education site. There is no waiting list. Students who are not accepted may re-apply for admission one more time in the following year. They are encouraged to speak with the Program Director about strategies to strengthen their application.

Before participating in clinical internship, students must submit proof of the Radiation Therapy Health Clearance, current health insurance and current Cardio-Pulmonary Resuscitation (CPR) certificate from the American Heart Association (BLS-Basic Life Support for Health Care Providers). Students are responsible for determining if their health insurance coverage includes provisions for emergency room visits in the event of a needle stick or other injury in the clinical setting, as well as the costs of anti-HIV drugs if the physician determines the medications are warranted. Please note: if the student is out of the program for 5 months or more, she/he must re-do the drug screen and background check.

In addition, before engaging in clinical practice at health facilities, students will be required to obtain professional liability insurance in the amount of \$1,000,000 per occurrence/\$3,000,000 aggregate. Continued liability coverage as well as current health clearance, clear background check and drug screen, and immunity coverage is required throughout the program.

\*\*Note: Failure to maintain health clearance and a clear background check during the radiation therapy program may result in dismissal from the nursing program and possible refusal of the ARRT to allow the student to take the Radiation Therapy licensure exam. Students are responsible for meeting all of the above requirements.

### **Background Checks**

Radiation therapy departments used by the Radiation Therapy major require criminal background and drug screening prior to internship. Students who do not pass the background check and/or drug test may be unable to attend the internship, therefore, may be unable to complete the program of study. Any fee or cost associated with background checks and/or drug testing is the responsibility of the student. Students may be subject to random drug testing. Any fees associated with this will be the responsibility of the student.

Students will need to provide their own transportation to class and clinical internship. Proof of auto insurance and a valid driver's license is required. Travel to clinical internships may require driving up to 100 miles as measured from the National University educational site.

Students successfully completing the Radiation Therapy major will be eligible to apply for state and national examinations. Upon successful completion of the final course within the program, application for the national exam will be provided in the last course of the Program. Students are responsible for submitting applications and fees to the State of California and the American Registry of Radiologic Technologists (ARRT).

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Demonstrate safe practice in all aspects of radiation therapy.
- Effectively communicate with patients and their families.
- Demonstrate clinical competence in the areas of patient care, treatment, and simulation.
- Formulate priorities in daily clinical practice.
- Apply concepts of teamwork.
- Evaluate the clinical significance of treatment parameters as prescribed and suspend treatment as appropriate.
- Develop plans based on patient assessment to address physical, emotional, and educational needs.
- Demonstrate the ability to think critically and apply knowledge to new situations.
- Analyze clinical data to ensure safety and quality improvement of radiation therapy operations.
- Evaluate treatment plans to ensure accurate and effective treatment delivery.
- Demonstrate values and attitudes congruent with the profession's standards and ethics.
- Analyze current health care research for application to radiation therapy practice.
- Apply strategies that promote professional development and life long learning.

### Degree Requirements

To receive a Bachelor of Science degree in Radiation Therapy, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper division level and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general education electives may be necessary to satisfy total units for the degree. Refer to the section on undergraduate admission requirements for specific information regarding admission and matriculation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

### Preparation for the Major

(12 courses; 42.75 quarter units)

- RTT 201 Introduction to Radiation Ther (2.25 quarter units)
- MTH 215\* College Algebra & Trigonometry  
*Prerequisite: Accuplacer test placement evaluation, or MTH 12A, and MTH 12B*
- BST 322\* Intro to Biomedical Statistics
- BIO 161\* General Biology I
- BIO 201\* Human Anatomy & Physiol I  
*Recommended: Prior completion of: BIO 100, BIO 100A, CHE 101, CHE 101A or equivalent courses.*

- BIO 201A Human Anatomy & Physiol Lab I (1.5 quarter units)  
*Prerequisite: BIO 201*
- BIO 202\* Human Anatomy & Physiol II  
*Recommended: Prior completion of: BIO 201, and BIO 201A, BIO 100, and BIO 100A, CHE 101, and CHE 101A or equivalent courses*
- BIO 202A Human Anatomy & Physiol Lab II (1.5 quarter units)  
*Prerequisite: BIO 202*
- BIO 203\* Introductory Microbiology  
*Recommended: Prior completion of: BIO 201, and BIO 201A, BIO 202, and BIO 202A, BIO 100, and BIO 100A, CHE 101, and CHE 101A or equivalent courses*
- BIO 203A Introductory Microbiology Lab (1.5 quarter units)  
*Prerequisite: BIO 203*
- PHS 181 Physics for Non-Sci Majors I  
*Prerequisite: 2 years of high school algebra, and MTH 204, or MTH 215, or MTH 216A, or MTH 216B*
- or**
- PHS 171\* General Physics 1  
*Prerequisite: MTH 215, or MTH 216A, and MTH 216B*
- PHS 182 Physics for Non-Sci Majors II  
*Prerequisite: PHS 181*
- or**
- PHS 172 General Physics 2  
*Prerequisite: PHS 171*

### Requirements for the Major

(21 courses; 73.5 quarter units)

Students must pass all courses with a C or better to progress in the program. Students will need 76.5 quarter units of upper division level coursework. In absence of units students may need to take additional upper division electives to satisfy the total upper division units for the degree.

- RTT 310 Sectional/Topographic Anatomy  
*Prerequisite: BIO 201 with a minimum grade of C, and BIO 202 with a minimum grade of C*
- RTT 300 Medical Imaging  
*Prerequisite: RTT 200 with a minimum grade of C Acceptance into the Radiation Therapy Program, or RTT 201*
- RTT 305 Patient Care I (3 quarter units)  
*Prerequisite: BIO 201 with a minimum grade of C, and BIO 202 with a minimum grade of C, and BIO 203 with a minimum grade of C, and RTT 300 with a minimum grade of C, Corequisite: RTT 320*
- RTT 320 Pro Ethics and Legal Issues (1.5 quarter units)  
*Prerequisite: RTT 300, Corequisite: RTT 305*
- RTT 315 Clinical Concepts I  
*Prerequisite: RTT 305 with a minimum grade of C, and RTT 306 with a minimum grade of C*
- RTT 480 Internship I  
*Prerequisite: RTT 300 with a minimum grade of C, and RTT 305 with a minimum grade of C, and RTT 306 with a minimum grade of C, and RTT 310 with a minimum grade of C, and RTT 320 with a minimum grade of C*
- RTT 410 Clinical Radiation Physics I  
*Prerequisite: MTH 215 with a minimum grade of C, and PHS 171 with a minimum grade of C, and RTT 300 with a minimum grade of C*
- RTT 411 Clinical Radiation Physics II  
*Prerequisite: RTT 410 with a minimum grade of C*

- RTT 306 Patient Care II  
*Prerequisite: RTT 305 with a minimum grade of C*
- RTT 415 Clinical Oncology I (2.25 quarter units)  
*Prerequisite: RTT 305 with a minimum grade of C, and RTT 306 with a minimum grade of C, and RTT 310 with a minimum grade of C, and RTT 480 with a minimum grade of C, Corequisite: RTT 316*
- RTT 316 Clinical Concepts II (2.25 quarter units)  
*Prerequisite: RTT 315 with a minimum grade of C, and RTT 480, and Corequisite: RTT 415*
- RTT 416 Clinical Oncology II (2.25 quarter units)  
*Prerequisite: RTT 415 with a minimum grade of C*
- RTT 317 Clinical Concepts III (2.25 quarter units)  
*Prerequisite: RTT 316 with a minimum grade of C, Corequisite: RTT 416*
- RTT 481 Internship II  
*Prerequisite: RTT 480 with a minimum grade of C*
- RTT 420 Radiation Biology (3 quarter units)  
*Prerequisite: RTT 410 with a minimum grade of C, and RTT 411 with a minimum grade of C, and RTT 415 with a minimum grade of C, and RTT 416 with a minimum grade of C, and RTT 481 with a minimum grade of C, Corequisite: RTT 460*
- RTT 460 Operational Issues (1.5 quarter units)  
*Prerequisite: RTT 316 with a minimum grade of C, and RTT 416 with a minimum grade of C, Corequisite: RTT 420*
- RTT 455 Medical Dosimetry  
*Prerequisite: RTT 315 with a minimum grade of C, RTT 316 with a minimum grade of C, RTT 317 with a minimum grade of C, RTT 410 with a minimum grade of C, and RTT 411 with a minimum grade of C*
- RTT 440 Research in Radiation Therapy (2.25 quarter units)  
*Prerequisite: BST 322 with a minimum grade of C, and RTT 315 with a minimum grade of C, and RTT 316 with a minimum grade of C, and RTT 317 with a minimum grade of C, and RTT 410 with a minimum grade of C, and RTT 411 with a minimum grade of C, and RTT 415 with a minimum grade of C, and RTT 416 with a minimum grade of C, Corequisite: RTT 450*
- RTT 450 Quality Management (2.25 quarter units)  
*Prerequisite: RTT 410 with a minimum grade of C, and RTT 411 with a minimum grade of C, Corequisite: RTT 440*
- RTT 482 Internship III (6 quarter units)  
*Prerequisite: RTT 481 with a minimum grade of C*
- RTT 490 Advanced Capstone  
*Prerequisite: Completion of major requirements.*

## SCHOOL OF PROFESSIONAL STUDIES

### UNDERGRADATE PROGRAMS

#### BACHELOR OF ARTS

##### Major in Pre-law Studies

Academic Program Director: Bryan Hance; (310) 662-2115 bhance@nu.edu

The Bachelor of Arts in Pre-Law Studies program provides students with the well-rounded education needed for admission to law schools. Emphasis is placed on the verbal, critical thinking, and analytical skills that are considered vital for success as a law student and as a member of the legal profession. This major also allows students interested in a career in business or government to gain an understanding of the complex legal issues they will face in their professions.

#### Program Learning Outcomes:

Upon successful completion of this program, students will be able to:

- Develop legal and critical thinking skills in judicial issues.
- Describe, analyze, and anticipate legal issues in a business environment.
- Analyze contemporary legal issues in the state, federal, and administrative law forums
- Analyze issues by application of relevant rules of law, ethical standards, and social mores.
- Develop concise legal arguments.
- Demonstrate written, oral communication, and presentation skills used in pre-law.
- Describe need for effective planning in preparation for the negotiation process.

#### Degree Requirements:

To earn a Bachelor of Arts with a Major in Pre-Law Studies, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and minimum of 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Students should refer to the section on undergraduate admission procedures for specific information on admission and evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

#### Prerequisites for the Major

(5 courses; 19.5 quarter units)

ENG 100 Effective College English I (3 quarter units)  
*Prerequisite: Satisfactory performance on Accuplacer*

ENG 101 Effective College English II (3 quarter units)  
*Prerequisite: ENG 100*

SOC 100 Principles of Sociology  
*Prerequisite: ENG 100, and ENG 101*

or

PSY 100 Introduction to Psychology

POL 201 American Politics  
*Prerequisite: ENG 100, and ENG 101*

or

PHL 100 Introduction to Philosophy  
*Prerequisite: ENG 100, and ENG 101*

LAW 200 Intro to Law & Legal Writing

#### Requirements for the Major

(9 courses; 40.5 quarter units)

LAW 204 Legal Aspects of Business I

LAW 305 Legal Aspects of Business II  
*Prerequisite: LAW 204*

LAW 310 Litigation

LAW 400 Current Legal Issues

LAW 402 The Art of Negotiation

or

ADR 405 Negotiation Fundamentals

LAW 405 Analytical Reasoning

LAW 408 Legal Writing Research and Ora

#### Capstone:

LAW 420 Advocacy



or

LAW 470 Pre-Law Senior Project  
*Prerequisite: LAW 310, LAW 400, and LAW 408*

ADR 400 Alternative Dispute Resolution

### Upper-Division Electives

(7 courses; 31.5 units)

Choose seven upper-division degree related electives. The courses noted with an \* below are strongly recommended.

LAW 430 \* Constitutional Law

LAW 440 Comparative International Law

LAW 445 Administrative Law for Business

LAW 455 Public Contracting

LAW 460 \* Law School Portfolio Project

ADR 410 \* Facilitation Fundamentals

ADR 415 \* Mediation Fundamentals

ADR 420 \* Communication & Conflict

ADR 425 \* Issues in Conflict Management

ADR 430 \* Ethics and Neutrality

CJA 464 Constitutional Law for CJ

SOC 445 Contemporary Social Problems

*Prerequisite: ENG 100, and ENG 101*

PHL 337 Ethics

*Prerequisite: ENG 100, and ENG 101*

### Minor in Business Law

Academic Program Director: Bryan Hance; (310) 662-2115; bhance@nu.edu

This minor is designed to provide students who have an interest in a career in law, business, or government, with an understanding of the complex legal issues that exist in today's business environment.

### Requirements for the Minor

(6 courses; 27 quarter units)

LAW 204 Legal Aspects of Business I

LAW 305 Legal Aspects of Business II

*Prerequisite: LAW 204*

LAW 400 Current Legal Issues

ADR 400 Alternative Dispute Resolution

ADR 405 Negotiation Fundamentals

### Choose one (1) from the following:

LAW 440 Comparative International Law

or

LAW 445 Administrative Law for Business

or

LAW 455 Public Contracting

### Minor in Pre-Law Studies

Academic Program Director: Bryan Hance; (310) 662-2115 bhance@nu.edu

A minor in pre-law studies helps prepare business professionals for the increasing legal implications of business in a global environment.

### Requirements for the Minor

(6 courses; 27 quarter units)

LAW 204 Legal Aspects of Business I

LAW 305 Legal Aspects of Business II

*Prerequisite: LAW 204*

LAW 408 Legal Writing Research and Ora

LAW 400 Current Legal Issues

ADR 405 Negotiation Fundamentals

MGT 400 Ethics in Law, Business & Mgmt

## COURSE DESCRIPTIONS

### COURSE TERMINATIONS

BAN 660B Business Analytics Capstone II

BIO 380 Human Biology for Teachers

CSC 610 Mathematical Foundations

DAT 605 Web and Cloud Computing

DAT 625 Database Management Systems

DAT 635 Database Installation & Config

DAT 645 DB Management & Security

DHH 692C Internship Support DHH

EGR 240 Electronic Circuits

EGR 240L Electronic Circuits Lab

ENG 013 Strategies for Writing

ITM 605 Advanced IT Project Mgmt

ITM 650 Network Infrastructure Mgmt

LAD 692C Internship Support LAD

MKT 210 Intro to Consumer Behavior

MKT 220 Intro to Personal Selling

MKT 230 Basic Advertising Concepts

SEN 632 Software Architecture Appl.

SEN 635 Software Testing

SEN 662 Engineering Software Quality

SPD 694C Internship Support M/S

## COURSE DESCRIPTIONS

### BAN – Business Analytics

#### BAN 660 Business Analytics Capstone

*Prerequisites: BAN 655*

Students are expected to identify a problem and develop a solution using analytical methods. Students are required to utilize data and apply the appropriate analytical model. Grading will be H, S, and U only. Eligible for In Progress (IP). This is a two month project course.

### BIO - Biology

#### BIO 407 Molecular Biology

*Prerequisites: BIO 161, BIO 162, BIO 163, BIO 169A, CHE 141, CHE 142, CHE 143, CHE 149A, BIO 305*

*Corequisites: BIO 407A*

An introduction to molecular biology focusing on gene structure, organization, regulation and expression. Topics in genetic engineering and genome evolution are covered, as well as DNA replication, recombination, transcription and post-transcriptional mechanisms in both eukaryotic and prokaryotic cells.

#### BIO 407A Molecular Biology Lab (1.5 quarter units)

*Prerequisites: BIO 161, BIO 162, BIO 163, BIO 169A, CHE 141, CHE 142, CHE 143, CHE 149A, BIO 305*

*Corequi sites: BIO 407*

This course emphasizes techniques essential to molecular biology including DNA extraction, purification and quantification; polymerase chain reactions; and restriction enzyme digestion.

## CEE – Computer and Electrical Engineering

### CEE 310 Circuit Analysis

*Prerequisites:* CEE 300

An overview of basic circuit design and analysis. Introductory topics include: Ohm's law, Kirchhoff's Laws, the mesh-current method, and Thévenin and Norton Equivalent circuits. Students will apply these topics to RL, RC, and RLC circuit analysis. Advanced topics include the understanding and application of operational amplifiers.

### CEE 310L Circuit Analysis Lab (1.5 quarter units)

*Corequisites:* CEE 310

Centers on experiments covering the theoretical material in CEE310. Students will design, implement and analyze basic circuits. Experiments include: Ohm's law; Kirchhoff's laws; series and parallel resistors; voltage and current dividers; delta-wye configurations; mesh-current and node-voltage analysis; superposition and Thevenin equivalents; inverting and non-inverting amplifier circuits; series RC and RL circuits.

### CEE 324 Linear Systems and Signals

*Prerequisites:* CSC 208, or MTH 220, CEE 310

Introduction to fundamental concepts, analysis and applications of continuous-time and discrete-time signals and linear systems. Course contents include time-domain and frequency-domain characterization of signals and systems, Fourier Series and Fourier Transform, basic sampling and filtering concepts, the Laplace Transform, and the Z Transform etc. The course will be supplemented with MATLAB based exercises. CEE 324L Linear Systems and Signals Lab (1.5 quarter units)

#### Corequisites: CEE 324

This lab course provides a collection of hands-on experiments for supporting the lectures of CEE 324. The experiments are designed to enable students to understand the theory behind signals and systems as well as validate the theory with real-world examples. The lab will cover time-domain and frequency-domain characterization of signals and systems, transforms, filtering and sampling.

### CEE 340 Embedded Systems

*Prerequisites:* CSC 208, and CSC 252, or CSC 262

Exploration of design and interfacing of microcontroller based embedded systems. It covers various aspects of 8051 C and assembly language programming and interfacing. The course examines the architecture of the 8051 microcontroller along with a study of the I/O ports, addressing modes, interrupt routines, timings and the serial data communication in 8051.

### CEE 340L Embedded Systems Lab (1.5 quarter units)

*Corequisites:* CEE 340

This lab course provides a collection of experiments for supporting the lectures in CEE 340. The labs are designed to familiarize students with various aspects of hardware and software for microcontroller applications such as interfacing with various devices, programming I/O ports and interrupts and working with sensors.

### CEE 420 Microelectronics

*Prerequisites:* CEE 310

Describes the fundamentals of semiconductor devices and microelectronic circuits. Students will explore the terminal characteristics of p-n junction and Zener diodes, diode circuits, and transistors and transistor circuits. Specifically, discussion includes principles of MOSFET and BJT operations, biasing technology, and their application in transistor circuit analysis.

### CEE 420L Microelectronics Lab (1.5 quarter units)

*Corequisites:* CEE 420

This lab course is designed to supplement the material of CEE420, to assist students in obtaining a better understanding of the operation of microelectronic circuits. Laboratory activities include the design, construction, computer simulation, and analysis of transistor circuits, multi-stage amplifiers, operational amplifiers, current drivers and other semiconductor circuits.

## CHE - Chemistry

### CHE 141 General Chemistry 1

*Prerequisites:* MTH 215 or equivalent

General chemistry topics important for higher level chemistry and science courses: thermodynamics, reaction kinetics, and quantum mechanics. Successful completion of a college algebra course is required for enrollment in this course.

### CHE 360 Biochemistry I

*Prerequisites:* CHE 350, CHE 350A, CHE 351

Study of the structures and functions of important classes of biological molecules: proteins, carbohydrates, nucleic acids, and lipids. A strong and current background in chemistry is required to successfully complete this course.

## CJA – Criminal Justice Administration

### CJA 540 International CJA Experience

Visit foreign countries and investigate the origins of modern courts, corrections, and law enforcement that are historical precursors of the current U.S. legal and criminal justice system. Students develop a thorough understanding of the emergence of criminal justice and forensic science through lectures and presentations by experts and historians of the criminal justice systems in the host countries.

## CSC – Computer Science

### CSC 600 Advanced Programming

*Prerequisites:* CSC 242, CSC 252, and CSC 262, Students with a baccalaureate degree in Computer Science (CS), Computer Engineering (CE), Software

Engineering (SE), or Information Systems (IS) do not need these prerequisites.

Review of structured, object oriented, event driven programming and java graphics. Coverage of java generic classes and lambda streams. Application development with multi-threading and database connectivity features.

### CSC 603 Software Eng Fundamentals

A survey of principles of modern software engineering; requirements analysis, development and maintenance of a software product and its supporting documents, software lifecycle and various models of development. Course also introduces students to tools and processes needed to develop a software product, system or application, in a systematic manner.

### CSC 605 Software Architecture Principle

*Prerequisites:* CSC 603

Software architecture and its components and relationships, functionality, specifications, properties, interfaces, and data models are examined during this course. Topics discussed include net-centric computing, cloud computing, distributed processes, open source programs and service-oriented architecture.

### CSC 606 Modern Operating Systems

*Prerequisites:* CSC 600

A study of relation between architectures, system software and application software. Topics include process, thread, and memory management issues, multiprogramming, timesharing, multithreading, multiprocessing, inter-process communication, synchronization, virtual machines, client-server systems, distributed systems, real time systems, resource allocation, shared resources, input output, file systems, computer security and related problems. Scope and limitations of current Operating Systems are considered.

### CSC 607 Security in Computing

*Prerequisites:* CSC 606

This course examines the use of security vulnerabilities and threats in computer programs, operating systems, networks, and databases. The use of cryptography and other countermeasures to provide confidentiality, integrity, and availability is then evaluated in depth, from the perspectives of both technical effectiveness and ethics of users and developers.

### CSC 670 User Interface Engineering

*Prerequisites:* CSC 600

A study of techniques in design and implementation of user interfaces. Emphasis will be on effective human computer interaction strategies that meet human cognitive capabilities and organizational practices and processes.

### CSC 675 Database Design and Impl.

*Prerequisites:* CSC 600 (CSC600 course prerequisite is not required for students registered for MSMIS program)

Introduction to Database. DBMS Architecture. High Level Conceptual Data Models: ERI, Relational, ER to Relational Mapping, Operations and Relational Constraints Violations. Database Design Theory and Methodology: Functional Dependencies and Normal Forms. SQL \*Plus environment and commands: Relational Algebra Operations, Creation and Modification of relations, Data Management and Retrieval using Multiple Tables.

### CSC 678 Advanced Database Programming

*Prerequisites:* CSC 675

This course teaches the skills for implementing and maintaining databases using Structured Query Language (SQL), including Data Design Language and Data

Manipulation Language. Topics include creating databases, manipulate data, nest queries, views, and unstructured data.

### **CSC 680 Database Web Interface**

*Prerequisites: CSC 678*

This course addresses diverse issues arising when designing World Wide Web interface. Basic database concepts will be presented but the course will focus on discussion of interface issues specific to web databases, technologies for linking databases to web servers for delivery, discussion of various web-database applications, case studies, and industry trends. Students will design and develop front-end application using GUI/API, server-side and client-side programming.

### **CSC 685 Topics in Computing**

Each time this course is offered, it addresses a topic in computer science that is not covered as a regular course. The topic is covered at an advanced level that is appropriate for any student who has successfully completed the prerequisite courses. Possible topics include grid computing, semantic web, intelligent systems and knowledge abstraction.

### **CSC 686 Computer Science Project I**

*Prerequisites: CSC 605, CSC 607, CSC 670 and CSC 680*

A study of the software development practices. Emphasizes logical organization of system and communicating design through documentation suitable for generating a concrete implementation. Students construct an original project with practical applications utilizing software engineering concepts.

### **CSC 687 Computer Science Project II**

*Prerequisites: CSC 686*

Course meets once a week. A continuation of the student project. Student teams complete the project in this phase. The project is coded, module-tested, system-tested and all documentation is completed. Grading is by H, S or U only.

### **CSC 688 Computer Science Project III**

*Prerequisites: CSC 687*

In this course class meets twice a week. A continuation of the student project. Student teams complete the project in this phase. The project is coded, module-tested, system-tested and all documentation is completed. Grading is by H, S, or U only.

## **ENG - English**

### **ENG 375 Nature Writing**

*Prerequisites: ENG 100, and ENG 101, ENG 240, or ENG 334A*

An advanced course for students interested in using writing as a means of exploring the natural world. This course surveys nature writing in its various forms (essays, articles, poetry, journals, etc.) as well as effective nature writing strategies. This course is designed to give students a basis for future personal creative work.

### **ENG 663 Capstone Project in Rhetoric**

*Prerequisites: ENG 656, ENG 657, ENG 655, ENG 668, or ENG 680A Pictures that Speak*

Writing the Master's thesis or capstone project. Taken as the last course in the M.A. English with a Specialization in Rhetoric program. Exceptions may be made if within two courses of program completion, with approval of the lead faculty. Students study published models of rhetorical criticism. They hone critical tools and apply them to a substantial, original project. Working closely with the capstone instructor and peers, students take this project from inception to final form: a work of professional-quality rhetorical criticism. Grading basis is S/U only. Course is eligible for In Progress (IP) grade.

## **ENM – Engineering Management**

### **ENM 607A Capstone Course I**

*Prerequisites: All core classes in program.*

Culminating capstone project that includes the engineering management processes learned throughout this program. Working in teams under the guidance of their assigned faculty advisor, students select a research topic. The duration of this course is one month. This is the first part of a three course series that each student has to complete sequentially. Grading is H, S, or U only.

### **ENM 607B Capstone Course II**

*Prerequisites: ENM 607A*

Continuation of ENM 607A capstone project. Specific focus is on the literature review and preliminary data gathering and analysis. The duration is one month. This is the second part of a three course series that each student has to complete sequentially.

Failure to complete this second course successfully require students to repeat ENM607A and ENM607B again. Grading is H, S, or U only.

### **ENM 607C Capstone Course III**

*Prerequisites: ENM 607B*

Continuation of ENM 607B project course. Specific focus is on the analysis of the data collected including problem solutions. Students present their research in both written and oral form to the client organization, if applicable, and to other students and faculty. This is the third part of a three course series that each student has to complete sequentially. Failure to complete this third course successfully requires students to repeat ENM607A/B/C again with a new team and/or a new project. Grading is H, S, or U only. Course is eligible for In Progress (IP) grade.

## **LAW - Law**

### **LAW 204 Legal Aspects of Business I**

A survey of contracts, sales, agencies, personal property, commercial paper and associated topics. Emphasizes prevention of litigation and liability arising from business operations.

### **LAW 305 Legal Aspects of Business II**

*Prerequisites: LAW 204*

A sequential course to LAW 204. A survey of business organizations (partnerships, corporations, government regulations), property (real property and leasing, estates, community property), business torts, business crimes and associated topics. Emphasizes prevention of litigation and liability arising from business operations.

## **LIT - Literature**

### **LIT 360 History of Literary Theory**

*Prerequisites: ENG 240, and LIT 100*

A survey of major arguments about the nature of literature, literary expression, and literary experience from Plato through the mid-20th century.

## **MCW – Creative Writing**

### **MCW 636 Genre Fiction Workshop**

Two-month fiction workshop focused on writing in one or more genres of fiction, such as Sci-Fi, Fantasy, Horror, Thriller, and Romance, among others. Genres selected by instructor. Students will write their own original genre texts for critique, explore genre-specific conventions, and read extensively in the genre.

## **MGT- Management**

### **MGT 608 Info & Supply Chain Systems**

Students focus on major corporate applications of information technology, learning how business decisions are facilitated by these tools. Specific applications include the effective and efficient management of projects, inventory and transportation. The course concludes with the evolution of logistics into the broader scope of supply chain management, focusing on how enterprise-wide information systems enable this cross-functional, inter-firm collaboration that leads to new competitive advantages.

## **PSY - Psychology**

### **PSY 442 Case Studies Sport Psychology**

*Prerequisites: Successful completion of 10 courses in the BA Sport Psychology program.*

An advanced course in the application of psychological theories and research to sports and exercise behaviors. The seminar will focus upon skills in assessment, interviewing, case formulation, and interventions with athletes.

### **PSY 445 Applied Sport Psychology**

*Prerequisites: PSY 100, PSY 302*

This course examines the application of psychological theories and research to sports and exercise behaviors. Case studies from a variety of sports will be explored to develop a set of psychological skills that can be applied across sports.

### **PSY 448 History of Sport & Sport Psych**

*Prerequisites: PSY 100, PSY 302*

Interrelated historical development of physical education and sport as well as the history and development of sport, exercise, and performance psychology. Topics include the role of the scientific method and applied methods in research and practice, the history of sport, the role of culture and gender in sport and sport psychology, and current trends in sport and applied performance psychology.