FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Graduate Programs

Department Ocean and Mechanical Engineering

College Engineering and Computer Science

UGPC Approval _____
UFS Approval _____
Banner _____
Catalog _____

Program Name

Master of Science with Major in Mechanical Engineering

☐ **New Program***

☑ **Change Program***

Effective Date
(TERM & YEAR)

Please explain the requested change(s) and offer rationale below or on an attachment.

Editorial Change, update course numbering EML 6317, Advanced Control Systems replaces EML6930, Special topics (control) at several locations. Update course numbering to EML 6716, Advanced Fluid Dynamics replaces EML 6930, Special Topics (Fluid Dynamics) at one location.

*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.

Faculty Contact/Email/Phone

Francisco Presuel-Moreno, fpresuel@fau.edu, 954-924-7236

Consult and list departments that may be affected by the change(s) and attach documentation

Approved by		***Date***
Department Chair	Digitally signed by Manhar Dhanak DN: cn=Manhar Dhanak, o=Florida Atlantic University, ou=Ocean and Mechnical Engineering, email=dhanak@fau.edu, c=US Date: 2021.03.11 19:07:18 -05'00'	
College Curriculum Chair	Francisco Presuel-Moreno Digitally signed by Francisco Presuel-Moreno DN: cn=Francisco Presuel-Moreno, o=Florida Atlantic University, ou=Ocean and Mechanical Engineering, email=fpresuel@fau.edu, c=US Date: 2021.03.12 12:47:57 -05'00'	3/12/2021
College Dean	Digitally signed by Mihaela Cardei DN: cn=Mihaela Cardei, o=Florida Atlantic University, ou=Ocean and Mechanical Engineering, email=mcardei@fau.edu, c=US	3/12/2021
UGPC Chair		Apr 4, 2021
UGC Chair		Apr 5, 2021
Graduate College Dean		Apr 5, 2021
UFS President		
Provost		

Email this form and attachments to UGPC@fau.edu 10 days before the UGPC meeting.

COMBINED PROGRAMS

B.S.M.E. to M.S. Degree Program (Thesis Option)

Candidates seeking a combined program leading to both Bachelor of Science in Mechanical Engineering and Master of Science degrees with the thesis option must complete an approved program of at least 30 credits. Out of those 30, 9 credits of graduate coursework (5000 level or higher) will count toward both the bachelor's and master's degrees, as long as the following criteria are met:

1. The student has met the minimum 120 credits for the bachelor's degree; and

2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

A maximum of 9 credits may then be counted for both the bachelor's and master's programs if the total number of credits exceeds 150.

Prerequisite Coursework for Transfer Students
Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the *Transition Guides.*

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

Degree Requirements
Candidates must complete the following:

1.Three core courses (9 credits): EGM 6533, Advanced Strength of Materials; EML 6223, Mechanical Vibrations or EML 6317, Advanced Control Systems~~EML 6930, Special Topics (Control)~~; and EML 6716, Advanced Fluid Dynamics;

2. A math course (3 credits): EOC 5172, Mathematical Methods in Ocean Engineering 1;

3. Four technical electives (12 credits at the 5000 level or higher;

4. Must complete one semester of EML 5937, Graduate Seminar (0 credits) with grade of Satisfactory ("S");

5. Up to three courses may be taken while the student is an undergraduate;

6. Before the end of the student's third semester of full-time enrollment, a written thesis proposal must be submitted to the supervisory committee and defended in an oral examination;

7. A master's thesis (6 credits), which must be defended at an oral examination;

8. At least one-half of the credits must be at the 6000 level or above;

9. At least one-half of the credits must be from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section.

Top

B.S.M.E. to M.S. Degree Program (Non-Thesis Option)

Candidates seeking a combined program leading to both Bachelor of Science in Mechanical Engineering and Master of Science degrees with the non-thesis option must complete an approved program of at least 30 credits. Out of those 30, 9 credits of coursework (5000 level or higher) will count toward both the bachelor's and master's degrees.

Prerequisite Coursework for Transfer Students
Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the *Transition Guides.*

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

Degree Requirements
Candidates must complete the following:

1. Three core courses (9 credits): EGM 6533, Advanced Strength of Materials; EML 6223, Mechanical Vibrations or EML 6317, Advanced Control Systems~~EML 6930, Special Topics (Control)~~; and EML 6716, Advanced Fluid Dynamics;

2. A math course (3 credits): EOC 5172, Mathematical Methods in Ocean Engineering 1;

3. Six technical electives (18 credits);

4. Up to three courses, at the 5000 level or higher, may be taken while the student is an undergraduate;

5. Must complete one semester of EML 5937, Graduate Seminar (0 credits) with grade of Satisfactory ("S");

6. At the time of application for degree, students must submit a portfolio to their advisor consisting of four graduate projects from 10 courses in their program of study. The portfolio will be reviewed by the student's supervisory committee;

7. At least one-half of the credits must be at the 6000 level or above;

8. At least one-half of the credits must be from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section.

B.S.M.E. to M.S. Degree Program (Non-Thesis Option/Business Minor)

Candidates seeking a combined program leading to both Bachelor of Science in Mechanical Engineering and Master of Science degrees with the non-thesis option and with a minor in Business must complete an approved program of at least 36 credits. Out of those 36, 9 credits of coursework (5000 level or higher) will count toward both the bachelor's and master's degrees.

Prerequisite Coursework for Transfer Students
Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the *Transition Guides.*

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

Degree Requirements
Candidates must complete the following:

1. Three core courses (9 credits): EGM 6533, Advanced Strength of Materials; EML 6223, Mechanical Vibrations or EML 6317, Advanced Control Systems~~EML 6930, Special Topics (Control)~~; and EML 6716, Advanced Fluid Dynamics~~EML 6930, Special Topics (Fluid Dynamics)~~;

2. A math course (3 credits), Mathematical Methods in Ocean Engineering 1;

3. Three technical electives (9 credits) at the 5000 or 6000 level from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section;

4. Up to three courses at the 5000 level or higher, may be taken while the student is an undergraduate;

5. Must complete one semester of EML 5937, Graduate Seminar (0 credits) with grade of Satisfactory ("S");

6. Five business courses (15 credits) as described at the beginning of this College of Engineering and Computer Science section;

7. At the time of application for degree, students must submit a portfolio to their advisor consisting of four graduate projects from 12 courses in their program of study. The portfolio will be reviewed by the student's supervisory committee;

8. At least one-half of the credits must be at the 6000 level or above;

9. At least one-half of the credits must be from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section.

Top

MASTER'S PROGRAMS

The Master of Science program has both thesis and non-thesis options. The thesis option requires a minimum of 24 credits of coursework and a thesis (6 additional credits). The non-thesis option requires a minimum of 33 credits of coursework. Requirements for the Ph.D. program are described later in this section.

Each student must complete a comprehensive and coordinated Plan of Study requiring depth in one or more of the following areas: mechanical systems, solid body mechanics, fluid mechanics, heat transfer, thermal/fluid systems, helicopter dynamics, materials, manufacturing, controls, robotics and CAD/CAM. The Plan of Study includes all course and thesis work (if the thesis option is chosen) that the student expects to complete for the M.S. degree. Students submit their Plans of Study electronically for approval using the MyPOS system.

Admission Requirements
Usual admission requirements are as follows. Students with non-engineering bachelor's degrees, click here for additional requirements.

1. A baccalaureate degree in Engineering, Natural Science or Mathematics, but preferably in Mechanical Engineering and from a regionally accredited institution. A student who does not have a background in mechanical engineering should expect to take additional undergraduate mechanical engineering coursework.

2. Demonstrated proficiency in both written and spoken English. A student from a non-English-speaking country is required to take the Test of English as a Foreign Language (TOEFL) exam and achieve a score of at least 550 (CBT-213, iBT-79).

3. At least a 3.0 (of a 4.0 maximum) GPA in the last 60 credits attempted prior to graduation.

4. Submission of the Graduate Record Examination (GRE) score is required. GRE scores more than five years old will not be accepted. The GRE requirement is waived for applicants who have a bachelor's degree from FAU's Ocean and Mechanical Engineering Department with a GPA of at least 3.25 over the last 60 credits.

5. Petitions for admittance to the program will not be accepted when a student wishes to include more than five courses taken as a non-degree-seeking student.

Admission to Candidacy
A student is eligible to apply for candidacy when:

1. The student has completed a minimum of 9 credits as a graduate student.

2. The student has maintained a minimum GPA of 3.0 in all courses attempted as a graduate student.

3. The student has filed an approved Plan of Study for the degree program.

Students should file for candidacy as soon as they are eligible. Usually, no more than 20 credits of completed work before admission to candidacy will be accepted toward a degree program. A student should be admitted to candidacy prior to beginning work on thesis.

Degree Requirements
Students must satisfy all of the University graduate requirements.

Link to Master of Science with Major in Mechanical Engineering

Non-thesis Option and Non-thesis Option with a Business Minor

Link to Master of Science with Major in Mechanical Engineering and Engineering Management Minor

Top

Master of Science with Major in Mechanical Engineering (Thesis Option)

Candidates for the Master of Science degree with the thesis option must complete an approved program of at least 30 credits including:

1. Three core courses (9 credits): EGM 6533, Advanced Strength of Materials; EML 6223, Mechanical Vibrations or EML 6317, Advanced Control Systems~~EML 6930, Special Topics (Control)~~; and EML 6716, Advanced Fluid Dynamics;

2. A math course (3 credits): EOC 5172, Mathematical Methods in Ocean Engineering 1;

3. Four technical electives (12 credits) at the 5000 level or higher;

4. Must complete one semester of EML 5937, Graduate Seminar (0 credits) with grade of Satisfactory ("S");

5. Before the end of the student's third semester of full-time enrollment, a written thesis proposal must be submitted to the supervisory committee and defended in an oral examination;

6. A Master's thesis (6 credits), which must be defended at an oral examination;

7. At least one-half of the credits must be at the 6000 level or above;

8. At least one-half of the credits must be from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section.

Master of Science with Major in Mechanical Engineering
Non-Thesis Option and Non-Thesis Option with a Business Minor

Candidates for the Master of Science degree with the non-thesis option must complete an approved program of at least 30 credits including:

1. Three core courses (9 credits): EGM 6533, Advanced Strength of Materials; EML 6223, Mechanical Vibrations or EML 6317, Advanced Control Systems~~EML 6930, Special Topics (Control)~~; and EML 6716, Advanced Fluid Dynamics;

2. A math course (3 credits): EOC 5172, Mathematical Methods in Ocean Engineering 1;

3. Six technical electives (18 credits) at the 5000 or 6000 level;

4. Must complete one semester of EML 5937, Graduate Seminar (0 credits) with grade of Satisfactory ("S");

5. At the time of application for degree, students must submit a portfolio to their advisor consisting of four graduate projects from 10 courses in their program of study. The portfolio will be reviewed by the student's supervisory committee;

6. At least one-half of the credits must be at the 6000 level or above;

7. At least one-half of the credits must be from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section.

Candidates for the Master of Science degree with the non-thesis option and a Business minor must complete an approved program of at least 36 credits including:

1. Three core courses (9 credits): EGM 6533, Advanced Strength of Materials; EML 6223, Mechanical Vibrations or EML 6317, Advanced Control Systems~~EML 6930, Special Topics (Control)~~; and EML 6716, Advanced Fluid Dynamics;

2. A math course (3 credits): EOC 5172, Mathematical Methods in Ocean Engineering 1;

3. Three technical elective courses (9 credits) at the 5000 or 6000 level from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section;

4. Five business courses (15 credits) as described at the beginning of this College of Engineering and Computer Science section under the Business Minor heading;

5. Must complete one semester of EML 5937, Graduate Seminar (0 credits) with grade of Satisfactory ("S");

6. At the time of application for degree, students must submit a portfolio to their advisor consisting of four graduate projects from 12 courses in their program of study. The portfolio will be reviewed by the student's supervisory committee;

7. At least one-half of the credits must be at the 6000 level or above;

8. At least one-half of the credits must be from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section.

Top

Master of Science with Major in Mechanical Engineering and Engineering Management Minor

This Master of Science degree program with a minor in Engineering Management is a 36-credit program consisting of advanced courses in mechanical engineering as well as courses in the College of Business. Candidates for this program should have an undergraduate degree in mechanical engineering with a minimum GPA of 3.0. Submission of the Graduate Record Examination (GRE) is required. GRE scores more than five years old will not be accepted. The GRE requirement is waived for applicants who have a bachelor's degree from FAU's Ocean and Mechanical Engineering Department with a GPA of at least 3.25 over the last 60 credits. Non-English-speaking candidates must have a minimum score of 550 on the TOFEL. Two reference letters and at least two years of professional experience are also required.

Candidates for the Master of Science degree with Major in Mechanical Engineering and Engineering Management minor must complete an approved program of at least 36 credits including:

1. Three core courses (9 credits): EGM 6533, Advanced Strength of Materials; EML 6223, Mechanical Vibrations or EML 6317, Advanced Control Systems~~EML 6930, Special Topics (Control)~~; and EML 6716, Advanced Fluid Dynamics;

2. A math course (3 credits): EOC 5172, Mathematical Methods in Ocean Engineering 1;

3. Three elective courses (9 credits) from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section;

4. Must complete one semester of EML 5937, Graduate Seminar (0 credits) with grade of Satisfactory ("S");

5. Three required management courses (9 credits) listed in the table below;

6. Two management elective courses (6 credits) from the table below;

7. At the time of application for degree, students must submit a portfolio to their advisor consisting of four graduate projects from 12 courses in their program of study. The portfolio will be reviewed by the student's supervisory committee;

8. At least one-half of the credits must be at the 6000 level or above;

9. At least one-half of the credits must be from the list of Mechanical Engineering courses shown in the Engineering and Computer Science Course Descriptions section.

Required Management Courses (9 credits)		
Organizational Behavior	MAN 6245	3
Operations Management	MAN 6501	3
Project Management	MAN 6526	3

Management Elective Courses (6 credits)		
Select two courses from the list:		
Entrepreneurship, Creativity and Innovation	MAN 6299	3
Project Management	MAN 6526	3
Cross-Cultural Management and Human Resources	MAN 6609	3
International Business Operations	MAN 6614	3
Entrepreneurial Consulting Project	MAN 6806	1-4
Seminar in Entrepreneurship/Venture Management	MAN 6875	3
Global Environment of Management	MAN 6937	3