

Master of Science in Aerospace Engineering

2 Graduate Program Change 2022-23

I. General Information

The faculty member originating this proposal is to complete sections I and II.

Before starting this form, please review graduate curriculum website on policies and processes: <https://www.unlv.edu/graduatecollege/curriculum>

Click "**validate and launch proposal**" **button below.** Once the pop-up window comes up and displays an error message, click on the "show me" button (on the pop-up). This will highlight in red the required fields of this form. Fill in **ONLY** the red (required) fields.

With all red fields completed, click on the "**validate and launch proposal**" **button** again to launch the proposal. The pop-up this time should not display an error, and will display instead a "**launch proposal**" **button.** Click on the "**launch proposal**" **button** to launch.

After launch, please fill in all remaining fields in the form to reflect your intended changes, including edits to the schema section of this form (further explained below).

Department (s) (if Dual or Interdisciplinary please add all departments):*

Mechanical Engineering

Degree or Certificate Name: * Master of Science in Aerospace Engineering

Degree Type: *

Master of Science

Program Type: *

Master's

II. Program Changes

Proposed New CIP Code (if applicable):

Are you changing admission requirements? * Yes No

Are you changing program learning objectives? Yes No

If yes, describe changes to learning objectives:

Are you changing course requirements? Yes No

Are you changing degree completion requirements? Yes No

Are you changing the culminating experience? Yes (complete the culminating experience section below) No

Other Changes (e.g. subplan titles,...): Yes No

If not a Dual itself, is this program also available as part of a Dual-Degree offering? Yes No

Summary of Changes

Provide a brief summary of proposed changes: Add ME 682 Aerodynamics into the required course lists.

Minor terminology adjustments.

Provide a rationale for each proposed change: Aerodynamics is an important topic for aerospace. Many graduate students in Aerospace program take ME 682 Aerodynamics. It makes sense to add ME 682 into the required list.

Office of Online Education

Programs that are 100% online must contact the Office of Online Education (<https://www.unlv.edu/provost/online-education>).

Email: elizabeth.barrie@unlv.edu

What is the current delivery/mode of instruction for this program? 100% face-to-face courses Hybrid (some online courses; some face-to-face courses) 100% online courses

- Are you changing the delivery/mode of instruction? (select new mode):*
- 100% face-to-face courses
 - Hybrid (some online courses; some face-to-face courses)
 - 100% online courses (contact office of online education)
 - No Changes

Required Additional Documents:

Please attach required documents by navigating to the “attach a file” icon at the right of this form.

Information and forms available at the [Office of the Vice Provost for Academic Programs](#) website.

If changing to 100% online delivery, please attach the following:

Assessment Plan - A new assessment plan will be required when adding an exclusively online mode of delivery to a degree and it must be approved by the [Office of Academic Assessment](#), assessment@unlv.edu,

Dean's memo of support

Teach Out Plan (available at the [Office of the Vice Provost for Academic Programs](#) website).

- If 100% Online, attach the required documents and mark the checkboxes:
- Assessment Plan
 - Dean's memo of support
 - Teach Out Plan

Office of Educational Compliance

Programs that lead to professional licensure or certification must contact the Office of Educational Compliance (<https://www.unlv.edu/provost/ed-compliance>).

Email: leeann.fields@unlv.edu

- With this change, does this program lead to professional licensure or certification?*
- Yes (contact office of educational compliance)
 - No

SCHEMA SECTION

Please edit the schema section after launching the proposal. To launch, please complete all other fields of this form and click "validate and launch" at the bottom. If an error message pops up, please click "show me" and fill in all red (missing) fields in the form and click "validate and launch" again until successfully launched.

In this section, please use the instructions below to change the graduate catalog display of program requirements: descriptions, admissions, courses, degree completion, graduation, etc.

Please note that the new graduate catalog will display the exact information that you edit in this section.

INSTRUCTIONS:

1. Click on the "View Curriculum Schema" icon at the bottom of the "Schema Section."
2. If you are only adjusting existing content, click on the respective Core you would like to edit, then make your edits and click on "Save" as you go. If you are deleting a subplan or courses, simply delete the respective Cores or courses and adjust the descriptive content accordingly.

If you are adding new subplans and/or adding or substituting courses, please see the steps below:

Prior to following the steps below, please open in parallel a structurally similar program from the graduate catalog as a reference ([UNLV Graduate Catalog](#)). You will use this reference to review the sections of a program plan, and have direction on expected content.

3. Click "Add Core" to create blank "Cores." Create as many Cores as you will need. If unsure, refer to other subplans already in this program or to a reference in the graduate catalog to understand how many Cores you need and their expected content.
4. Click on each Core and rename them following your needs or a catalog reference, clicking on "Save" as you go.
5. Add content to all of the cores by clicking within the field to be edited and clicking "Save" as you go. Please note that course sections require instructions of how the credits must be taken (e.g. "Complete x credits by completing all of the following courses," or "Complete x credits of advisor-approved courses," or "Complete 3 credits of course-x and 6 credits of course-z," etc.).
6. To add courses, click on the "View Curriculum Courses" tab at the top of the schema window below, then click on the "Import Course" button at the bottom of the "View Curriculum Courses" window. Click on the available import catalog (only one will be available), and on the import window, select "filter by prefix." (1) Search for your desired course prefix; (2) then click "search available curriculum; (3) then click on all courses that will be imported. Add courses to proposal by clicking, at the very bottom, on the "Add Courses to Proposal" button. Repeat this process as often as you need until all courses are added to the proposal.
7. For courses that do not exist yet at the time of this proposal: Add the courses into the description box of the respective course section in the following way: "PREFIX - NUMBER - Course name, (credits)."
8. Add the courses into their respective course section by clicking "add course" within each course section.

QUESTIONS? Step-by-step guides are available at the [Graduate Curriculum Website](#), and at any time please contact gradcurriculum@unlv.edu

Plan Description

The objectives of the M.S.A.E. degree are to provide a quality graduate educational program that will complement the existing undergraduate and graduate curricula in mechanical engineering. The aerospace graduate program will improve and enhance the capabilities of those students seeking careers in the aerospace field and supporting engineering work for the aerospace and aviation technology community. The majority of students seeking the M.S.A.E. degree will have undergraduate degrees in the fields of mechanical or aerospace engineering, or closely related fields of engineering, applied physics, or applied mathematics; some will already have graduate degrees in the more conventional areas of engineering or the sciences. Those individuals with engineering (as well as physical science) interests will use the M.S.A.E. to develop careers as well as improve their skills in the aerospace and aviation industry. Students enrolling in the program on a full-time basis will likely assist engineering faculty in obtaining sponsored project funding and performing innovative aerospace and aviation engineering research.

For more information about your program including your graduate program handbook and learning outcomes please visit the [Degree Directory](#).

Plan Admission Requirements

[Application deadlines](#)

Applications available on the [UNLV Graduate College website](#).

In addition to the general requirements for admission to the Graduate College, an applicant for the M.S. program must complete the following requirements:

Applicants must complete the on-line process in the Grad Rebel Gateway system.

Mechanical Engineering applicants must provide two additional items while completing the process in the Grad Rebel Gateway system:

A written statement of purpose indicating interests and objectives in working toward a M.S. degree.

Two letters of recommendation using the online recommendation system. There is no specified format.

Each letter should detail the potential of the applicant for success in a Mechanical Engineering Ph.D. program.

The applicant must have a bachelor's degree in engineering or a closely related discipline. Admitted students with non-engineering

backgrounds will be required to complete a set of coursework requirements that will assure successful completion of the M.S.

specialization and qualify the student to sit for the Fundamentals of Engineering (FE) exam. The Graduate Program Committee or Graduate Coordinator will specify a list of required undergraduate courses that must be completed within the first year. These courses are in addition to those required for the graduate degree.

The applicant must submit an official copy of the Graduate Record Examination (GRE) test scores. The GRE university code for UNLV is 4861. The Mechanical Engineering Department code is 1502. The minimum preferred score is at or above 70 percentile range in the quantitative reasoning section. The Graduate Program Committee can modify this requirement if necessary. The GRE requirement is waived for students participating in the Integrated BS-MS subplan.

The GPC will examine the applicant's academic record and will make the final determination of the applicant's admissibility to the M.S. program. In general, a minimum post-baccalaureate GPA of 3.00 on a 4.00 scale or equivalent is preferred for admission in addition to a GPA of 3.00 on a 4.00 scale or equivalent in all engineering courses.

All domestic and international applicants must review and follow the [Graduate College Admission and Registration Requirements](#).

The Integrated BS-MS degree program is designed to provide high-achieving UNLV Mechanical Engineering undergraduate students with the opportunity to take graduate courses that can count toward both the B.S. and M.S. ME degree programs at UNLV. This will hopefully encourage them to continue with a graduate degree by reducing the time needed for degree completion. Up to nine credits of approved graduate-level coursework can be taken as technical electives for the grade of B or better during the senior year and those credits will be waived for the graduate degree. The GRE requirement is waived for students participating in the Integrated BS-MS subplan. The following conditions are needed to enroll in the Integrated BS-MS program:

A minimum of two semesters of full-time enrollment in B.S. of Mechanical Engineering program is required.

Applications are normally submitted with two semesters remaining in the senior year.

A minimum of 90 credits of coursework applicable to the B.S. of Mechanical Engineering degree with a cumulative GPA of 3.3 or higher must be completed before beginning the joint degree program.

Student has to choose the thesis option.

Students are accepted into a degree program as described in the Graduate Catalog. The faculty and corresponding sub-disciplines and sub-plans within the described programs are subject to change at any time.

Plan Requirements

See Subplan Requirements below.

[Subplan 1: Non-Thesis](#)

[Subplan 2: Thesis](#)

[Subplan 3: Integrated BS-MS](#)

Subplan 1 Requirements: Non-Thesis

Total Credits Required: 30

Course Requirements

Required Courses – Credits: 9

Complete three of the following courses:

ME 609 Turbomachinery	3
ME 682 Aerodynamics	3
ME 700 Advanced Fluid Mechanics I	3
ME 701 Advanced Fluid Mechanics II	3
ME 702 Computational Fluid Dynamics	3
ME 705 Conduction Heat Transfer	3
ME 706 Convective Heat Transfer	3
ME 740 Advanced Dynamics	3
ME 741 Energy and Variational Methods in Applied Mechanics I	3

Core Courses – Credits: 6

Complete two of the following courses:

ME 704 Finite Element Applications in Mechanical Engineering	3
ME 711 Advanced Thermodynamics	3
ME 717 Transport Phenomena	3
ME 720 Acoustics I	3
ME 721 Acoustics II	3
ME 725 Vibrations I	3
ME 726 Vibrations II	3

ME 729 Advanced Robotics	3
ME 774 Introduction to Theory of Elasticity and Plasticity I	3
ME 777 Application of High-Performance Computing Methods in Science and Engineering	3

Elective Courses – Credits: 12

Complete 12 credits of elective coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

Design Project – Credits: 3

ME 796 Design Project in Mechanical Engineering	1 – 3
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Degree Requirements

Requires 30 credits of approved graduate courses. At least 18 credits must be earned from 700-level courses, and 15 credits must be in engineering.

Students must make satisfactory progress toward degree completion as defined below:

File an approved degree program before the completion of nine credits of coursework.

Complete at least six credits of the approved program per calendar year.

Maintain a grade point average (GPA) of 3.00 on a 4.00 scale with no grades below C. Grades of C- or below are not acceptable.

Students must comply with Graduate College policy. If progress is not satisfactory, probation and separation may result, in accordance with the rules of the Graduate College.

Graduation Requirements

The student must submit all required forms to the Graduate College as well as apply for graduation up to two semesters prior to completing

well as apply for graduation up to two semesters prior to completing their degree requirements.

Successfully complete a design project.

Subplan 2 Requirements: Thesis

Total Credits Required: 30

Course Requirements

Required Courses – Credits: 9

Complete three of the following courses:

ME 609 Turbomachinery	3
ME 682 Aerodynamics	3
ME 700 Advanced Fluid Mechanics I	3
ME 701 Advanced Fluid Mechanics II	3
ME 702 Computational Fluid Dynamics	3
ME 705 Conduction Heat Transfer	3
ME 706 Convective Heat Transfer	3
ME 740 Advanced Dynamics	3
ME 741 Energy and Variational Methods in Applied Mechanics I	3

Core Courses – Credits: 6

Complete two of the following courses:

ME 704 Finite Element Applications in Mechanical Engineering	3
ME 711 Advanced Thermodynamics	3
ME 717 Transport Phenomena	3
ME 720 Acoustics I	3
ME 721 Acoustics II	3
ME 725 Vibrations I	3
ME 726 Vibrations II	3
ME 729 Advanced Robotics	3
ME 774 Introduction to Theory of Elasticity and Plasticity I	3
ME 777 Application of High-Performance Computing Methods in Science and Engineering	3

Elective Courses – Credits: 9

Complete 9 credits of elective coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

Thesis – Credits: 6

ME 797 Thesis in Mechanical Engineering

3 – 6

Degree Requirements

Requires 24 credits of approved graduate courses plus six credits of work associated with the master's level thesis, for a total of 30 credits. At least 15 credits must be earned from 700-level courses, and at least 15 credits must be in engineering. The final examination will include a defense of thesis.

Students must make satisfactory progress toward degree completion as defined below:

File an approved degree program before the completion of nine credits of coursework.

Complete at least six credits of the approved program per calendar year.

Maintain a grade point average (GPA) of 3.00 on a 4.00 scale with no grades below C. Grades of C- or below are not acceptable.

Students must comply with Graduate College policy. If progress is not satisfactory, probation and separation may result, in accordance with the rules of the Graduate College.

The student must identify a Thesis Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Thesis Committee that includes at least four members:

One Thesis Advisor. A student may have two co-Advisors but they count as one committee member.

Two Mechanical Engineering Department faculty members.

One Graduate College representative. The student, in consultation with their Advisor, is responsible for inviting

a committee member from within the university but outside the Mechanical Engineering Department. This

person is responsible for ensuring consistency and fairness throughout the UNLV graduate programs.

Graduation Requirements

The student must submit all required forms to the Graduate College as well as apply for graduation up to two semesters prior to completing their degree requirements.

The student must submit and successfully defend their thesis by the posted deadline. The defense must be advertised and is open to the public.

After the thesis defense, the student must electronically submit a properly formatted pdf copy of their thesis to the Graduate College for format check. Once the thesis format has been approved by the Graduate College, the student will submit the approved electronic version to ProQuest. Deadlines for thesis defenses, format check submissions, and the final ProQuest submission can be found [here](#).

Subplan 3 Requirements: Integrated BS-MS

Total Credits Required: 21-27

Students admitted into this subplan have taken 3, 6 or 9 credits of graduate level courses that were applied toward their B.S. degree in Mechanical Engineering at UNLV. These credits reduce the total needed to complete the M.S. degree.

Course Requirements

Required Courses – Credits: 9

Complete three of the following courses:

ME 609 Turbomachinery	3
ME 682 Aerodynamics	3
ME 700 Advanced Fluid Mechanics I	3

ME 701 Advanced Fluid Mechanics II	3
ME 702 Computational Fluid Dynamics	3
ME 705 Conduction Heat Transfer	3
ME 706 Convective Heat Transfer	3
ME 740 Advanced Dynamics	3
ME 741 Energy and Variational Methods in Applied Mechanics I	3

Core Courses – Credits: 6

Complete two of the following courses:

ME 704 Finite Element Applications in Mechanical Engineering	3
ME 711 Advanced Thermodynamics	3
ME 717 Transport Phenomena	3
ME 720 Acoustics I	3
ME 721 Acoustics II	3
ME 725 Vibrations I	3
ME 726 Vibrations II	3
ME 729 Advanced Robotics	3
ME 774 Introduction to Theory of Elasticity and Plasticity I	3
ME 777 Application of High-Performance Computing Methods in Science and Engineering	3

Electives – Credits: 0-6

Complete 0-6 credits of elective coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

Thesis – Credits: 6

ME 797 Thesis in Mechanical Engineering	3 – 6
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Degree Requirements

Total credits required depends on the total number of approved graduate-level coursework taken as technical electives (with a grade of B or better) during the senior year.

Requires 15-21 credits of approved graduate courses plus six credits of work associated with the master's level thesis, for a total of 21-27

of work associated with the master's level thesis, for a total of 21-27 credits. At least 15 credits must be earned from 700-level courses, and

at least 15 credits must be in engineering. The final examination will include a defense of thesis.

Students must make satisfactory progress toward degree completion as defined below:

File an approved degree program before the completion of nine credits of coursework.

Complete at least six credits of the approved program per calendar year.

Maintain a grade point average (GPA) of 3.00 on a 4.00 scale with no grades below C. Grades of C- or below are not acceptable.

The student must identify a Thesis Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Thesis Committee that includes at least four members:

One Thesis Advisor. A student may have two co-Advisors but they count as one committee member.

Two Mechanical Engineering Department faculty members.

One Graduate College representative. The student, in consultation with their Advisor, is responsible for inviting a committee member from within the university but outside the Mechanical Engineering Department. This person is responsible for ensuring consistency and fairness throughout the UNLV graduate programs.

Graduation Requirements

The student must submit all required forms to the Graduate College as well as apply for graduation up to two semesters prior to completing their degree requirements.

The student must submit and successfully defend their thesis by the posted deadline. The defense must be advertised and is open to the public.

After the thesis defense, the student must electronically submit a properly formatted pdf copy of their thesis to the Graduate College for format check. Once the thesis format has been approved by the Graduate College, the student will submit the approved electronic version to ProQuest. Deadlines for thesis defenses, format check submissions, and the final ProQuest submission can be found [here](#).

Plan Graduation Requirements

Refer to your subplan for Graduation Requirements.

[Subplan 1: Non-Thesis](#)

[Subplan 2: Thesis](#)

[Subplan 3: Integrated BS-MS](#)

Advising and Culminating Experience

With these changes, will students in this program need a Grad Advisory Committee (GAC) formed?

- Yes
 No

If yes, please list the applicable subplans that will need a GAC:

With these changes, will students be assigned a faculty advisory prior to GAC formation?

- Yes
 No

If yes, please list the applicable subplans that will need an advisor:

Comments:

For Master's program only: With these changes, does this program require a prospectus form?

- Yes
 No

If yes, please list applicable subplans:

With these changes, will the culminating experience be a course?

- Yes
 No

If yes, please provide course prefix, number and name:

With these changes, describe the culminating experience (requirements, if applicable-which subplans will need GACs, forms, etc.):

The [Degrees Directory](#) provides current and consistent degree information. Submission of this form indicates acknowledgment and understanding that every department is responsible creating and maintaining accurate and updated program information on the UNLV Degrees Directory.

If new courses are added as placeholders within this proposal, new courses must be created using a Course Create form simultaneously to the process of this proposal.

Degrees Directory Program Entry: Check this box to acknowledge the above statement.

Changes will be applicable to: Current Students
 New Students
 Both Current and New Students



If applicable to current students, changes are: Mandatory Optional


If mandatory: If mandatory, I confirm that all students will be notified in writing of these changes as approved by the graduate college
 Not Mandatory

Effective Date:

READY TO SUBMIT?

After making all your intended changes, please follow these steps:

1. Finish the launch of your proposal by clicking the decisions icon  located to the right of the form. This will display a new decision/approval field on the top right.
2. Click on "approve", add an optional comment if necessary, and then click on the "Make My Decision" button at the bottom to move the proposal forward to the next step. You will see a notification indicating that the proposal has moved forward. You will not be able to edit after moving the proposal forward.
3. Please note that it is your responsibility as the proposer to see that the proposal is reviewed and receives all necessary approvals. Please be encouraged to reach out to reviewers on each step, if necessary.
4. You can check the status of the proposal by clicking on the workflow status icon  to verify that the proposal has gone to the next step.

The workflow status icon  will also show you the current step of the proposal at any given time, and who are the reviewers at that step.

QUESTIONS? contact gradcurriculum@unlv.edu


III. Department Vote Information

Note: This section is to be filled out by the Department Chair on behalf of the department committee.

(The role has been assigned to the corresponding person on this step. If incorrect, please notify gradcurriculum@unlv.edu).

1. Review the proposal. Discuss and make appropriate revisions.
2. Fill in vote information in the fields below, along with the approval. If Dual or Interdisciplinary: add votes from all departments/colleges involved

3. Then approve/reject by clicking the decisions icon  located to the right of the form. This will display a new decision/approval field on the top right. Click on "approve", add an optional comment if necessary, and then click on the "Make My Decision" button at the bottom to move the proposal forward to the next step. You will see a notification indicating that the proposal has moved forward. You will not be able to edit after moving the proposal forward.

The workflow status icon  will also show you the current step of the proposal at any given time, and who are the reviewers at that step.

If there were any modifications to the proposal, please enter them in the comments box below:

Comments:

Date faculty voted on proposal: 12/10/21


Result of vote: 17-0


Manner of vote: online

IV. College Vote Information

Note: This section is to be filled out by the Academic Associate Dean on behalf of the college/school committee.

(The role has been assigned to the corresponding person on this step. If incorrect, please notify gradcurriculum@unlv.edu).

1. Review the proposal. Discuss and make appropriate revisions.
2. Fill in vote information in the fields below, along with the approval. If Dual or Interdisciplinary: add votes from all departments/colleges involved
3. Then approve/reject by clicking the decisions icon  located to the right of the form. This will display a new decision/approval field on the top right. Click on "approve", add an optional comment if necessary, and then click on the "Make My Decision" button at the bottom to move the proposal forward to the next step. You will see a notification indicating that the proposal has moved forward. You will not be able to edit after moving the proposal forward.

The workflow status icon  will also show you the current step of the proposal at any given time, and who are the reviewers at that step.

Date faculty voted on proposal: 1/21/2022

Result of vote: 3/0/0

Manner of vote: online

V. Graduate College Use Only - Code Request Items

Note: This section is for graduate college use only.

Academic Organization:

Academic Program Code:

Academic Plan Code:

**Plan Description (30
chars):**

**Transcript
Description:**

Subplan Code:

Subplan Description:

Subplan Type: Track
 Concentration
 Option/Dual
 Embedded/Track

**Subplan on
Transcript?** YES NO

**Effective Date and
First Term Valid:**

**Length / Avg. Time to
Degree:**

CIP code and title:

Other Codes Needed:

**Description /
implementation field
(do not edit)**

Comments for Master of Science in Aerospace Engineering

Curriculog	3/2/2022 4:22 pm Reply
Emily Lin has approved this proposal on Graduate College Dean.	
Gregory Moody	3/2/2022 1:33 pm Reply
10-0 in support. WebEx meeting held March 1, 2022 Please send how much of the program is taught online to Gail.	
Curriculog	3/2/2022 1:33 pm Reply
Gregory Moody has approved this proposal on Graduate Programs Committee.	
Curriculog	3/2/2022 1:14 pm Reply
Graduate Curriculum has approved this proposal on Graduate Programs Committee.	
Curriculog	1/28/2022 8:37 am Reply
Mohamed Trabia has approved this proposal on School/College Associate Dean/ Dean.	
Melissa Morris	1/24/2022 8:28 am Reply
3/4 of the committee voted to approve this proposal 1 member did not reply to request for review and vote	
Curriculog	1/24/2022 8:28 am Reply
Melissa Morris has approved this proposal on School/College Committee.	
Curriculog	1/5/2022 10:06 am Reply
Mechanical Chair has approved this proposal on Department Chair.	
Curriculog	1/5/2022 9:50 am Reply
Mechanical Graduate Coordinator has approved this proposal on Graduate Coordinator.	
Curriculog	1/5/2022 9:00 am Reply
Graduate Curriculum has approved this proposal on Technical Review.	
Curriculog	12/16/2021 10:42 am Reply

Hui Zhao has approved this proposal on Originator.

Curriculog

12/16/2021 10:41 am [Reply](#)

Hui Zhao has launched this proposal.

Curriculog

12/16/2021 10:35 am [Reply](#)

Hui Zhao imported from the map 2022-2023 - Working Graduate Catalog into the following proposal fields: I. General Information: Department (s) (if Dual or Interdisciplinary please add all departments);, I. General Information: Degree or Certificate Name:, I. General Information: Degree Type:, I. General Information: Program Type:, II. Program Changes: Proposed Curriculum:, V. Graduate College Use Only - Code Request Items: Description / implementation field (do not edit).