



# **ADDENDUM C**

## **TO THE NATIONAL UNIVERSITY GENERAL CATALOG 85**

**National University  
Spectrum Business Park  
9388 Lightwave Ave,  
San Diego, CA. 92123.**

The following updates will take effect July 1, 2023.

## Tuition, Program, and Technology Fees

### Class-Based Programs:

#### School of Business and Economics (SoBE) Tuition

Master of Arts, Human Resource Management courses, per credit .....	\$504
Master of Science, Marketing courses, per credit .....	\$522
Master of Accountancy courses, per credit .....	\$477

#### Sandford College of Education (SCoE) Tuition

Master of Science, Applied Behavioral Analysis courses, per credit .....	\$464
Master of Science, Educational Counseling courses, per credit .....	\$464

#### School of Health Professions (SoHP) Tuition

Bachelor of Science in Nursing courses, per credit .....	\$407
Master of Healthcare Administration courses, per credit .....	\$469

#### School of Technology and Engineering (SoTE) Tuition

Bachelor of Science, Computer Science courses, per credit .....	\$348
Master of Science, Engineering Management courses, per credit .....	\$495

#### School of Arts, Letters and Sciences (SoALS) Tuition

Master of Arts, English courses, per credit .....	\$477
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#### College of Law and Public Service (CLOPS) Tuition

Master of Criminal Justice courses, per credit .....	\$477
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#### Technology Fees

ACC 654 .....	\$60.00
BIO 100 .....	\$40.00
CYB 331 .....	\$30.50
CYB 332 .....	\$30.50
CYB 452 .....	\$30.50
CYB 453 .....	\$30.50
CYB 472 .....	\$30.50
CYB 602 .....	\$30.50
CEE 324 .....	\$64.00
CEE 324L .....	\$64.00

Technology Fees have been removed from the following course(s):

BIO 203A

## GoReact Technology Fees

GoReact is an online video coaching and collaboration platform designed to improve professional practice. All General Education and Special Education Student Teachers and University Interns are required to utilize GoReact during their Student Teaching/Clinical Practice and Seminar courses.

Students enrolled in any of the SCOE courses listed below are required to obtain an annual subscription to GoReact. If at any point in the program the subscription expires, students are required to renew the

annual subscription. There is a \$50 annual tech fee for GoReact. Students will be charged a fee annually throughout the duration of program.

#### **Department of Organizational Leadership and Education Administration**

EDA 600A

#### **Department of Special Education**

SPD 552A, SPD 552B, SPD 550A, SPD 550B, SPD 691A, SPD 691B, SPD 693A, SPD 693B, MMS 625A, MMS 625B, MMS 627A, MMS 627B, MMS 627C, MMS 627D, MMS 627E, MMS 627F, ESN 655A, ESN 655B, ESN 657A, ESN 657B, ESN 657C, ESN 657D, ESN 657E, ESN 657F

#### **Department of Teacher Education**

ITL 550A, ITL 550B, ITL 650A, ITL 650B, ITL 650C, ITL 650D, ITL 650E, ITL 650F, BIL 540A, BIL 540B, BIL 540C, BIL 640A

#### **Department of Global Innovation, Social Emotional Learning, and Educational Technology**

EID 600, EID 610, EID 620, EID 630, EID 640, EID 650, EID 660, EID 670

#### **Department of ABA, School Psychology & Educational Counseling**

EDC 600, EDC 604, EDC 605A, EDC 605B, EDC 607, EDC 608, EDC 609, EDC 612A, EDC 612B, EDC 613A, EDC 613B, EDC 614A, EDC 614B, CED 610, CED 611, PED 616, PED 618A, PED 618B, PED 620, PED 622, PED 624, PED 626, PED 630, PED 632, PED 634, PED 642, PED 644, PED 678

## **1:1 Course Program Fees**

<b>Program</b>	<b>Number of Credits</b>	<b>Number of Courses</b>	<b>Price per credit</b>	<b>Course Material Fee Per Course</b>	<b>Total Estimated Tuition</b>
<b>JFK School of Psychology and Social Sciences</b>					
Master of Science in Sports Psychology (MSPSYSP)	36	12	\$916	135	\$35,046
Master of Social Work - Generalist (MSW)	60	20	\$776	\$125	\$49,510
<b>School of Health Professions</b>					
Master of Health Administration (MHA)	42	14	\$641	\$125	\$29,122
Master of Science in Nursing (MSN)	36	12	\$562	135	\$22,302
<b>Sanford College of Education</b>					
Master of Education (MED)	30	10	\$743	\$110	\$23,840
Post-Baccalaureate Certificate – Applied Behavior Analysis	21	7	\$743	\$130	\$16,963

Post-Baccalaureate Certificate	12	4	\$743	\$130	\$9,886
Master of Science in Applied Behavior Analysis (MSABA)	30	10	\$708	\$135	\$23,040

# Degree Information

## Undergraduate Degrees

### Associate of Arts and Associate of Science General Education Requirements

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Huda Makhluף; hmakhluף@nu.edu, John Miller; jmiller@nu.edu

The following General Education requirements apply to all Associate of Arts and Associate of Science degrees.

The Associate of Arts in General Education (formerly the Associate of Arts), and the Associate of Science in General Education have specific General Education requirements. Please see these programs for more information.

The General Education program for the Associate of Arts and Associate of Science degrees promotes the intellectual growth of all students in National University's Associate level undergraduate degree programs. The general education curriculum assumes that undergraduates will not concentrate on a major field of study until they have completed a general education program that provides instruction in writing and mathematical skills as well as introducing the student to subject matter in the Humanities, Information Literacy and Science and Social Science disciplines. Students will also address the cultural diversity of contemporary society.

Students in the general education program are advised to focus on writing and speech communication first. Students are then counseled to explore mathematical and other formal systems to develop abstract reasoning abilities and are encouraged to take a course in informational literacy. Finally, all students are required to have exposure to the natural sciences, the humanities, fine arts, language, and the social and behavioral sciences. Many of these courses include an examination of the human condition in a multicultural society.

The general education curriculum emphasizes communications, mathematics and sciences, humanities, arts, language, and social/behavioral sciences. Thus, the curriculum provides coherence to Associate level undergraduate education.

#### **Program Learning Outcomes:**

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

- Demonstrate skills for self-development that contribute to lifelong learning.
- Demonstrate literacy in written and oral communication.
- Apply information literacy skills in developing research projects and presentations.
- Demonstrate a capacity for responsible citizenship in a diverse society.
- Demonstrate awareness of past and present human and cultural diversity.
- Identify ethical issues raised in different disciplines.
- Demonstrate scientific and quantitative literacy skills in appraising information and solving problems.
- Demonstrate the ability to use the elements of critical thinking to analyze issues, solve problems, and make decisions.
- Demonstrate the ability to work successfully in a team.

#### **Degree Requirements:**

The General Education curriculum furnishes students with the basic knowledge necessary to pursue any Associate level degree program. Students who fulfill the curriculum gain an interdisciplinary liberal arts framework geared toward problem solving. This emphasis promotes self-directed research in many academic areas that have traditionally been kept separate.

### Diversity Requirement

The diversity component serves the general education program goal of increasing respect for, and awareness of, diverse peoples and cultures. A plus [+] after any course on the list of approved general education courses signifies a diversity-enriched course. Students must complete at least one diversity-enriched course in the general education program.

### General Education Program Requirements

The general education program consists of a minimum of 37.5 quarter units. Of the 37.5 quarter units students must complete at least 4.5 units in diversity enriched coursework.

#### AREA A: ENGLISH COMMUNICATION (Minimum 9.0 quarter units)

Category 1 Writing (4.5 quarter units)		
ENG 102	Effective College English	4.50
Category 2 Speech and Communication (4.5 quarter units)		
COM 103	Public Speaking	4.50
COM 120	Intro to Interpersonal Comm	4.50

#### AREA B: MATHEMATICAL CONCEPTS AND QUANTITATIVE REASONING (Minimum 4.5 quarter units)

MTH 204	Mathematics for Science <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement	4.50
MTH 209A	Fundamentals of Mathematics I <b>Prerequisite:</b> MTH 12A and MTH 12B	4.50
MTH 210	Probability and Statistics <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
MTH 215	College Algebra & Trigonometry <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND MTH 216B	College Algebra II <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
MTH 220	Calculus I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B, or Accuplacer test placement	4.50
MTH 301	Fundamentals of Mathematics II <b>Prerequisite:</b> MTH 209A	4.50
CSC 208	Calculus for Comp. Science I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
MNS 205	Intro to Quantitative Methods <i>Historical-Review all addendums</i>	4.50
BST 322	Intro to Biomedical Statistics	4.50

#### AREA C: INFORMATION LITERACY (Minimum 4.5 quarter units)

ILR 260	Academic Information Literacy <b>Prerequisite:</b> ENG 102	4.50
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**AREA D: ARTS AND HUMANITIES, AND LANGUAGE (Minimum 4.5 quarter units)**

ART 225	Introduction to Art History <b>Prerequisite:</b> ENG 102	4.50
ASL 120	American Sign Language I	4.50
ASL 220	American Sign Language II <i>Discontinued</i> <b>Prerequisite:</b> ASL 120	4.50
ART 110	Visual Arts	4.50
FYA 101	First-Yr Sem: Arts & Human <i>Discontinued</i> <b>Prerequisite:</b> ENG 102	4.50
HIS 233	World Civilizations I <b>Prerequisite:</b> ENG 102	4.50
HIS 234	World Civilizations II <b>Prerequisite:</b> ENG 102	4.50
LIT 100	Introduction to Literature <b>Prerequisite:</b> ENG 102	4.50
LIT 345	Mythology <b>Prerequisite:</b> ENG 240 and LIT 100	4.50
MUS 100	Fundamentals of Music <i>Historical-Review all addendums</i>	4.50
MUS 300	Film Music <i>Historical-Review all addendums</i> <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> MUS 100	4.50
MUS 327	World Music <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
ACEX 2101X	Philosophy of Coaching	4.50
PHL 100	Introduction to Philosophy <b>Prerequisite:</b> ENG 102	4.50
PHL 337	Ethics <b>Prerequisite:</b> ENG 102	4.50
SPN 100	Beginning Spanish I	4.50
SPN 101	Beginning Spanish II <b>Prerequisite:</b> SPN 100	4.50
SPN 200	Intermediate Spanish I <b>Prerequisite:</b> SPN 101	4.50
THR 200	Theater Arts	4.50

<sup>+</sup>Diversity Enriched Offerings

**AREA E: SOCIAL AND BEHAVIORAL SCIENCES (Minimum 4.5 quarter units)**

ACEX 2100X	History of Sport	4.50
COM 100	Intro to Mass Communication	4.50
COM 220	Media Literacy <i>Historical-Review all addendums</i>	4.50
COM 380	Democracy in the Info. Age <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
ECO 203	Principles of Microeconomics	4.50
ECO 204	Principles of Macroeconomics	4.50
EDA 200	Schools of the World <i>Discontinued</i>	4.50
FYS 102	First-Yr Sem: Social Sciences <b>Prerequisite:</b> ENG 102	4.50

HIS 220A	United States History I <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
HIS 220B	United States History II <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
POL 100	Introduction to Politics <b>Prerequisite:</b> ENG 102	4.50
POL 201	American Politics <b>Prerequisite:</b> ENG 102	4.50
PSYC 100	Introduction to Psychology	4.50
SOC 100	Principles of Sociology	4.50
SOC 260	Cultural Anthropology <b>Prerequisite:</b> ENG 102	4.50
SOC 350	Cultural Diversity <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50

<sup>+</sup>Diversity Enriched Offering

**AREA F: PHYSICAL AND BIOLOGICAL SCIENCES (Minimum 6 quarter units  
[Note: one science lab is required])**

Strongly recommended: complete the BIO 201 - 203A series in numerical sequence BIO 201 + 201A, 202 + 202A, 203 + 203A.

BIO 100	Survey of Bioscience	4.50
BIO 100A	Survey of Bioscience Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 100 for non-science majors (GE), or BIO 163 for science majors	1.50
BIO 161	General Biology 1	4.50
BIO 162	General Biology 2 <b>Prerequisite:</b> BIO 161	4.50
BIO 201	Human Anatomy and Physiol I <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 191A, or BIO 201A; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A	4.50
BIO 191A	Online Hum Anat and Phys I Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 201; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A	1.50
OR		
BIO 201A	Human Anatomy and Physiol LabI <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 201; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A or equivalent courses.	1.50
BIO 202	Human Anatomy and Physiol II <b>Corequisite:</b> BIO 202A, or BIO 192A; <b>Prerequisite:</b> BIO 201 and BIO 201A	4.50
BIO 192A	Online Anat and Phys II Lab <b>Corequisite:</b> BIO 202; <b>Prerequisite:</b> BIO 191A with a minimum grade of C- . Passing grade required; BIO 201 with a minimum grade of C- . Passing grade required	1.50
OR		
BIO 202A	Human Anatomy andPhysiol LabII <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 202; <b>Prerequisite:</b> BIO 201; BIO 201A	1.50



BIO 203	Introductory Microbiology <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 203A Students should take both lecture and lab courses concurrently and with the same instructor to ensure a consistent learning experience. Students who are retaking one of the two courses or present special circumstances should petition for exception to this requisite.; <b>Recommended: Prior completion of:</b> BIO 100 and BIO 100A; CHE 101 and CHE 101A or equivalent courses; BIO 201 and BIO 201A; BIO 202 and BIO 202A	4.50
BIO 193A	Online Microbiology Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 203; <b>Recommended: Prior completion of:</b> BIO 191A; BIO 201; CHE 101; CHE 101A	1.50
OR BIO 203A	Introductory Microbiology Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 203; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A; BIO 201 and BIO 201A; BIO 202 and BIO 202A	1.50
CHE 101	Introductory Chemistry <i>Historical-Review all addendums</i> <b>Recommended Preparation:</b> MTH 204, or MTH 215, or MTH 216A and MTH 216B	4.50
CHE 101A	Introductory Chemistry Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 101, or CHE 141 for Science Majors.	1.50
CHE 141	General Chemistry 1 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215 or equivalent	4.50
CHE 142	General Chemistry 2 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 141	4.50
EES 103	Fundamentals of Geology	4.50
EES 103A	Fundamentals of Geology Lab <b>Prerequisite:</b> EES 103	1.50
PHS 104	Introductory Physics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> 2 years of high school algebra and MTH 204, or MTH 216A and MTH 216B	4.50
PHS 104A	Introductory Physics Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 104, or PHS 171 for Science Majors.	1.50
PHS 171	General Physics 1 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 216A and MTH 216B	4.50
PHS 172	General Physics 2 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 171	4.50
<b>AREA G: LIFELONG LEARNING AND SELF DEVELOPMENT (Minimum 4.5 quarter units)</b>		
COH 100	Personal Health	4.50
COH 317	Public Health Nutrition <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> COH 100	4.50
COH 318	Drug Use and Abuse <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> COH 100	4.50
COH 319	Human Sexuality <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> COH 100	4.50
ENG 201	Fiction Writing I <b>Prerequisite:</b> ENG 102	4.50
ENG 202	Poetry Writing I <b>Prerequisite:</b> ENG 102	4.50
ENG 203	Screenwriting I	4.50

	<b>Prerequisite:</b> ENG 102	
ENG 375	Nature Writing	4.50
	<b>Prerequisite:</b> ENG 102; ENG 240, or ENG 334A	
FFL 100	Foundation to Academic Success	4.50
FYP 103	First-Yr Sem: Psychology	4.50
	<b>Prerequisite:</b> ENG 102	
GLS 150	Global Issues and Trends	4.50
MUS 200	Music Composition <i>Historical-Review all addendums</i>	4.50
	<b>Recommended Preparation:</b> MUS 100, or MUS 326, or MUS 327	
PHL 238	Logical & Critical Thinking	4.50
	<b>Prerequisite:</b> ENG 102	

## Associate of Science in Business

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Kentaya Beeler; kbeeler@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, finance, legal studies, management and marketing. With a goal to maximizing student success, the program is designed with three prerequisites: information literacy, introductory business mathematics, and probability and statistics. 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 37.5 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 (3 - 4 courses; 13.5 -15 quarter units)

ILR 260	Academic Information Literacy*	4.50
	<b>Prerequisite:</b> ENG 102	

MNS 205 must be taken if students do not have transfer credits for MNS 205, MTH 216A & MTH 216B, or MTH 220.

MNS 205	Intro to Quantitative Methods* <i>Historical-Review all addendums</i>	4.50
OR		
MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND		
MTH 216B	College Algebra II <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
OR		
MTH 220	Calculus I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B, or Accuplacer test placement	4.50
MTH 210	Probability and Statistics <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50

\* May be used to meet General Education requirements

### Requirements for the Major (8 courses; 36 quarter units)

#### Foundation Courses

ECO 203	Principles of Microeconomics	4.50
ECO 204	Principles of Macroeconomics	4.50
ACC 201	Financial Accounting Funds.	4.50
ACC 202	Managerial Accounting Funds. <b>Prerequisite:</b> ACC 201	4.50

#### Core Courses

LAW 204	Legal Aspects of Business I	4.50
MKT 302A	Marketing Fundamentals	4.50
FIN 310	Business Finance <b>Prerequisite:</b> ACC 201	4.50
MGT 309	Prin. of Mgmt & Organizations	4.50

## Associate of Science in General Education

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Huda Makhluף; hmakhluף@nu.edu

The Associate of Science (AS) degree is designed to give students a solid foundation for continuing professional and traditional studies as well as continued intellectual growth.

### General Education Program Requirements

To receive the AS degree in General Education, students must complete at least 90 quarter units, 18 of which must

be taken in residence at National University. Of the 90 units required, 76.5 must fall into the areas of General Education as listed below. A list of courses for each category can be found in the General Education section of the Catalog under General Education for Bachelor Degrees. In the absence of transfer credit, additional general elective courses may be taken to fulfill the total unit requirement for the degree.

The General Education Program consists of a minimum of 76.5 quarter units. Of the 76.5 units, students must complete at least 4.5 units at the upper-division level and 4.5 units in diversity-enriched coursework. A plus [+] indicates a diversity-enriched offering.

Students are urged to meet English and Mathematics requirements as early as possible in their college studies to avoid severe difficulties in other coursework. Please take a look at the section on Undergraduate Admission Procedures for specific information regarding application and placement evaluation.

Students planning to apply to National University's Bachelor of Science in Nursing (BSN) program should take onsite Anatomy & Physiology (BIO201A and BIO202A) and Microbiology (BIO203A) labs. The online versions of these lab courses are not accepted into NU's BSN programs.

### **Program Learning Outcomes:**

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

- Demonstrate skills for self-development that contribute to lifelong learning.
- Demonstrate literacy in written and oral communication.
- Apply information literacy skills in developing research projects and presentations.
- Demonstrate a capacity for responsible citizenship in a diverse society.
- Demonstrate awareness of past and present human and cultural diversity.
- Identify ethical issues raised in different disciplines.
- Demonstrate scientific and quantitative literacy skills in appraising information and solving problems.
- Demonstrate the ability to use the elements of critical thinking to analyze issues, solve problems, and make decisions.
- Demonstrate the ability to work successfully in a team.
- Demonstrate creative thinking in expression or problem solving.

**AREA A: ENGLISH COMMUNICATION (Minimum 13.5 quarter units)**

**AREA B: MATHEMATICAL CONCEPTS AND QUANTITATIVE REASONING**

**(Minimum 9.0 quarter units)**

**AREA C: INFORMATION LITERACY (Minimum 4.5 quarter units)**

**AREA D: ARTS, HUMANITIES, and LANGUAGE (Minimum 9 quarter units over at least 2 areas)**

**AREA E: SOCIAL AND BEHAVIORAL SCIENCES (Minimum 13.5 quarter units)**

**AREA F: PHYSICAL AND BIOLOGICAL SCIENCES (Minimum 18 quarter units required)**

Note: One 1.5 qu science lab is required. Perspective NU BSN students - the following online lab courses are not accepted into NU BSN programs (BIO 191A, BIO 192A, BIO 193A).

**AREA G: LIFELONG LEARNING AND SELF DEVELOPMENT (Minimum 4.5 quarter units)**

**AREA A-G: GENERAL EDUCATION (Minimum 4.5 quarter units)**

## **Bachelor of Science in Accounting**

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Consolacion Fajardo; cfajardo@nu.edu

The major in Accounting 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 Accounting to Master of Business Administration (BS ACC/MBA) Transition Program**

Students who are currently enrolled in the Bachelor of Science in Accounting 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 603. 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 12 to as few as 9 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 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 Disclosure Information**

The Bachelor of Science in Accounting program is currently operating using guidelines only from the California Board of Accountancy. For students who wish to become a CPA-, CMA- or CIA-certified please see appropriate organizational website.

For up-to-date information on program licensure eligibility requirements for a state, please visit:  
<https://www.nu.edu/licensuredisclosures/>

### **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
- Research issues to support critical assessment of accounting information
- Operate effectively in group settings to enhance student learning

### **Degree Requirements:**

To receive a Bachelor of Science with a major in Accounting, 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 69 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.

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 - 7 courses; 27 - 28.5 quarter units)

MNS 205	Intro to Quantitative Methods* <i>Historical-Review all addendums</i>	4.50
OR		
MTH 216A	College Algebra I* <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND		
MTH 216B	College Algebra II <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
ECO 203	Principles of Microeconomics*	4.50
ECO 204	Principles of Macroeconomics*	4.50
LAW 204	Legal Aspects of Business I	4.50
ACC 201	Financial Accounting Funds.	4.50
ACC 202	Managerial Accounting Funds. <b>Prerequisite:</b> ACC 201	4.50

\*May be used to meet General Education requirements ^ Eligible for Credit-by-exam waiver: Contact Academic 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.

### Requirements for the Major (17 courses; 76.5 quarter units)

#### Business Requirements (4 courses; 18 quarter units)

BIM 400	Info Mgmt in Organizations	4.50
MGT 309	Prin. of Mgmt & Organizations	4.50
FIN 310	Business Finance <b>Prerequisite:</b> ACC 201	4.50
MKT 302A	Marketing Fundamentals	4.50
OR		
IBU 430	Survey of Global Business <b>Prerequisite:</b> ECO 203 and ECO 204	4.50
OR		
MNS 407	Management Science^ <b>Prerequisite:</b> MNS 205 and MTH 210	4.50

^Recommended for students considering the CPA or CMA designation

### Accounting Requirements (13 courses; 58.5 quarter units)

ACC 410A	Intermediate Accounting I <b>Prerequisite:</b> ACC 201	4.50
ACC 410B	Intermediate Accounting II <b>Prerequisite:</b> ACC 410A	4.50
ACC 410C	Intermediate Accounting III <b>Prerequisite:</b> ACC 410B	4.50
ACC 431	Advanced Accounting <b>Prerequisite:</b> ACC 410C	4.50
ACC 432A	Taxation-Individual <b>Prerequisite:</b> ACC 201	4.50
ACC 432B	Taxation-Business <b>Prerequisite:</b> ACC 432A; ACC 431	4.50
ACC 433	Managerial Accounting <b>Prerequisite:</b> ACC 202	4.50
ACC 434	Government and Nonprofit Acct <b>Prerequisite:</b> ACC 201	4.50
ACC 436	Applied Tech for Accountants <b>Prerequisite:</b> ACC 201	4.50
ACC 515	Accounting Ethics	4.50
ACC 555	Data Analytics	4.50
ACC 435A	Auditing I <b>Prerequisite:</b> ACC 431	4.50
ACC 435B	Auditing II <b>Prerequisite:</b> ACC 435A	4.50

## Bachelor of Science in Biology

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Michael Maxwell; mmaxwell@nu.edu

The Bachelor of Science in Biology offers personal and academic fulfillment and growth as students discover the amazing world of biology. This degree prepares students for graduate and professional study, careers in life science education, research, health sciences, and applied biology. The BS Biology provides a solid foundation in all levels of biological organization, from molecules to ecosystems. Such a comprehensive curriculum is crucial to meeting modern challenges in science, which include new and emerging diseases, rapid advances in our understanding of genetics, physiology and biodiversity, threats to species and ecosystem functioning, and global population increase and sustainability. A degree in biology is common preparation for careers in the various medical professions, genetics, molecular and cell biology, biotechnology, microbiology, conservation biology, evolutionary biology, ecology, animal and plant science, as well as science writing, editing and education.

Students who wish to include an interdisciplinary approach to their academic training should look closely at the benefits provided by this major. In addition to meeting requirements for BS Biology, this degree allows for the integration of study in the life sciences with coursework in the physical and earth sciences, as well as applied fields such as forensics. Furthermore, in keeping with the commitment of the College of Letters and Sciences to the complete academic development of its students, science courses involve writing and diversity components, as well as fundamental critical thinking components.

### Bachelor of Science in Biology to Master of Forensic Science Transition Program

The BS Biology to MFS transition program allows students who are enrolled in the BS Biology with a cumulative grade point average of at least 3.0 and who are within completing their last six courses to register for two courses in the MFS program as electives for the bachelor's degree. Students may choose from the following courses: FSC 630, FSC 633, FSC634, FSC 635 or FSC 642. The two graduate courses are restricted to those that do not require a prerequisite. Students must complete all transition program coursework with a grade of B or better. The number



of courses required to earn an MFS degree for transition program students is reduced from 12 to as few as 10 courses. Graduate-level coursework taken as part of the Biology program cannot be applied as graduate credit to the Master of Forensic Science program, nor will it transfer as graduate level credit to any other university because it becomes part of the undergraduate degree program. Students must enroll in and complete the first class in the Master's degree within 6 months of the conferral date of their undergraduate degree. The MFS program must be completed within 4 years with no break in enrollment of 12 months or more. Further rules and requirements for Transition programs are located in the university catalog.

### Program Learning Outcomes:

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

- Discuss biological processes at all levels of organization: molecular, cellular and microbial, organismal, population, and ecosystem.
- Explain the importance of unifying concepts in biology, including cell theory, genetics, and evolution.
- Describe the structure and function of Earth's organisms, as well as their roles in the natural world.
- Apply the scientific method in laboratory-based and field-based inquiry.
- Demonstrate effective oral, visual, and written communication and quantitative skills, including the critical analysis of data and scientific literature.
- Demonstrate computer and technology literacy, including the ability to access databases within the context of course research and project development.
- Evaluate historical developments and research in biology, as well as current and contemporary research and challenges.

### Degree Requirements:

To receive a Bachelor of Science, Major in Biology, 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 69 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. Refer to the section on 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.

\* Completion of BIO 100, 100A, 201, 201A, 202, 202A, 203, 203A is equivalent to the course sequence BIO 161, 162, 163, 169A for fulfillment of the BS Biology degree.

### Preparation for the Major (16 courses; 57 quarter units)

MTH 210	Probability and Statistics* <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
MTH 216A	College Algebra I* <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND MTH 216B	College Algebra II* <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
CHE 141	General Chemistry 1* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215 or equivalent	4.50
CHE 142	General Chemistry 2* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 141	4.50
CHE 143	General Chemistry 3* <i>Historical-Review all addendums</i> <b>Corequisite:</b> CHE 149A; <b>Prerequisite:</b> CHE 142	4.50



BIO 161	General Biology 1*	4.50
BIO 162	General Biology 2*	4.50
	<b>Prerequisite:</b> BIO 161	
BIO 163	General Biology 3* <i>Historical-Review all addendums</i>	4.50
	<b>Corequisite:</b> BIO 169A; <b>Prerequisite:</b> BIO 161; BIO 162	
PHS 171	General Physics 1* <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 216A and MTH 216B	
PHS 172	General Physics 2* <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> PHS 171	
PHS 173	General Physics 3* <i>Historical-Review all addendums</i>	4.50
	<b>Corequisite:</b> PHS 179A; <b>Prerequisite:</b> PHS 171; PHS 172	
CHE 150	Introductory Organic Chemistry <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CHE 101 and CHE 101A, or CHE 141 and CHE 142 and CHE 143 and CHE 149A	
CHE 150A	Introductory Organic Chem Lab <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> CHE 150	
BIO 169A	General Biology Lab <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> BIO 163; <b>Prerequisite:</b> BIO 161; BIO 162	
CHE 149A	General Chemistry Laboratory <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> CHE 143	
PHS 179A	General Physics Lab <i>Historical-Review all addendums</i>	1.50
	<b>Prerequisite:</b> PHS 171 and PHS 172 and PHS 173, or PHS 104	

\*May be used to meet General Education requirements

#### Requirements for the Major (12 courses; 42 quarter units)

BIO 330	Ecology <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142; CHE 143; CHE 149A	
BIO 305	Genetics <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> BIO 100 and CHE 101, or BIO 162 and CHE 142	
BIO 310	Evolution <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A	
BIO 406	Cellular Biology <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142; CHE 143; CHE 149A; <b>Corequisite:</b> BIO 406A	
BIO 406A	Cellular Biology Lab <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> BIO 406; <b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142; CHE 143; CHE 149A	
BIO 407	Molecular Biology <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142; CHE 143; CHE 149A; <b>Corequisite:</b> BIO 407A; <b>Prerequisite:</b> BIO 305	
BIO 407A	Molecular Biology Lab <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> BIO 407; <b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142; CHE 143; CHE 149A; BIO 305	
BIO 414	Invertebrate Zoology <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142; CHE 143; CHE 149A; <b>Corequisite:</b> BIO 414A	
BIO 414A	Invertebrate Zoology Lab <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> BIO 414	
BIO 416	Vertebrate Zoology <i>Historical-Review all addendums</i>	4.50

**Prerequisite:** BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142;  
CHE 143; CHE 149A; **Corequisite:** BIO 416A

BIO 416A	Vertebrate Zoology Laboratory <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 416	1.50
BIO 485	Contemporary Topics in Biology <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 305, or BIO 310, or BIO 330	4.50

### Upper-Division Electives (7 courses; 31.5 quarter units)

Students may select only 300, 400, or 500 level in the College of Letters and Sciences to complete the total of 76.5 quarter units of upper division for the degree. Suggested upper-division courses are given below.

BIO 420	Animal Behavior <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 100A	4.50
BIO 430	Immunology <i>Historical-Review all addendums</i> <b>Recommended Preparation:</b> BIO 203, or BIO 406, or equivalent courses.	4.50
BIO 440	Botany <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 169A; CHE 141; CHE 142; CHE 143; CHE 149A	4.50
BIO 450	Natural History of California <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 161; BIO 162; BIO 163; BIO 100A, or BIO 100; BIO 100A	4.50
BIO 460	Marine Biology <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 161 with a minimum grade of C. Student must have taken General Biology or equivalent ; BIO 162 with a minimum grade of C. Student must have taken General Biology or equivalent ; BIO 163 with a minimum grade of C. Student must have taken General Biology or equivalent	4.50
BIO 461	Marine Biology Field Studies ** <b>Recommended Preparation:</b> BIO 162 with a minimum grade of C. Student must have a grade of C or higher	4.50
BIO 470	Bioinformatics <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 470A; <b>Prerequisite:</b> BIO 161 with a minimum grade of C-. Student must have passed the class with a C- or better; BIO 162 with a minimum grade of C-. Student must have passed the class with a C- or better; BIO 163 with a minimum grade of C-. Student must have passed the class with a C- or better	4.50
BIO 470A	Bioinformatics Lab <b>Corequisite:</b> BIO 470	1.50
BIO 480	Studies in Biology	4.50
CHE 350	Organic Chemistry I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 142	4.50
CHE 350A	Organic Chemistry I Lab <i>Discontinued</i> <b>Corequisite:</b> CHE 350 Minimum C	1.50
CHE 351	Organic Chemistry II <i>Historical-Review all addendums</i> <b>Corequisite:</b> CHE 351A; <b>Prerequisite:</b> CHE 350	4.50
CHE 351A	Organic Chemistry II Lab <i>Discontinued</i> <b>Corequisite:</b> CHE 351 Minimum C	1.50
CHE 360	Biochemistry I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 350; CHE 350A; CHE 351	4.50
CHE 361	Biochemistry II <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 360	4.50
EES 322	Oceanography	4.50
MTH 317	Mathematical Modeling <i>Historical-Review all addendums</i>	4.50

	<b>Prerequisite:</b> MTH 210; MTH 215, or MTH 216A and MTH 216B	
SCI 303	GIS: Geographic Info Systems	4.50
SCI 400	History of Science <i>Discontinued</i>	4.50
	<b>Prerequisite:</b> One 4.5 quarter unit science course from the natural sciences.	
SCI 490	Guided Study	0.50

\*\*Enrollment in this course requires Instructors permission

## Bachelor of Science in Computer Science

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Alireza Farahani; afarahan@nu.edu

The Bachelor of Science in Computer Science Degree program provides a strong technical background for students planning to begin careers upon graduation and for those interested in Graduate Studies in Computer Science. Degree Requirements include: courses in Object Oriented Programming, Data Structures and Algorithms, Operating Systems, Computer Communication Networks, Software Engineering, and Computer Architecture, as well as Mathematics, Statistics, and the Natural Sciences. The program features a rigorous academic foundation that is complemented by realistic programming assignments. Emphasis is placed on developing both the technical and design skills necessary to begin and enhance an individual's career. Graduates of this program are well prepared for immediate employment in either the computer industry or many other businesses that increasingly rely on computer science.

The Bachelor of Science in Computer Science Program Educational Objectives are as follows.

Within a few years of graduation, graduates are expected to be:

- Engaged and active as responsible professionals pursuing diverse career paths or successfully continuing their education in graduate school
- Participating in continuing education opportunities enabling them to understand and apply new ideas and technologies in the field of computing.
- Effective communicators and team members
- Active contributors to their community and their profession

### Bachelor of Science in Computer Science/Master of Science in Computer Science (BSCS/MSCS) Transition Program

Students must complete graduate-level coursework taken as part of the BSCS 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 3.00 to be eligible. Lastly, students must apply for and begin the MSCS program within six months after completing their final BSCS course. Students must complete their MSCS program within four years with no break exceeding 12 months. Students may choose up to two (2) courses from the following course list: CSC 603 and CSC 605. The number of courses required to earn an MSCS degree for transition program students will be reduced from 13 to as few as 11, depending on the number of graduate classes completed within the BSCS with a grade of B or better.

### Program Learning Outcomes:

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

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

### Degree Requirements:

To receive a Bachelor of Science in Computer Science, students must complete at least 180 quarter units to include a minimum of 69 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 (CSC 480A, CSC 480B & CSC 480C), 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.

### Prerequisites for the Major (10 -12 courses; 42 - 48 quarter units)

Students must select one (1) Science related Lecture and one (1) Lab Course from Area F of the General Education for a total of 6 quarter units. The Course/Lab combination must be intended for Science and Engineering majors and develop an understanding of the Scientific Method (PHY104 and PHY104A or PHY130A are recommended).

MTH 215	College Algebra & Trigonometry* <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
OR		
MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND		
MTH 216B	College Algebra II <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
CSC 208	Calculus for Comp. Science I* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
CSC 242	Intro to Programming Concepts* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
CSC 209	Calculus for Comp. Science II <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 208	4.50
CSC 252	Programming in C++* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 242	4.50
CSC 262	Programming in JAVA* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
CSC 220	Applied Probability & Stats. <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 208, or MTH 220; EGR 220	4.50
CSC 272	Advanced Programming in Java <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 262	4.50

\* May be used to meet a General Education requirement.

## Requirements for the Major (17 courses; 73.5 quarter units)

Students may take courses in any order if course prerequisites are satisfied.

CSC 310	Linear Algebra and Matrix Comp <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 252, or CSC 272	4.50
CSC 331	Discrete Structures and Logic <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 252, or CSC 272	4.50
EGR 320	Scientific Problem Solving <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 208, or EGR 220	4.50
CSC 300	Object Oriented Design <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 252, or CSC 272	4.50
CSC 335	Data Structures and Algorithms <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 300; CSC 331	4.50
CSC 350	Computer Ethics	4.50
CSC 340	Digital Logic Design <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 331; <b>Corequisite:</b> CSC 340L	4.50
CSC 340L	Digital Logic Design Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 331; <b>Corequisite:</b> CSC 340	1.50
CSC 338	Algorithm Design <b>Prerequisite:</b> CSC 335	4.50
CSC 342	Computer Architecture <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 340 and CSC 340L	4.50
CSC 400	OS Theory and Design <b>Prerequisite:</b> CSC 335	4.50
CSC 422	Database Design <b>Prerequisite:</b> CSC 300	4.50
CSC 436	Comp. Communication Networks <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 331	4.50
CSC 430	Programming Languages <b>Prerequisite:</b> CSC 300	4.50
CSC 480A	Computer Science Project I <b>Prerequisite:</b> Completion of requirements for the major and electives or permission of the program director.	4.50
CSC 480B	Computer Science Project II <b>Prerequisite:</b> CSC 480A	4.50
CSC 480C	Computer Science Project III <b>Prerequisite:</b> CSC 480B	4.50

## Approved Electives (4 courses; 18 quarter units)

The program requires 4 Upper Division Technical Electives. Students may customize and select four courses from the approved list below.

CSC 441	Web App Development <b>Prerequisite:</b> CSC 300 and CSC 422	4.50
CSC 443	Mobile App Development <b>Prerequisite:</b> CSC 300 and CSC 422	4.50
CSC 447	Software Testing & Automation <b>Prerequisite:</b> CSC 300	4.50
CSC 449	Software Engineering <b>Prerequisite:</b> CSC 300 and CSC 422	4.50
CSC 450	Artificial Intelligence	4.50

	<b>Prerequisite:</b> CSC 335	
CIS 301	Mgmt Information Systems	4.50
CIS 310	Technology Project Management	4.50
CIS 320	Systems Analysis & Integration	4.50
	<b>Prerequisite:</b> CIS 301	
CIS 475	Big Data and Cloud Computing	4.50
	<b>Prerequisite:</b> CSC 422	
CIS 430	Web/EB Design & Development	4.50
	<b>Prerequisite:</b> CIS 350	
CYB 331	Secure Linux System Admin	4.50
	<b>Prerequisite:</b> CYB 216	
CYB 332	Secure Windows Administration <i>Historical-Review all addendums</i>	4.50
CYB 333	Security Automation <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CYB 331; CYB 332	

Students may select other courses as electives outside this list with approval from the CS Program Director.

## Bachelor of Science in Construction Management

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Dirk Epperson; depperson@nu.edu

The purpose of the Bachelor of Science in Construction Management program is to provide students with a well-rounded education in technical construction fundamentals, written and verbal communication, mathematics, business, law, humanities, and natural sciences. This degree program will prepare the student for careers in management, administrative, and ownership positions in the construction industry such as construction executive, project manager, project engineer/coordinator, field engineer, planning/scheduling engineer, cost estimator, quality and safety controller, construction superintendent, and facilities engineer.

### Program Learning Outcomes:

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

- Demonstrate knowledge of mathematics, science and engineering and its application in identifying, formulating, and solving construction problems.
- Design a construction system, process, or procedure to meet desired needs.
- Indicate a fundamental understanding of mechanical, electrical and structural systems, and sustainability.
- Integrate and apply field inspection and survey techniques, safety standards, and regulatory compliance.
- Apply the principles of project management, accounting, cost estimating and scheduling techniques in construction processes.
- Develop and test hypotheses, analyze and interpret data, and use scientific judgment to draw conclusions.
- Communicate effectively through written, verbal, and graphical media with a range of audiences.
- Understand legal aspects, ethical issues, and professional responsibilities in global, economic, environmental, and societal contexts.
- Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

### Degree Requirements:

To receive a Bachelor of Science in Construction Management, students must complete at least 180 quarter units to include a minimum of 69 units of the University General Education requirements; 76.5 units must be completed at the upper-division level and 45 units must be taken in residence, including the capstone project classes. 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 (10 - 11 courses; 42 - 43.5 quarter units)

COM 103	Public Speaking	4.50
MTH 215	College Algebra & Trigonometry <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
OR		
MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND MTH 216B	College Algebra II <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
PHS 104	Introductory Physics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> 2 years of high school algebra and MTH 204, or MTH 216A and MTH 216B	4.50
PHS 104A	Introductory Physics Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 104, or PHS 171 for Science Majors.	1.50
OR		
PHS 130A	Physics Lab for Engineering ^	1.50
ILR 260	Academic Information Literacy <b>Prerequisite:</b> ENG 102	4.50
EGR 219	Intro to Graphics and Auto CAD <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
EGR 220	Engineering Mathematics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
EGR 225	Statics & Strength of Material <b>Prerequisite:</b> EGR 220	4.50
ACC 201	Financial Accounting Funds.	4.50
CSC 220	Applied Probability & Stats. <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 208, or MTH 220; EGR 220	4.50

^For online students only

### Requirements for the Major (19 courses; 82.5 quarter units)

MGT 309	Prin. of Mgmt & Organizations	4.50
EGR 310	Engineering Economics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
EGR 320	Scientific Problem Solving <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 208, or EGR 220	4.50
EGR 320L	Scientific Problem Solving-LAB <i>Historical-Review all addendums</i> <b>Prerequisite:</b> EGR 320 with a minimum grade of C. The laboratory experiments in EGR 320L build on the content covered in EGR 320 (mechanical, electrical, and thermodynamics problem solving concepts).	1.50

EGR 316	Legal Aspects of Engineering <i>Historical-Review all addendums</i>	4.50
DEN 308	Computer Aided Engineering I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> EGR 219	4.50
CEN 320	Surveying, Metrics and GIS <i>Historical-Review all addendums</i> <b>Prerequisite:</b> EGR 219	4.50
CEN 323	Structural Analysis <i>Historical-Review all addendums</i> <b>Prerequisite:</b> EGR 220 and EGR 225	4.50
CEN 325	Soil Mechanics and Foundation <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CEN 323	4.50
CEN 410	Constr Materials and Methods <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
CEN 413	Plans and Specifications <i>Historical-Review all addendums</i> <b>Prerequisite:</b> EGR 219	4.50
CEN 416	Mech and Electrical Systems <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
CEN 419	Est., Scheduling and Control <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CEN 410	4.50
EGR 440	Project Management Fundamental	4.50
CEN 420	Est., Scheduling & Control II <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CEN 419	4.50
CEN 422	Field Inspection and Safety <b>Prerequisite:</b> CEN 410	4.50
CEN 421	Constr, Acct, Finance and Law <b>Prerequisite:</b> ACC 201	4.50
CEN 425	Design & Const Process Integra	4.50
CEN 480	Sustainable Construction	4.50

#### **Construction Senior Project (3 courses; 13.5 quarter units)**

CEN 486A	Construction Senior Project I <b>Prerequisite:</b> Completion of 10 core courses in construction program.	4.50
CEN 486B	Construction Senior Project II <b>Prerequisite:</b> CEN 486A	4.50
CEN 486C	Construction Senior Project III <b>Prerequisite:</b> CEN 486B	4.50

## **Bachelor of Science in Electrical and Computer Engineering**

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Peilin Fu; 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.

In support of the mission of National University, the educational objective of the Electrical and Computer Engineering is to prepare graduate to achieve success in one or more of the following with a few years after graduation.

1. Succeed in pursuing chosen career path and demonstrate technical competence in utilizing electrical and computer engineering principles and skills in industry, academia or the public sector.
2. Engage in sustained learning through graduate education, professional development and self-study in engineering and other professionally related fields.
3. Function well on a diverse and multidisciplinary team with effective communication skills.
4. Exhibit leadership, high standards of ethical conduct and societal responsibility in the practice of engineering.

### Program Learning Outcomes:

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

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.

### 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 69 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 - 9 courses; 33 - 34.5 quarter units)

MTH 215	College Algebra & Trigonometry <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
OR		

MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND MTH 216B	College Algebra II <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
PHS 104	Introductory Physics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> 2 years of high school algebra and MTH 204, or MTH 215, or MTH 216A and MTH 216B	4.50
PHS 130A	Physics Lab for Engineering	1.50
CSC 208	Calculus for Comp. Science I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
CSC 242	Intro to Programming Concepts <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
CSC 209	Calculus for Comp. Science II <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 208	4.50
CSC 252	Programming in C++ <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 242	4.50
CSC 220	Applied Probability & Stats. <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 208, or MTH 220; EGR 220	4.50

#### Requirements for the Major (24 Courses; 93 quarter units)

PHS 231	Calculus-based Physics 1 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 104 and MTH 220, or CSC 208 and MTH 221, or CSC 209	4.50
PHS 232	Calculus-based Physics 2 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 104 PHS 231, MTH 220 or CSC 208, and MTH 221 or CSC 209	4.50
CSC 310	Linear Algebra and Matrix Comp <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 252, or CSC 272	4.50
CSC 331	Discrete Structures and Logic <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 252, or CSC 272	4.50
CEE 300	Advanced Engineering Math <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 209 and CSC 310;	4.50
CSC 300	Object Oriented Design <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 252, or CSC 272	4.50
CEE 310	Circuit Analysis <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CEE 300; <b>Corequisite:</b> CEE 310L	4.50
CEE 310L	Circuit Analysis Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> CEE 310	1.50
CSC 340	Digital Logic Design <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 331; <b>Corequisite:</b> CSC 340L	4.50
CSC 340L	Digital Logic Design Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 331; <b>Corequisite:</b> CSC 340	1.50
CSC 350	Computer Ethics	4.50
CSC 342	Computer Architecture <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CSC 340 and CSC 340L	4.50
CEE 420	Microelectronics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CEE 310; <b>Corequisite:</b> CEE 420L	4.50
CEE 420L	Microelectronics Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> CEE 420	1.50
CSC 436	Comp. Communication Networks <i>Historical-Review all addendums</i>	4.50

	<b>Prerequisite:</b> CSC 331	
CEE 324	Linear Systems and Signals <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CEE 310; <b>Corequisite:</b> CEE 324L	
CEE 324L	Linear Systems and Signals Lab <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> CEE 324	
CEE 340	Embedded Systems <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CSC 208 and CSC 252, or CSC 262; <b>Corequisite:</b> CEE 340L	
CEE 340L	Embedded Systems Lab <i>Historical-Review all addendums</i>	1.50
	<b>Corequisite:</b> CEE 340	
CEE 430	Digital Signal Processing <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CEE 324	
CEE 440	VLSI Design <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CEE 420	
CEE 498	Capstone Design Project I <i>Discontinued</i>	4.50
	<b>Prerequisite:</b> Complete all core courses except CEE499 capstone courses OR permission by the program lead.	
CEE 499A	Capstone Design Project II <i>Discontinued</i>	4.50
	<b>Prerequisite:</b> CEE 498	
CEE 499B	Capstone Design Project III <i>Discontinued</i>	4.50
	<b>Prerequisite:</b> CEE 499A	

## Bachelor of Science in Manufacturing Design Engineering

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Ronald Uhlig; ruhlig@nu.edu

The Bachelor of Science in Manufacturing Design Engineering provides students with the theoretical foundations, hands-on experience, and teaming skills required for effective conceptual, logistical, developmental, and interdisciplinary design of complex engineering devices, product life cycles, and engineering systems through integration of state-of-the-art computer-aided tools, concurrent engineering standards, and simulation modeling techniques. Graduates of this program will have competency in the fundamentals of evolving automated manufacturing technology and provide the industry with a source for qualified graduates to apply engineering principles in the design of automated and computer integrated manufacturing systems.

Upon completion of this degree, students will be prepared to hold positions such as manufacturing system design engineer, design supervisor for engineering projects, and product design engineer. The program blends together professional components from the traditional engineering curricula with the practical aspects of programming applications, engineering project management standards, and simulation modeling techniques. It also combines knowledge and practices needed for professionals working on engineering projects that require innovative and interdisciplinary background, skills, and experience.

### Program Learning Outcomes:

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

- Combine knowledge and practices needed to work on engineering projects that require innovative and interdisciplinary skills
- Utilize product reliability and design optimization concepts in engineering applications
- Apply state-of-the-art computer-aided engineering tools and engineering graphics techniques and methodologies
- Integrate engineering project management standards for efficient and competitive design of engineering products and processes
- Apply the concepts of engineering experiment design and analysis

- Analyze human factors, ergonomics, and safety issues as part of the requirements for design of engineering systems, products, and services
- Analyze a production problem and design and/or develop a manufacturing system
- Develop oral and written communication skills appropriate for engineering professionals
- Demonstrate global awareness and team skills needed in manufacturing design engineering

### Degree Requirements:

To receive a Bachelor of Science in Manufacturing Design Engineering, students must complete at least 180 quarter units, 76.5 of which must be completed at the upper-division level and 45 of which must be taken in residence, including the research project classes, and a minimum of 69 units of the University General Education 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 (11 - 12 courses; 43.5 - 45 quarter units)

MTH 215	College Algebra & Trigonometry* <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
OR		
MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND		
MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
PHS 104	Introductory Physics* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> 2 years of high school algebra and MTH 204, or MTH 215, or MTH 216A and MTH 216B	4.50
PHS 104A	Introductory Physics Lab* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 104, or PHS 171 for science majors	1.50
OR		
PHS 130A	Physics Lab for Engineering	1.50
CHE 101	Introductory Chemistry* <i>Historical-Review all addendums</i> <b>Recommended Preparation:</b> MTH 204, or MTH 215, or MTH 216A and MTH 216B	4.50
CHE 101A	Introductory Chemistry Lab* <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 101, or CHE 141 for science majors	1.50
OR		
CHE 120A	Intro to Chemistry Lab for Eng <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 101	1.50
EGR 219	Intro to Graphics and Auto CAD <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
EGR 220	Engineering Mathematics <i>Historical-Review all addendums</i>	4.50

	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
EGR 225	Statics & Strength of Material	4.50
	<b>Prerequisite:</b> EGR 220	
EGR 230	Electrical Circuits & Systems <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
CSC 208	Calculus for Comp. Science I* <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
CSC 220	Applied Probability & Stats. <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CSC 208, or MTH 220; EGR 220	

\*May be used to satisfy a general education requirement.

### Requirements for the Major (15 courses; 67.5 quarter units)

EGR 316	Legal Aspects of Engineering <i>Historical-Review all addendums</i>	4.50
EGR 320	Scientific Problem Solving <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CSC 208, or EGR 220	
EGR 320L	Scientific Problem Solving-LAB <i>Historical-Review all addendums</i>	1.50
	<b>Prerequisite:</b> EGR 320 with a minimum grade of C. The laboratory experiments in EGR 320L build on the content covered in EGR 320 (mechanical, electrical, and thermodynamics problem solving concepts).	
DEN 308	Computer Aided Engineering I <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> EGR 219	
EGR 310	Engineering Economics <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
DEN 411	Computer Aided Engineering II	4.50
	<b>Prerequisite:</b> EGR 219	
DEN 417	Computer Aided Engineering IV	4.50
	<b>Prerequisite:</b> EGR 219	
DEN 420	Computer Aided Engineering V	4.50
	<b>Prerequisite:</b> EGR 219; DEN 411 with a minimum grade of C. Student must have a working knowledge of the basics of SolidWorks to be successful in DEN 420; DEN 417 with a minimum grade of C. Student must have a working knowledge of the basics of MatLab to be successful in DEN 420	
DEN 422	Materials and Manufacturing	4.50
	<b>Prerequisite:</b> EGR 225	
DEN 423	Human Factors in Engineering <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
DEN 426	Reliability Engineering <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
DEN 429	Product Design Optimization <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
DEN 432	Concurrent Design Engineering <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 210, or CSC 220	
DEN 435	Design & Analysis of Experiment <i>Historical-Review all addendums</i>	4.50
EGR 440	Project Management Fundamental	4.50

### Engineering Senior Project (2 courses; 9 quarter units)

DEN 496A	Senior Capstone Project I <i>Discontinued</i>	4.50
	<b>Prerequisite:</b> EGR 440 and satisfactory completion of courses as specified by Lead faculty	
DEN 496B	Senior Capstone Project II <i>Discontinued</i>	4.50

## Foreign Credential Bridge Program

**Status:** *Discontinued*

**Academic Program Director:** Rachel VanWieren; rvanwieren@nu.edu

The Foreign Credential Bridge Program (FCBP) is designed as a prequalifying year of undergraduate study for students who have earned a recognized three-year bachelor's degree outside of the United States and who wish to earn a master's degree from National University. Students with such foreign credentials who apply to a master's program must complete this fourth year of undergraduate courses prior to beginning graduate level coursework. Eligibility for the FCBP is made by the office of the Registrar. Students must request a pre-evaluation of their foreign credentials through an Admissions Advisor or through the International Programs Office (for those with student visas).

### Degree Requirements:

This bridge program requires a residency minimum of 48 quarter units of study. Students must fulfill the requirements in the areas listed below. These requirements may be met by coursework taken in the bachelor's degree or at another regionally accredited institution. If they are so fulfilled, the content of the area will be waived, but the student will still need to meet the overall unit requirement of the program through open elective credit.

### AREA A: ENGLISH COMMUNICATION (13.5 quarter units required)

#### CATEGORY 1: Writing (9.0 quarter units required)

ENG 102	Effective College English	4.50
ENG 240	Advanced Composition <i>Prerequisite: ENG 102</i>	4.50
OR		
ENG 334A	Technical Writing <i>Prerequisite: ENG 102; (Only Business, Engineering and Nursing majors may fulfill the requirement by taking ENG 334A)</i>	4.50

#### CATEGORY 2: Oral Communication (4.5 quarter units required)

COM 103	Public Speaking	4.50
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### AREA B: MATHEMATICAL CONCEPTS AND QUANTITATIVE REASONING (Minimum 4.5 quarter units)

MTH 210	Probability and Statistics <i>Prerequisite: MTH 12A and MTH 12B, or Accuplacer test placement evaluation</i>	4.50
MTH 216A	College Algebra I <i>Discontinued</i> <i>Prerequisite: MTH 12A and MTH 12B, or Accuplacer test placement evaluation</i>	3.00
AND		
MTH 216B	College Algebra II <i>Discontinued</i> <i>Prerequisite: MTH 216A</i>	3.00

### AREA D: ARTS AND HUMANITIES (13.5 quarter units required)



ART 225	Introduction to Art History <b>Prerequisite:</b> ENG 102	4.50
ART 110	Visual Arts	4.50
HIS 233	World Civilizations I <b>Prerequisite:</b> ENG 102	4.50
HIS 234	World Civilizations II <b>Prerequisite:</b> ENG 102	4.50
LIT 100	Introduction to Literature <b>Prerequisite:</b> ENG 102	4.50
LIT 345	Mythology <b>Prerequisite:</b> ENG 240 and LIT 100	4.50
MUS 100	Fundamentals of Music <i>Historical-Review all addendums</i>	4.50
MUS 327	World Music <b>Prerequisite:</b> ENG 102	4.50
PHL 100	Introduction to Philosophy <b>Prerequisite:</b> ENG 102	4.50

#### AREA E: SOCIAL AND BEHAVIORAL SCIENCES (13.5 quarter units required)

COM 380	Democracy in the Info. Age <b>Prerequisite:</b> ENG 102	4.50
ECO 203	Principles of Microeconomics	4.50
ECO 204	Principles of Macroeconomics	4.50
HIS 220A	United States History I <b>Prerequisite:</b> ENG 102	4.50
HIS 220B	United States History II <b>Prerequisite:</b> ENG 102	4.50
POL 201	American Politics <b>Prerequisite:</b> ENG 102	4.50
PSYC 100	Introduction to Psychology	4.50
SOC 100	Principles of Sociology	4.50
SOC 260	Cultural Anthropology <b>Prerequisite:</b> ENG 102	4.50
SOC 350	Cultural Diversity <b>Prerequisite:</b> ENG 102	4.50

#### AREA F: PHYSICAL AND BIOLOGICAL SCIENCES (6 quarter units required)

(Note: One science lab is required at 1.5 quarter units.)

BIO 100	Survey of Bioscience	4.50
BIO 100A	Survey of Bioscience Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 100 for non-science majors (GE), or BIO 163 for science majors	1.50
CHE 101	Introductory Chemistry <i>Historical-Review all addendums</i> <b>Recommended Preparation:</b> MTH 204, or MTH 215, or MTH 216A and MTH 216B	4.50
CHE 101A	Introductory Chemistry Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 101, or CHE 141 for Science Majors.	1.50
EES 103	Fundamentals of Geology	4.50
EES 103A	Fundamentals of Geology Lab <b>Prerequisite:</b> EES 103	1.50
PHS 104	Introductory Physics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> 2 years of high school algebra and MTH 204, or MTH 216A and MTH 216B	4.50

PHS 104A	Introductory Physics Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 104, or PHS 171 for Science Majors.	1.50
BIO 201	Human Anatomy and Physiol I <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 191A, or BIO 201A; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A	4.50
BIO 201A	Human Anatomy and Physiol LabI <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 201; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A or equivalent courses.	1.50
BIO 202	Human Anatomy and Physiol II <b>Corequisite:</b> BIO 202A, or BIO 192A; <b>Prerequisite:</b> BIO 201 and BIO 201A	4.50
BIO 202A	Human Anatomy andPhysiol LabII <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 202; <b>Prerequisite:</b> BIO 201; BIO 201A	1.50
BIO 203	Introductory Microbiology <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 203A Students should take both lecture and lab courses concurrently and with the same instructor to ensure a consistent learning experience. Students who are retaking one of the two courses or present special circumstances should petition for exception to this requisite.; <b>Recommended: Prior completion of:</b> BIO 100 and BIO 100A; CHE 101 and CHE 101A or equivalent courses; BIO 201 and BIO 201A; BIO 202 and BIO 202A	4.50
BIO 203A	Introductory Microbiology Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 203; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A; BIO 201 and BIO 201A; BIO 202 and BIO 202A	1.50

## General Education for Bachelor Degrees

**Status:** *Historical-Review all addendums*

**Academic Program Director:** Melinda Campbell; 8582323077 mlcampbell@nu.edu

The general education program promotes the intellectual growth of all students in National University's undergraduate degree programs. The general education curriculum assumes that undergraduates will not concentrate on a major field of study until they have completed a thorough general education program that is writing-intensive and addresses the cultural diversity of contemporary society.

Students in the general education program are advised to focus on writing and speech communication first. Students are then counseled to explore mathematical and other formal systems to develop abstract reasoning abilities and are required to take a course in informational literacy and report writing. Finally, all students are required to have a significant exposure to the natural sciences, the humanities and fine arts, and the social and behavioral sciences and modern language. Many of these courses include an examination of the human condition in a multicultural society.

The general education curriculum emphasizes communications, mathematics and sciences, humanities and social/behavioral sciences. Thus, the curriculum provides coherence to undergraduate education, affording the student the opportunity to:

### **Program Learning Outcomes:**

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

- Demonstrate skills for self-development that contribute to lifelong learning.
- Demonstrate literacy in written and oral communication.
- Apply information literacy skills in developing research projects and presentations.
- Demonstrate a capacity for responsible citizenship in a diverse society.
- Demonstrate awareness of past and present human and cultural diversity.
- Identify ethical issues raised in different disciplines.
- Demonstrate scientific and quantitative literacy skills in appraising information and solving problems.



- Demonstrate the ability to use the elements of critical thinking to analyze issues, solve problems, and make decisions.
- Demonstrate the ability to work successfully in a team.
- Demonstrate creative thinking in expression or problem solving.

### Degree Requirements:

The general education curriculum furnishes students with the basic knowledge necessary to pursue any degree program. Students who fulfill the curriculum gain a strong interdisciplinary liberal arts framework geared toward problem solving. This emphasis promotes self-directed research in many academic areas that have traditionally been kept separate.

### Diversity Requirement

The diversity component serves the general education program goal of increasing respect for, and awareness of, diverse peoples and cultures. A plus [+] after any course on the list of approved general education courses signifies a diversity-enriched course. Students must complete at least one diversity-enriched course in the general education program.

### CSU General Education Certifications and IGETC

National University will accept the following General Education certifications: California State University (CSU) General Education Breadth Certification and the Inter-Segmental General Education Transfer Curriculum (IGETC). All requirements for CSU General Education and IGETC must be completed and certified prior to transfer to National University. The University will not accept partial certifications. Students transferring with full certifications are typically required to take one to three upper-division general education courses at National in order to fulfill the unit requirements. Students must provide an official transcript with the certification included or a separate certification form from the community college attended.

### General Education Program Requirements

The general education program consists of a minimum of 69 quarter units. Of the 69 quarter units, students must complete at least 4.5 units at the upper-division level and 4.5 units in diversity enriched coursework. All undergraduate students working toward any associate or bachelor's degree must meet the University's diversity requirement. A maximum of 13.5 upper-division units may be utilized to meet G.E. requirements.

### AREA A: ENGLISH COMMUNICATION (Minimum 13.5 quarter units)

#### CATEGORY 1: Writing(9.0 quarter units required)

ENG 102	Effective College English	4.50
ENG 240	Advanced Composition <b>Prerequisite:</b> ENG 102	4.50
OR		
ENG 334A	Technical Writing <b>Prerequisite:</b> ENG 102; (Only Business, Engineering and Nursing majors may fulfill the requirement by taking ENG 334A)	4.50

#### CATEGORY 2 - Oral Communication (4.5 quarter units required)

COM 103	Public Speaking	4.50
COM 120	Intro to Interpersonal Comm	4.50

### AREA B: MATHEMATICAL CONCEPTS AND QUANTITATIVE REASONING (Minimum 4.5 quarter units)

MTH 204	Mathematics for Science <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement	4.50
MTH 209A	Fundamentals of Mathematics I	4.50

	<b>Prerequisite:</b> MTH 12A and MTH 12B	
MTH 210	Probability and Statistics <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
MTH 215	College Algebra & Trigonometry <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	4.50
MTH 216A	College Algebra I <i>Discontinued</i> <b>Prerequisite:</b> MTH 12A and MTH 12B, or Accuplacer test placement evaluation	3.00
AND MTH 216B	College Algebra II <i>Discontinued</i> <b>Prerequisite:</b> MTH 216A	3.00
MTH 220	Calculus I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B, or Accuplacer test placement	4.50
MTH 301	Fundamentals of Mathematics II <b>Prerequisite:</b> MTH 209A	4.50
CSC 208	Calculus for Comp. Science I <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	4.50
MNS 205	Intro to Quantitative Methods <i>Historical-Review all addendums</i>	4.50
BST 322	Intro to Biomedical Statistics	4.50

#### AREA C: INFORMATION LITERACY (Minimum 4.5 quarter units)

ILR 260	Academic Information Literacy <b>Prerequisite:</b> ENG 102	4.50
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#### AREA D: ARTS, HUMANITIES, AND LANGUAGES (Minimum 18 quarter units in at least 2 areas)

ARTS		
ART 225	Introduction to Art History <b>Prerequisite:</b> ENG 102	4.50
ART 110	Visual Arts	4.50
FYA 101	First-Yr Sem: Arts & Human <i>Discontinued</i> <b>Prerequisite:</b> ENG 102	4.50
MUS 100	Fundamentals of Music <i>Historical-Review all addendums</i>	4.50
MUS 300	Film Music <i>Historical-Review all addendums</i> <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> MUS 100	4.50
MUS 327	World Music <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
THR 200	Theater Arts	4.50
HUMANITIES		
ACEX 2101X	Philosophy of Coaching	4.50
HIS 233	World Civilizations I <b>Prerequisite:</b> ENG 102	4.50
HIS 234	World Civilizations II <b>Prerequisite:</b> ENG 102	4.50
LIT 100	Introduction to Literature <b>Prerequisite:</b> ENG 102	4.50
LIT 345	Mythology	4.50

	<b>Prerequisite:</b> ENG 240 and LIT 100	
PHL 100	Introduction to Philosophy	4.50
	<b>Prerequisite:</b> ENG 102	
PHL 238	Logical & Critical Thinking	4.50
	<b>Prerequisite:</b> ENG 102	
PHL 337	Ethics	4.50
	<b>Prerequisite:</b> ENG 102	
LANGUAGES		
ASL 120	American Sign Language I	4.50
ASL 220	American Sign Language II <i>Discontinued</i>	4.50
	<b>Prerequisite:</b> ASL 120	
SPN 100	Beginning Spanish I	4.50
SPN 101	Beginning Spanish II	4.50
	<b>Prerequisite:</b> SPN 100	
SPN 200	Intermediate Spanish I	4.50
	<b>Prerequisite:</b> SPN 101	
Students may also satisfy Area D Foreign Language requirements with 9 quarter units of computer languages:		
CSC 242	Intro to Programming Concepts <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	
CSC 252	Programming in C++ <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> CSC 242	
CSC 262	Programming in JAVA <i>Historical-Review all addendums</i>	4.50
	<b>Prerequisite:</b> MTH 215, or MTH 216A and MTH 216B	

<sup>+</sup>Diversity Enriched Offerings

#### AREA E: SOCIAL AND BEHAVIORAL SCIENCES (Minimum 13.5 quarter units)

ACEX 2100X	History of Sport	4.50
COM 100	Intro to Mass Communication	4.50
COM 220	Media Literacy <i>Historical-Review all addendums</i>	4.50
COM 380	Democracy in the Info. Age <sup>+</sup>	4.50
	<b>Prerequisite:</b> ENG 102	
ECO 203	Principles of Microeconomics	4.50
ECO 204	Principles of Macroeconomics	4.50
EDA 200	Schools of the World <i>Discontinued</i>	4.50
FYS 102	First-Yr Sem: Social Sciences	4.50
	<b>Prerequisite:</b> ENG 102	
HIS 220A	United States History I <sup>+</sup>	4.50
	<b>Prerequisite:</b> ENG 102	
HIS 220B	United States History II <sup>+</sup>	4.50
	<b>Prerequisite:</b> ENG 102	
POL 100	Introduction to Politics	4.50
	<b>Prerequisite:</b> ENG 102	
POL 201	American Politics	4.50
	<b>Prerequisite:</b> ENG 102	
PSYC 100	Introduction to Psychology	4.50
SOC 100	Principles of Sociology	4.50
SOC 260	Cultural Anthropology	4.50
	<b>Prerequisite:</b> ENG 102	
SOC 350	Cultural Diversity <sup>+</sup>	4.50
	<b>Prerequisite:</b> ENG 102	

<sup>+</sup>Diversity Enriched Offering.

**AREA F: PHYSICAL AND BIOLOGICAL SCIENCES (Minimum 6 quarter units  
[Note: one science lab is required])**

Strongly recommended: complete the BIO 201 - 203A series in numerical sequence BIO 201 + 201A, 202 + 202A, 203 + 203A.

BIO 100	Survey of Bioscience	4.50
BIO 100A	Survey of Bioscience Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> BIO 100 for non-science majors (GE), or BIO 163 for science majors	1.50
BIO 161	General Biology 1	4.50
BIO 162	General Biology 2 <b>Prerequisite:</b> BIO 161	4.50
BIO 201	Human Anatomy and Physiol I <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 191A, or BIO 201A; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A	4.50
BIO 191A	Online Hum Anat and Phys I Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 201; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A	1.50
OR BIO 201A	Human Anatomy and Physiol LabI <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 201; <b>Recommended: Prior completion of:</b> BIO 100; BIO 100A; CHE 101; CHE 101A or equivalent courses.	1.50
BIO 202	Human Anatomy and Physiol II <b>Corequisite:</b> BIO 202A, or BIO 192A; <b>Prerequisite:</b> BIO 201 and BIO 201A	4.50
BIO 192A	Online Anat and Phys II Lab <b>Corequisite:</b> BIO 202; <b>Prerequisite:</b> BIO 191A with a minimum grade of C-. Passing grade required; BIO 201 with a minimum grade of C-. Passing grade required	1.50
OR BIO 202A	Human Anatomy andPhysiol LabII <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 202; <b>Prerequisite:</b> BIO 201; BIO 201A	1.50
BIO 203	Introductory Microbiology <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 203A Students should take both lecture and lab courses concurrently and with the same instructor to ensure a consistent learning experience. Students who are retaking one of the two courses or present special circumstances should petition for exception to this requisite.; <b>Recommended: Prior completion of:</b> BIO 100 and BIO 100A; CHE 101 and CHE 101A or equivalent courses; BIO 201 and BIO 201A; BIO 202 and BIO 202A	4.50
BIO 193A	Online Microbiology Lab <i>Historical-Review all addendums</i> <b>Corequisite:</b> BIO 203; <b>Recommended: Prior completion of:</b> BIO 191A; BIO 201; CHE 101; CHE 101A	1.50
OR BIO 203A	Introductory Microbiology Lab <i>Historical-Review all addendums</i>	1.50

**Corequisite:** BIO 203; **Recommended:** Prior completion of: BIO 100; BIO 100A; CHE 101; CHE 101A; BIO 201 and BIO 201A; BIO 202 and BIO 202A

CHE 101	Introductory Chemistry <i>Historical-Review all addendums</i> <b>Recommended Preparation:</b> MTH 204, or MTH 215, or MTH 216A and MTH 216B	4.50
CHE 101A	Introductory Chemistry Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 101, or CHE 141 for Science Majors.	1.50
CHE 141	General Chemistry 1 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 215 or equivalent	4.50
CHE 142	General Chemistry 2 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> CHE 141	4.50
EES 103	Fundamentals of Geology	4.50
EES 103A	Fundamentals of Geology Lab <b>Prerequisite:</b> EES 103	1.50
PHS 104	Introductory Physics <i>Historical-Review all addendums</i> <b>Prerequisite:</b> 2 years of high school algebra and MTH 204, or MTH 216A and MTH 216B	4.50
PHS 104A	Introductory Physics Lab <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 104, or PHS 171 for Science Majors.	1.50
PHS 171	General Physics 1 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> MTH 216A and MTH 216B	4.50
PHS 172	General Physics 2 <i>Historical-Review all addendums</i> <b>Prerequisite:</b> PHS 171	4.50

#### AREA G: LIFELONG LEARNING AND SELF DEVELOPMENT (Minimum 4.5 quarter units)

COH 100	Personal Health	4.50
COH 317	Public Health Nutrition <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> COH 100	4.50
COH 318	Drug Use and Abuse <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> COH 100	4.50
COH 319	Human Sexuality <b>Prerequisite:</b> ENG 102; <b>Recommended Preparation:</b> COH 100	4.50
ENG 201	Fiction Writing I <b>Prerequisite:</b> ENG 102	4.50
ENG 202	Poetry Writing I <b>Prerequisite:</b> ENG 102	4.50
ENG 203	Screenwriting I <b>Prerequisite:</b> ENG 102	4.50
ENG 375	Nature Writing <b>Prerequisite:</b> ENG 102; ENG 240, or ENG 334A	4.50
FFL 100	Foundation to Academic Success	4.50
FYP 103	First-Yr Sem: Psychology <b>Prerequisite:</b> ENG 102	4.50
GLS 150	Global Issues and Trends	4.50
MUS 200	Music Composition <i>Historical-Review all addendums</i> <b>Recommended Preparation:</b> MUS 100, or MUS 326, or MUS 327	4.50
PHL 238	Logical & Critical Thinking <b>Prerequisite:</b> ENG 102	4.50

#### AREA A-G: GENERAL EDUCATION (Minimum 4.5 quarter units)

If a student has not met the upper-division unit requirement in the completion of the above general education areas, an upper-division course from the following list must be taken. (Upper-division courses applicable to General Education are numbered 300-399). If a student has already met the upper-division unit requirement in the completion of the above general education areas, any course below or any course in Areas A through G may satisfy this Area. Remedial courses taken to achieve minimum levels of collegiate-level competency in the areas of writing and mathematical concepts and systems do not satisfy any portion of the general education requirement.

ART 315	Film as Art <b>Prerequisite:</b> ENG 102	4.50
ART 329	World Art <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
COM 360	Representation in the Media <sup>+</sup> <i>Historical-Review all addendums</i> <b>Prerequisite:</b> ENG 102	4.50
COM 380	Democracy in the Info. Age <b>Prerequisite:</b> ENG 102	4.50
EES 322	Oceanography	4.50
ENG 375	Nature Writing <b>Prerequisite:</b> ENG 102; ENG 240, or ENG 334A	4.50
FYM 104	First-Yr Sem: Math & Sci <b>Prerequisite:</b> ENG 102	4.50
LIT 311	British Literature I <b>Prerequisite:</b> ENG 240 and LIT 100	4.50
LIT 312	British Literature II <b>Prerequisite:</b> ENG 240 and LIT 100	4.50
LIT 321	American Literature I <b>Prerequisite:</b> ENG 240 and LIT 100	4.50
LIT 322	American Literature II <b>Prerequisite:</b> ENG 240 and LIT 100	4.50
MUS 326	American Music <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
PHL 320	World Religions <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
PHL 375	Environmental Ethics <b>Prerequisite:</b> ENG 102	4.50
PHS 102	Survey of Physical Science	4.50
PSY 300	Social Psychology of Sport <b>Prerequisite:</b> ENG 102; PSYC 100	4.50
PSYC 301	Child Development <b>Prerequisite:</b> ENG 102	4.50
SCI 300	Geography <sup>+</sup>	4.50
SOC 325	Popular Culture <b>Prerequisite:</b> ENG 102	4.50
HIS 336	American Film and Society <sup>+</sup> <b>Prerequisite:</b> ENG 102	4.50
SOC 344	Love, Sex, and the Family <b>Prerequisite:</b> ENG 102	4.50
SOC 350	Cultural Diversity <b>Prerequisite:</b> ENG 102	4.50

<sup>+</sup>Diversity Enriched Offering.

## Undergraduate Minors

N/A

## Graduate Degrees

N/A

## Graduate Certificates

### Graduate Certificate in Trauma Studies

**Status:** *Discontinued*

**Academic Program Director:** Jacob Kaminker; jkaminker@nu.edu

#### **THIS PROGRAM IS CURRENTLY NOT ACCEPTING ENROLLMENT.**

With our society's increased awareness of trauma's many forms and our improved understanding of its neurological effects, professionals in an expanding array of fields are being impacted by issues related to trauma. These include not just health-care and mental-health workers but first responders, police officers, military servicemen and women, even clergy members, teachers, coaches, mentors, and others to whom people may turn for help in a time of need.

By gaining a better understanding of the psychological and physiological roots of trauma and different approaches to its treatment (including multicultural perspectives), those who complete the Trauma Studies Certificate are better equipped to deal with trauma-related issues in an ethical, humane, and effective manner across a broad range of clinical and non- clinical settings.

Classes are taught online. All instruction is in an intensive weekend format. Students can enter as desired any quarter and campus. A certificate will be granted at the completion of 20 units of instruction.

This certificate program is open to all individuals who are interested in working with trauma. Prior experience in working with trauma, while desirable, is not required. This certificate can be taken in a one or two-year model and is open to anyone holding a bachelor's degree

#### **Certificate Requirements (10 courses; 20 quarter units)**

TSC 5001	Foundations of Trauma Studies <i>Discontinued</i>	3.00
TSC 5002	Neurobiology of Trauma <i>Discontinued</i>	2.00
TSC 5003	Attachment & Dev. Approaches <i>Discontinued</i>	2.00
TSC 5004	Assessment/Treatment Planning <i>Discontinued</i>	2.00
TSC 5005	Legal/Ethical Issues in Trauma <i>Discontinued</i>	1.00
TSC 5006	Somatic Psychology Approaches <i>Discontinued</i>	3.00
TSC 5007	Working with Trauma in Family <i>Discontinued</i>	2.00
TSC 5008	Art Based Trauma Interventions <i>Discontinued</i>	2.00
TSC 5009	Working with Systemic Trauma <i>Discontinued</i>	2.00
TSC 5010	Vicarious Trauma & Self Care <i>Discontinued</i>	1.00

### 1:1 Modality Program Options

#### **School of Business and Economics**

- **Post-Baccalaureate Certificate in Business**
  - [General Business Specialization](#)
  - [Entrepreneurship Specialization](#)



- Inclusive Leadership Specialization
- Management of Virtual Organizations Specialization
- Project Management Specialization
- **Post-Master's Certificate in Business**
  - Advanced Accounting Specialization
  - Financial Management Specialization
  - General Business Specialization
  - Project Management Specialization
- **Doctor of Business Administration**
  - Advanced Accounting Specialization
  - Financial Management Specialization
  - General Business Specialization
  - Global Business Management Specialization
  - Health Services Specialization
  - Homeland Security: Leadership and Policy Specialization
  - Human Resources Management Specialization
  - Industrial/Organizational Psychology Specialization
  - Information Technology Specialization
  - Organizational Leadership Specialization
  - Project Management Specialization
  - Strategic Management Specialization
- **Doctor of Philosophy in Business Administration**
  - Advanced Accounting Specialization
  - Financial Management Specialization
  - Global Business Management Specialization
  - Health Services Specialization
  - Homeland Security: Leadership and Policy Specialization
  - Industrial/Organizational Psychology Specialization
  - Information Technology Specialization
  - Organizational Leadership Specialization
  - Project Management Specialization
  - Strategic Management Specialization
- **Doctor of Philosophy in Human Resources Management**
- **Doctor of Philosophy in Organizational Leadership**

## Sanford College of Education

- **Post-Baccalaureate Certificate in Education**
  - Early Childhood Education Specialization
  - Multimedia Instructional Design Specialization
  - Remote Teaching in K-12 Education Specialization
  - School Safety, Security, and Emergency Management Specialization
  - Social Emotional Learning Specialization
  - Trauma-Informed Educational Practices Specialization
- **Master of Education in Educational Leadership**
- **Post-Master's Certificate in Education**
  - Curriculum and Teaching Specialization
  - E-Learning Specialization
  - Early Childhood Education Specialization
  - Educational Leadership Specialization
  - English Language Learning Specialization
  - General Education Specialization



- Instructional Design Leadership Specialization
- Instructional Leadership Specialization
- International Education and Globalization Specialization
- Leadership in Higher Education Specialization
- Organizational Leadership Specialization
- Quantitative Research Specialization
- School Safety, Security, and Emergency Management Specialization
- Social Emotional Learning Specialization
- Special Education Specialization
- Sport and Athletic Management Specialization
- Trauma-Informed Educational Practices Specialization
- **Education Specialist**
  - Curriculum and Teaching Specialization
  - E-Learning Specialization
  - Early Childhood Education Specialization
  - English Language Learning Specialization
  - General Education Specialization
  - Instructional Leadership Specialization
  - International Education and Globalization Specialization
  - Leadership in Higher Education Specialization
  - Learning Analytics in Higher Education Specialization
  - Learning Analytics in K-12 Education Specialization
  - Organizational Leadership Specialization
  - School Safety, Security, and Emergency Management Specialization
  - Social Emotional Learning Specialization
  - Special Education Specialization
  - Sport and Athletic Management Specialization
  - Trauma-Informed Educational Practices Specialization
- **Doctor of Education**
  - Curriculum and Teaching Specialization
  - E-Learning Specialization
  - Early Childhood Education Specialization
  - English Language Learning Specialization
  - General Education Specialization
  - Instructional Leadership Specialization
  - International Education and Globalization Specialization
  - Leadership in Higher Education Specialization
  - Learning Analytics in Higher Education Specialization
  - Learning Analytics in K-12 Education Specialization
  - Nursing Education Specialization
  - Organizational Leadership Specialization
  - School Safety, Security, and Emergency Management Specialization
  - Social Emotional Learning Specialization
  - Special Education Specialization
  - Sport and Athletic Management Specialization
  - Trauma-Informed Educational Practices Specialization
- **Doctor of Education in Instructional Design**
- **Doctor of Philosophy in Education**
  - Curriculum and Teaching Specialization
  - E-Learning Specialization
  - Early Childhood Education Specialization
  - English Language Learning Specialization
  - General Education Specialization
  - Instructional Leadership Specialization

- International Education and Globalization Specialization
- Leadership in Higher Education Specialization
- Learning Analytics in Higher Education Specialization
- Learning Analytics in K-12 Education Specialization
- Organizational Leadership Specialization
- School Safety, Security, and Emergency Management Specialization
- Social Emotional Learning Specialization
- Special Education Specialization
- Sport and Athletic Management Specialization
- Trauma-Informed Educational Practices Specialization
- **Doctor of Philosophy in Instructional Design**

## School of Health Professions

- **Doctor of Health Administration**
- **Doctor of Nursing Practice in Executive Leadership**

## JFK School of Psychology and Social Sciences

- **Post-Baccalaureate Certificate in Psychology**
- **Master of Science in Child and Adolescent Development Psychology**
- **Master of Science in Educational Psychology**
- **Master of Science in Forensic Psychology**
  - General Specialization
  - Threat Assessment and Management Specialization
- **Master of Science in Health Psychology**
- **Master of Science in Industrial & Organizational Psychology**
- **Post-Master's Certificate in Psychology**
- **Doctor of Philosophy in Psychology**
  - Counseling Psychology Specialization
  - General Psychology Specialization
  - Gerontology Specialization
  - Health Psychology Specialization
  - Industrial/Organizational Psychology Specialization
  - Psychology of Gender and Sexual Fluidity Specialization
  - Social Policy and Behavioral Health Administration Specialization
  - Substance-Related and Addictive Disorders Specialization
  - Trauma and Disaster Relief Specialization
- **Post- Post-Baccalaureate Certificate in Marriage and Family Therapy**
- **Master of Arts in Marriage and Family Therapy**
  - Child and Adolescent Family Therapy Specialization
  - Couple Therapy Specialization
  - General Family Therapy Specialization
  - LGBTQ Couple and Family Therapy Specialization
  - Medical Family Therapy Specialization
  - Military Family Therapy Specialization
  - Systemic Sex Therapy Specialization
  - Systemic Treatment of Addictions Specialization
  - Trauma Informed Systemic Therapy Specialization

- **Master of Arts in Marriage and Family Therapy, California Track**
- **Master of Science in Clinical Mental Health Counseling**
- **Master of Social Work**
  - Generalist
  - Advanced Generalist
- **Post-Master's Certificate in Marriage and Family Therapy**
- **Doctor of Marriage and Family Therapy**
  - Child and Adolescent Therapy Specialization
  - Couple Therapy Specialization
  - General Family Therapy Specialization
  - Systemic Administration and Entrepreneurship Specialization
  - Systemic Organizational Leadership Specialization
  - Therapy with Military Families Specialization
- **Doctor of Philosophy in Marriage and Family Therapy**
  - Child and Adolescent Therapy Specialization
  - Couple Therapy Specialization
  - Culture, Diversity, and Social Justice in a Global Context Specialization
  - Education and Supervision Specialization
  - General Family Therapy Specialization
  - Medical Family Therapy Specialization
  - Systemic Leadership Specialization
  - Therapy with Military Families Specialization

## School of Technology and Engineering

- **Master of Science in Information Technology**
  - Cloud and Networking Infrastructure Management Specialization
  - General Information Management Specialization
  - Information Technology Project Management Specialization
  - Network Risk Management and Control Specialization
- **Master of Science in Technology Management**
  - Cybersecurity Management Specialization
  - Data Science Management Specialization
  - General Management Specialization
  - Information Technology Management Specialization
  - Project and Program Management Specialization
- **Doctor of Philosophy in Computer Science**
- **Doctor of Philosophy in Cybersecurity**
  - General and Technology Specialization
  - Global Strategy and Operations Specialization
  - Governance, Risk, and Compliance Specialization
  - Secure Cloud Computing Specialization
- **Doctor of Philosophy in Data Science**
- **Doctor of Philosophy in Technology Management**
  - Computer Science Specialization
  - Cybersecurity Specialization
  - Data Science Specialization
  - Engineering Management Specialization
  - Information Systems Specialization
  - IT Project Management Specialization

## College of Law and Public Service

- **Post-Master's Certificate in Law**
  - [Criminal Justice Specialization](#)
  - [Homeland Security Specialization](#)
- **Juris Doctor**
- **Doctor of Criminal Justice**
  - [Homeland Security Specialization](#)
  - [Organizational Leadership Specialization](#)
  - [Policing Specialization](#)
  - [Public Administration Specialization](#)
- **Doctor of Public Administration**

## 1:1 Degree Changes

### EDS

- EDS - Course Sequence: Course sequence updated for all specializations
- EDS - [General Education Specialization](#): Updated specialization course offerings
- EDS - [Instructional Leadership Specialization](#): Updated specialization course offerings
- EDS - [Leadership in Higher Education Specialization](#): Updated specialization course offerings
- EDS - [Organizational Leadership Specialization](#): Updated specialization course offerings

### EDS-EDL

- Update to the course sequence
- New [Higher Education Specialization](#) and Courses
- New [PK-12 Specialization](#) and Courses

### EdD

- EdD - [General Education Specialization](#): Updated specialization course offerings
- EdD - [Instructional Leadership Specialization](#): Updated specialization course offerings
- EdD - [Leadership in Higher Education Specialization](#): Updated specialization course offerings
- EdD - [Organizational Leadership Specialization](#): Updated specialization course offerings

### EdD-EDL

- Update to the course sequence
- New [Higher Education Specialization](#) and Courses
- New [PK-12 Specialization](#) and Courses

### PhD-ED

- PhD-ED - Course Sequence: Course sequence updated for all specializations
- PhD-ED - [General Education Specialization](#): Updated specialization course offerings
- PhD-ED - [Instructional Leadership Specialization](#): Updated specialization course offerings
- PhD-ED - [Leadership in Higher Education Specialization](#): Updated specialization course offerings
- PhD-ED - [Organizational Leadership Specialization](#): Updated specialization course offerings

## PhD-EDL

- Update to the course sequence
- New [Higher Education Specialization](#) and Courses
- New [PK-12 Specialization](#) and Courses

# Academic Information for Undergraduate Degrees

## National University Dean's List

At National University, we believe it is important to recognize academic success in many forms. We realize our students have many demands across many roles in their lives. While Cum Laude and other graduation honors are awarded in recognition of achievement sustained across the student journey, the Dean's List recognizes students in their shorter sprints toward ultimate success.

The Dean's List at National University is a quarterly recognition of undergraduate and graduate students who have demonstrated exceptional academic performance. Students eligible for the honor must complete a minimum amount of coursework (9.0 quarter units/6.0 semester units) with a three-month GPA of at least 3.5 (undergraduate) or 3.7 (graduate).

In determining student eligibility, we use the following criteria:

- Completed a minimum of 9.0 quarter units/6.0 semester units). These units are calculated on the end date of the course. For instance, a student completing an 8-week course with 4 weeks completed prior to the quarter and 4 weeks completed during the assessment period would be granted unit and GPA credit for the whole course.
- Quarter GPA of at least 3.5 (undergraduate) or 3.7 (graduate). These minimum GPAs are only calculated with the courses completed during the assessment period. Therefore, a student may have a cumulative GPA of 3.3, receive two A's during courses completed in the quarter, and will be eligible for the honor of Dean's List.

**Exceptions:** Dissertation courses and some clinically-focused coursework is excluded in the calculation of eligibility, and those students in the Juris Doctorate program have different eligibility criteria based on program accreditation requirements as outlined in the Juris Doctorate Student Handbook.

The Dean's List is calculated and awarded quarterly in January, April, July, and October for the three months preceding. Students are notified via their student email address and also receive a confirmation when their certificate is issued. Certificates are available electronically through Parchment.

# Academic Information for Graduate Degrees

## National University Dean's List

At National University, we believe it is important to recognize academic success in many forms. We realize our students have many demands across many roles in their lives. While Cum Laude and other graduation honors are awarded in recognition of achievement sustained across the student journey, the Dean's List recognizes students in their shorter sprints toward ultimate success.

The Dean's List at National University is a quarterly recognition of undergraduate and graduate students who have demonstrated exceptional academic performance. Students eligible for the honor must complete a minimum amount of coursework (9.0 quarter units/6.0 semester units) with a three-month GPA of at least 3.5 (undergraduate) or 3.7 (graduate).

In determining student eligibility, we use the following criteria:

- Completed a minimum of 9.0 quarter units/6.0 semester units). These units are calculated on the end date of the course. For instance, a student completing an 8-week course with 4 weeks completed prior to the quarter and 4 weeks completed during the assessment period would be granted unit and GPA credit for the whole course.
- Quarter GPA of at least 3.5 (undergraduate) or 3.7 (graduate). These minimum GPAs are only calculated with the courses completed during the assessment period. Therefore, a student may have a cumulative GPA of 3.3, receive two A's during courses completed in the quarter, and will be eligible for the honor of Dean's List.

**Exceptions:** Dissertation courses and some clinically-focused coursework is excluded in the calculation of eligibility, and those students in the Juris Doctorate program have different eligibility criteria based on program accreditation requirements as outlined in the Juris Doctorate Student Handbook.

The Dean's List is calculated and awarded quarterly in January, April, July, and October for the three months preceding. Students are notified via their student email address and also receive a confirmation when their certificate is issued. Certificates are available electronically through Parchment.



# Courses

## General Education

### **MTH 215 College Algebra & Trigonometry (4.50)**

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

Duration: 4

Examines higher degree polynomials, rational, exponential and logarithmic functions, Trigonometry and matrix Algebra. Completion of this course prepares a student to take Calculus and other upper level Math courses. This course is specifically for mathematics, computer science, and engineering majors.

### **PHL 320 World Religions (4.50)**

**Prerequisite:** ENG 102

Major world religions, including Hinduism, Buddhism, Confucianism, Taoism, Judaism, Christianity, and Islam, are surveyed in their philosophical, historical, art historical, and literary contexts. Important aspects of the philosophy and sociology of religion are addressed, and parallels in the study of myths, rituals, conversion experiences, and rites of passage are compared. Recent and contemporary religious trends are also addressed.

### **PHL 375 Environmental Ethics (4.50)**

**Prerequisite:** ENG 102

An exploration of various philosophical approaches to ethics as they inform and are applied to contemporary human-environment relations. Issues of human use and abuse of the environment as a standing reserve of resources, wealth, and power; questions of moral standing and animal rights, including habitat loss and species extinction; and sociological problems related to population control, industrialization, and pollution are analyzed and evaluated. Western cultural and ecological assumptions are examined through anthropocentric, holistic, utilitarian, deontological, ecofeminist, and ethics-of-care perspectives.

## UNDERGRADUATE

### **BIS 405 Interdisciplinary Sciences (4.50)**

**Prerequisite:** BIS 301; **Recommended:** Prior completion of: MTH 204, or MTH 215

Duration: 4

This elective is open to non-science majors. This trans-disciplinary course is a comprehensive team science approach to learning the basic concepts of genetic anthropology, human evolution, migration and cultural diversity, genetics and human variation, and epidemiology of disease. It will make use of computer technology. Students will participate in virtual learning environments and be introduced to interdisciplinary case studies. Teams of students will engage in investigative data search and analysis. Patterns of human migration will be examined within the context of cultural diversity, language, and the impact of environment on disease.

### **BUS 485A Capstone Strat Bus Policy I (4.50)**

**Prerequisite:** MNS 205; MTH 210; MTH 215, or MTH 220 and ECO 203; ACC 201; ACC 202; LAW 204; BIM 400; MGT 309; MGT 400; FIN 310; MNS 407; MKT 302A; IBU 430; MGT 451

Duration: 4

Students apply the principal concepts and skills learned in each of their BBA program core courses to real-world business situations. Students' ability to integrate this knowledge and to apply and articulate critical analysis to cases and other assignments are among the key objectives of this course. This is the first part of a two-part sequence. The focus of part A is on scanning and evaluating a current business situation for strategic planning.

### **CEN 410 Constr Materials and Methods (4.50)**

**Prerequisite:** MTH 215

Duration: 4

An overview of the basic materials and methods utilized in construction projects. Wood, steel, masonry, glass, and concrete and other material are introduced along with their associated construction systems in foundations, framing, cladding, windows, doors, finishes and roofing.

**CEN 416 Mech and Electrical Systems (4.50)****Prerequisite:** MTH 215

Duration: 4

The impact of M/E systems on the design and construction process including energy considerations. Fundamentals of HVAC, plumbing, fire protection, electrical distribution, lighting, information systems, and vibrations in the building system.

**CSC 208 Calculus for Comp. Science I (4.50)****Prerequisite:** MTH 215

Duration: 4

(Cross-listed and equivalent to MTH220) Focus on differential and integral calculus with applications. Topics include limits and continuity, derivatives, standard rules of differentiation including chain rule, exponential and logarithmic forms, curve sketching, definition of anti-derivatives; integration rules including substitution and by parts, coverage of Fundamental Theorem of Calculus and a brief exposure to numeric integration. Students may not receive credit for both CSC 208 and MTH 220.

**CSC 242 Intro to Programming Concepts (4.50)****Prerequisite:** MTH 215

Duration: 4

This course introduces modern programming design techniques using C++. A study of fundamental control structures in C++ as well as syntax and semantics of the constructs in the language. The coverage includes data types, looping and decision statements, functions, and arrays. The course examines problem analysis, decomposition and modern programming paradigms and methodologies with introduction to object-oriented programming.

**CSC 262 Programming in JAVA (4.50)****Prerequisite:** MTH 215

Duration: 4

The course introduces the Java programming language and its features. Topics include introduction to object-oriented programming, basic control structures, Java graphics and GUI objects, exposure to event driven programming, arrays and strings in Java. Coverage includes inheritance, and polymorphism and exception handling

**DEN 423 Human Factors in Engineering (4.50)****Prerequisite:** MTH 215

Duration: 4

Consideration of human characteristics in the requirements for design of the systems, products and devices. Human-centered design with focus on human abilities, limitations and interface.

**DEN 426 Reliability Engineering (4.50)****Prerequisite:** MTH 215

Duration: 4

An introduction to reliability engineering with emphasis on practical applications and the mathematical concepts. Cover mechanical, electronic and software failure mechanisms, design and testing.

**DEN 429 Product Design Optimization (4.50)****Prerequisite:** MTH 215

Duration: 4

This course focuses on analytical and empirical tools that allow designers and manufacturing engineers to predict the manufacturing and assembly cost estimates for optimized design.

**EGR 219 Intro to Graphics and Auto CAD (4.50)****Prerequisite:** MTH 215

Duration: 4

Introduction to the latest version of Auto CAD software for two- and three-dimensional modeling, engineering graphics and technical drawings.

**EGR 220 Engineering Mathematics (4.50)****Prerequisite:** MTH 215

Duration: 4

An examination of the major mathematical tools for engineers and scientists.

**EGR 230 Electrical Circuits & Systems (4.50)****Prerequisite:** MTH 215

Duration: 4

A study of fundamentals of direct and alternating current, basic circuit theory, three-phase circuits, transformers, electrical generators, and motors.

**EGR 310 Engineering Economics (4.50)****Prerequisite:** MTH 215

Duration: 4

Economic Analysis for decision making with emphasis on rate of return, net present value, benefit-cost and multi-objective evaluation methods. Cost estimation and alternative analysis.

**MTH 220 Calculus I (4.50)****Prerequisite:** MTH 215, or Accuplacer test placement

Duration: 4

(Cross listed and equivalent to CSC208) An introduction to limits and continuity. It examines differentiation and integration concepts with applications to related rates, curve sketching, engineering optimization problems, and business applications. Students may not receive credit for both MTH220 and CSC208.

**MTH 311 Topics from Geometry (4.50)****Prerequisite:** MTH 215, or Accuplacer test placement

Duration: 4

A survey of the main concepts of Euclidean geometry with an emphasis on the axiomatic approach, constructions, logic of proof, and some ideas from non-Euclidean geometry including historical aspects. A study of axioms of Euclidean Geometry, inference rules, some fundamental theorems of Euclidean Geometry, and rigorous proofs will be offered.

**MTH 317 Mathematical Modeling (4.50)****Prerequisite:** MTH 210; MTH 215

Duration: 4

An introductory to mathematical modeling, utilizing a variety of diverse applications from physical, biological, business, social, and computer sciences. Discuss the limitations, as well as the capabilities, of mathematics as applied to understanding of our world. Teaches problem identification, models of solutions and model implementation. Graphing calculator is required.

**MTH 325 Discrete Mathematics (4.50)****Prerequisite:** MTH 215

Duration: 4

(Cross listed and equivalent to CSC331) This course studies combinatory and graph theory as the theoretical foundation for today's advanced technology. It analyzes algorithms, logic, circuits, number bases, and proofs. Ample applications (graphs, counting problems, Turing Machines, codes) examine the ideas of Euler, Boole, Floyd, Warshall, Dijkstra, Church and Turing, Shannon, Bernoulli. Graphing calculator is required. Students may not receive credit for both MTH325 and CSC331.

**MTH 410 Technology in Math Education (4.50)****Prerequisite:** MTH 215, or MTH 301

Duration: 4

Computer Technology in the Mathematics Classroom An overview of the computer-based technology in the mathematics classroom. Evaluates graphing calculators, and computer software such as Maple, Scientific Workplace, Geometer's Sketchpad, MiniTab, SPSS, and others to determine their value in illuminating concepts in the curriculum.

**MTH 411 Number Theory (4.50)****Prerequisite:** MTH 215; MTH 416

Duration: 4

A thorough examination of the fundamental principles of number systems. Topics explored include divisibility, Euclidean rings, irreducible polynomials, arithmetic functions, congruencies, the distribution of primes, and the Fundamental Theorem of Arithmetic. Active student engagement is prioritized through conjecture formulation, hypothesis testing, counterexample construction, logical argumentation, and proof development.

**MTH 412 History of Mathematics (4.50)****Prerequisite:** MTH 215, or MTH 301

Duration: 4

Examines currents in the development of mathematics and throughout ancient Egypt, Babylon, China, and the Middle East. Studies math's influence on society through the major events of Europe, contemporary developments, and some projections into the future, including the women and men who played key roles in the evolution of mathematics.

**MTH 417 Foundations of Geometry (4.50)****Prerequisite:** MTH 215, or MTH 311

Duration: 4

A discussion of fundamental ideas and processes common to Euclidean and Non-Euclidean Geometries: projective, affine and metric geometry. Examines the interplay between inductive and deductive reasoning and formal and informal proof. Addresses uses in science (transformations, scaling), art (Escher-type tessellations, projections), architecture (three-dimensional figures) and computer science (fractals, computer-aided design).

**PHL 336 Science, Technology & Humanity (4.50)****Prerequisite:** ENG 102

Duration: 4

This course examines the historical and philosophical evolution of the key conceptual frameworks of modern science and the technologies that coevolved with them, giving special emphasis to the ways this evolution has influenced 21st-century understandings of human life and personhood.

**DOCTORAL****1:1**

- EDL-9000: Educational Leadership Theories
- EDL-9100: Leadership for Diversity, Equity, Inclusion, and Social Justice
- EDL-9200: Leadership, Supervision, and Personnel in PK-12 Education
- EDL-9300: Legal Issues in PK-12 Education
- EDL-9400: PK-12 Curriculum, Instruction, and Assessment
- EDL-9500: Innovation for Change in Educational Organizations
- EDL-9600: Policy Development & Implementation in PK-12 Education
- EDL-9700: Finance & Budgeting in PK-12 Education

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