

# GRADUATE PROGRAMS IN ARTS AND SCIENCES

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## Degree Programs

Master of Science  
Community/Technical College Mathematics  
Marine and Environmental Biology

## MASTER OF SCIENCE IN COMMUNITY/TECHNICAL COLLEGE MATHEMATICS

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## Description

The program leading to the Master of Science degree in Community/Technical College Mathematics requires the completion of thirty-three semester hours in the fields of mathematics, education, computer science, and/or physical science. The primary focus of the program is the preparation of mathematics teachers for community and technical colleges state-wide and beyond. The curriculum will also strengthen secondary teachers' mathematics content understanding as well. The program consists of a mathematics/teacher education core consistent with post-secondary mathematics education training, as well as elective content selected from mathematics, education, physical science, and computer science. The elements of the Master of Science degree serve to make prospective community college mathematics educators proficient in their content areas, and to enhance the professional development of secondary and post-secondary instructors.

## Admission Requirements

In addition to all general requirements for admission to the university and to graduate studies, applicants must:

1. have a bachelor's degree (with mathematics training through differential equations, linear algebra, mathematical statistics, and a foundations course) from an accredited institution, AND
2. have a minimum GPA of 2.50 on a 4.00 scale, AND
3. attain a minimum GRE General Test score of 1000 (verbal plus quantitative), AND
4. submit three letters of recommendation.

An applicant who has a bachelor's degree and who has a minimum GPA of 2.00 on a 4.00 scale and who lacks exactly one of the admission requirements listed above may be admitted to pre-program status.

Once admitted to pre-program studies, a student may exit pre-program status by fulfilling the requirement [exactly one of (1) through (4) above] he or she lacked upon admission to pre-program. The missing requirement may be achieved by the following means. [Items (1) through (4) below correspond by number to item (1) through (4) listed above in Admission Requirements.]

The pre-program student must:

1. Successfully complete courses in differential equations, linear algebra, mathematical statistics, and foundations. (These courses cannot be applied toward the MSCTCM degree.)
2. Successfully complete courses in mathematics and the sciences until overall GPA or GPA on last 60 hours rises to 2.50. (Courses taken to fulfill this requirement cannot be applied toward the MSCTCM degree.) OR: Obtain approval for admission by a majority vote of the mathematics graduate faculty.
3. Take the GRE during the semester of admission to pre-program, and meet the admission criterion.
4. Submit three letters of recommendation during the semester of admission to pre-program.
5. In cases of items (3) and (4), no more than twelve semester hours of graduate credit (with no course grade lower than B) may be applied toward the MSCTCM degree.

## Graduate Course Work

Required Courses (18 hours)

MATH 509 (3) Logic and Foundations of Mathematics for Teachers (cornerstone course taken first semester)

MATH 510 (3) Number-theoretic and Discrete Structures

MATH 523 (3) Geometric and Algebraic Structures

MATH 584 (3) Technology and Communication in Mathematics Education (capstone course normally taken in final semester)

EDFR 501 (3) Education Research

EDCI 586 or EDCI 589 (3) Curriculum and Instruction Methods Course

## Elective Courses (15 hours)

Elective course work is selected from approved courses in mathematics, education, computer science, and/or physical science. At least nine hours of electives must be titled MATH.

The following are strongly recommended electives:

MATH 511 (3) Calculus and Analytic Structures

MATH 573 (3) Topics in the History of Mathematics

The following are recommended electives:

MATH 512 (3) Probability and Statistics

MATH 570 (3) Mathematics Modeling: An Experimental Approach for Teachers

Other approved electives include those in the following list. This list may not be comprehensive.

Mathematics

MATH: 405 (3), 461 (3), 530 (3), 540 (3), 557 (3), 558 (3), 588 (6), 589 (3), 590 (3);

#### Computer Science

CMPS: 402 (3), 406 (3), 410 (3), 412 (3), 416 (3), 418 (3);

#### Physical Science

PHSC: 473 (3), 474 (3);

#### Education

EDCI: 580 (3);

EDFR: 503 (3), 513 (3);

EDTL: 501 (3), 503 (3), 505 (3), 507 (3), 509 (3), 511 (3).

Note: A concentration for teachers of mathematics is available. Interested persons should contact the department head.

#### Master's Comprehensive Examination

During the final semester or session, candidates for the M.S. degree must take a comprehensive examination; an oral examination may also be required at the option of the student's committee if the student's performance on the written examination is less than satisfactory.

A candidate must be registered in the university for the semester or session in which the comprehensive examination is taken and must register for MATH 595.

A candidate who fails the examination may retake the examination at the next or a later regular administration of the examination. No special examination will be given. No candidate will be permitted a third examination.

#### Responsibility of Student

Graduate students are responsible for becoming fully acquainted with all regulations and requirements pertaining to them. Only regulations and requirements pertaining to graduate students are stipulated in this section of the *Catalog*, but general regulations and requirements pertaining to all students are to be found elsewhere in the *Catalog*. This *Catalog* is not to be interpreted as a contract between the university and the graduate student.

### MASTER OF SCIENCE IN MARINE AND ENVIRONMENTAL BIOLOGY

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#### Specific Requirements

Through this Master of Science program, students will be prepared for "real world" scientific marine and environmental technologies and skills to foster the economic development of the unique and vital natural resources of the region serviced by Nicholls State University. The program will teach students to

develop and apply the science of the twenty-first century to the needs of the region's economically important resources, its industries, and its communities.

Requirements for admission and completion of the M.S. program are listed below. A thesis based on graduate research, a publication on the thesis research, and an oral comprehensive exam is required.

#### Curricular Tracks

The M.S. program in Marine and Environmental Biology has two curricular tracks:

1. Pre-Marine and Environmental Biology - Non-degree track baccalaureate graduates taking Marine and Environmental M.S. graduate courses to accumulate postgraduate hours, or students working toward admission into the M.S. degree track by the Departmental Admissions Committee.
2. Marine and Environmental Biology - M.S. degree track students accepted into the M.S. program by the Departmental Admissions Committee, but working toward M.S. course prerequisites and/or acceptance of a thesis research project by their major professor and Thesis Research Committee; M.S. degree track students accepted into the program and working with their major professor and Thesis Research Committee toward the M.S. degree.

#### Minimum Admission Requirements

1. B.S. degree in a science curriculum
2. Minimum GPA of 3.00 on a 4.00 scale
3. Combined GRE of 1000 (verbal and quantitative)
4. Three letters of recommendation from professionals in the field
5. Interview with the Departmental M.S. Admissions Committee for acceptance into the M.S. in Marine and Environmental Biology track

#### Completion Requirements

1. Students must complete the 17 hours of core graduate courses and complete a minimum of 18 hours of graduate electives. No more than six hours of graduate electives may be from undergraduate/graduate 400\* level courses.
2. Students must take at least one course with LUMCON.
3. Students must compose and submit a thesis based on graduate research. In addition, a manuscript based upon thesis research must be submitted for publication prior to graduation.
4. Students must pass an oral defense of the thesis.
5. No more than six hours of transfer credit can be applied to graduation, and transfer must be (1) credit in a course applicable to the graduate training and (2) approved by the Thesis Research Committee, Graduate Coordinator, and Department Head.
6. No more than 6 hours of C's can be counted toward the degree and a minimum GPA of 3.0 must be maintained.
7. The graduate program must be completed in six years.
8. Other requirements will be in accordance with Graduate Studies as described in the Nicholls State University *Catalog*.

#### Graduate Course Work

Required courses and electives – 35 hours  
Required Courses: (17 hrs)

BIOL 501 (1)– Graduate Seminar  
BIOL 551 (3) – Marine and Environmental Biology I  
BIOL 552 (3)– Marine and Environmental Biology II  
BIOL 560 (1)– Marine and Environmental Biology Regulation, Law & Policy  
Workshop  
BIOL 571 (1)– Marine and Environmental Internship I  
BIOL 572 (1)– Marine and Environmental Internship II  
BIOL 591 (1) (592 (2), 593 (3), 594 (4)) – Thesis Research  
BIOL 599 (1)– Thesis

Elective Courses (minimum of 18 hrs. required; maximum of 6 hrs. from \*400 level; maximum of 6 hrs. from \*\*GEOM courses):

\*BIOL 421 (3)– Genome Biology  
\*BIOL 425 (4)– Applied and Environmental Microbiology  
\*BIOL 465 (4)– Marine Conservation and Management  
\*BIOL 472 (2), 473 (3), and 474 (4) - Special topics plus LUMCON based courses including, "Our Changing Coastal Ocean."  
\*BIOL 473 (3), 474 (4) – Other graduate LUMCON summer courses  
\*BIOL 480 (4)– Environmental Biotechnology  
\*BIOL 483 (3)– Marine and Estuarine Biology  
\*BIOL 490 (3)– Environmental Toxicology  
BIOL 504 (3)– -Ecological Restoration  
BIOL 535 (3)– Marine and Estuarine Invertebrate Immunity  
BIOL 541 (4)– Molecular Biotechnology  
BIOL 545 (3)– Environmental Public Health Microbiology  
BIOL 555 (3)– Advanced Oceanography  
BIOL 556 (3)– Biology of Polluted Waters  
BIOL 561 (3) – Wetlands Plant Biology  
BIOL 568 (3)– Professional Scientific Writing Laboratory  
BIOL 575 (3)– Environmental Diagnostics and Biomarkers  
BIOL 580 (3)– Bioremediation of Toxic Environments  
BIOL 581 (2)– Analytical Techniques for Environmental Applications  
BIOL 585 (3)– Aquatic Toxicology  
\*CHEM 490 (3)– Special Topics in Chemistry  
\*\*GEOM 501 (3) - GIS Applications  
\*\*GEOM 511 (3) - GPS for Mappers  
\*\*GEOM 521 (3) - Remote Sensing  
\*\*GEOM 531 (3) - Spatial Databases  
MATH 507 (3)- Biostatistics