

Doctor of Philosophy - Mechanical Engineering

Plan Description

The Department of Mechanical Engineering offers a program leading to the Ph.D. degree in Engineering in the field of Mechanical Engineering. The program also offers the Ph.D. degree with a concentration in the field of Nuclear Engineering.

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](#).

Application for the Ph. D. program can be completed by one of two mechanisms. The Post-Master's subplan requires the student to complete an M. S. degree in Engineering or equivalent with a major in mechanical engineering or closely related fields (nuclear engineering or health physics for the Nuclear concentration subplan). The Post-Bachelor's subplan allows those undergraduates with outstanding undergraduate backgrounds to enter the Ph. D. program without having to complete an M. S. degree. The degree requirements for both options are the same beyond the B. S. degree excluding the completion of a master's thesis.

In order to be admitted to the Ph. D. program in Engineering in the field of Mechanical Engineering, a student must complete the following requirements:

1. Applicants must complete the on-line process in the Grad Rebel Gateway system.
2. Mechanical Engineering applicants must provide two additional items while completing the process in the Grad Rebel Gateway system:
 1. Submit a written statement of purpose indicating interests and objectives in working toward a Ph. D. degree. This is a 1-2 page essay describing the applicant's reasons for considering graduate study, goals after completion of the graduate degree, and the applicant's specific areas of interest.
 2. Submit three 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.
3. Candidates who do not meet all the requirements may be admitted with conditional or provisional status. Details of the conditions or provisions required will be provided with the notification of admittance.
4. Before acceptance into the Ph. D. program, potential students may take courses as a non-degree seeking student. Up to 15 credits can be applied to the degree program if they meet curriculum requirements.
5. 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 required preferred** score is at or above 75

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-PhD subplan.

6. All domestic and international applicants must review and follow the [Graduate College Admission and Registration Requirements](#).
7. Admitted students with non-engineering backgrounds will be required to complete a set of courses that will assure successful completion of the Ph. D. 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.

Post-Master's subplan

1. The applicant must have a Master of Science in Engineering degree or equivalent with a major in mechanical engineering or a closely allied field.
2. A minimum post-baccalaureate GPA of 3.30 (on a 4.00 scale) is required for graduates from accredited U. S. institutions. The Graduate College is responsible for international GPA interpretation.

Post-Bachelor's subplan

1. The applicant must have a bachelor's degree in engineering or a closely related discipline.
2. A minimum GPA of 3.50 (on a 4.00 scale) is required for graduates from accredited U. S. institutions. The Graduate College is responsible for international GPA interpretation.

Integrated BS-PhD subplan

The Integrated BS-PhD 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 Ph. D. 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 course work 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-PhD subplan. The following conditions are needed to enroll in the Integrated BS-PhD program:

1. A minimum of two semesters of full-time enrollment in B. S. of Mechanical Engineering program is required.
2. Applications are normally submitted with two semesters remaining in the senior year.
3. A minimum of 90 credits of course work applicable to the B. S. of Mechanical Engineering degree with a cumulative GPA of 3.50 or higher must be completed before beginning the joint degree program.
4. Student must submit three letters of recommendation to the Mechanical Engineering Graduate Program Coordinator.

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: Post-Master's](#)

[Subplan 2: Post-Master's Nuclear Engineering](#)

[Subplan 3: Post-Bachelor's](#)

[Subplan 4: Post-Bachelor's Nuclear Engineering](#)

[Subplan 5: Integrated BS-PhD](#)

[Subplan 6: Integrated BS-PhD Nuclear Engineering](#)

Subplan 1 Requirements: Post-Master's

Total Credits Required: 39

Course Requirements

Required Courses – Credits: 9

Complete 9 credits from any Mechanical Engineering 600- or 700-level courses.

Elective Courses – Credits: 12

Complete 12 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

Dissertation – Credits: 18

ME 799 Dissertation

1 – 6

Degree Requirements

1. Complete a minimum of 21 credits of course work beyond the degree of Master of Science in Engineering (M. S.) or equivalent with an overall minimum GPA of 3.20 and a minimum GPA of 2.70 (B-) in each class. Ph. D. candidates who do not maintain this GPA requirement will be placed on probation.
2. Out of the 21 credits of course work a minimum of 18 of these credits must be 700-level courses, and no more than 6 credits can be from ME 791 Graduate

- Independent Study. In addition to these course requirements, a minimum of 18 credits of Dissertation is required.
3. The student's Doctoral Advisory Committee may add other requirements in accordance with the individual's background and area of study. No more than 15 non-matriculated credits including transfer credits are allowed.
 4. The student must identify a Dissertation Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Doctoral Advisory Committee that includes at least five members:
 1. One Dissertation Advisor. A student may have two co-Advisors but they count as one committee member.
 2. Three Mechanical Engineering Department faculty members. At the discretion of the Dissertation Advisor and student, one of these three can be from a relevant supporting field outside of the department or university.
 3. 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.
 5. The program of study must be submitted by the second semester of study. The program of study is to be prepared by the student and their doctoral advisor, and must be approved by the student's Doctoral Advisory Committee and the GPC.
 6. The student must pass a written Qualifying Exam consisting of two sections, Mathematics and a Major subject area chosen from the following list:
 1. Dynamics and Control
 2. Fluid Mechanics
 3. Material Science
 4. Solid Mechanics and Mechanical Design
 5. Thermal Sciences
 6. Nuclear Engineering

These examinations are prepared by a department committee and based on undergraduate senior level courses. Qualifying exams are held every semester. The first attempt at taking the qualifying exam must be scheduled during the first year of study. They can be taken a maximum of two times. Failure to take the exam within the first year or failure to pass the exam in the second attempt will automatically result in terminating the student from the program.

7. Students must submit a written report to their Doctoral Advisory Committee consisting of a relevant literature review, dissertation research objectives, and outline of planned work to meet those objectives. The student must also present this proposal to their committee and be prepared to discuss and defend their objectives and plan. This report and presentation is known as the "Preliminary Exam".
 1. The Preliminary Exam must be scheduled within one semester of passing the Qualifying Exam.

2. The Preliminary Exam can be taken only once per semester but may be repeated until passed.
8. The student is advanced to candidacy for the Ph. D. upon completion of all course work, the Qualifying Exam and the Preliminary Exam.

Graduation Requirements

See Plan Graduation Requirements below.

Subplan 2 Requirements: Post-Master's Nuclear Engineering

Total Credits Required: 39

Course Requirements

Required Courses – Credits: 9

Students in the Nuclear Engineering concentration must take three courses (9 credits) from the following list:

ME 655 Fundamentals of Nuclear Engineering	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 707 Radiation Heat Transfer	3
ME 708 Convective Boiling and Condensation	3
ME 711 Advanced Thermodynamics	3
ME 754 Introduction to Nuclear Criticality Safety	3
ME 755 Nuclear Criticality Safety Engineering	3
ME 756 Monte Carlo Methods in Nuclear Engineering	3
ME 757 Radiation Monitoring and Safeguards Systems	3
ME 758 Accelerator Applications in Nuclear Engineering	3
ME 760 Waste Management And The Nuclear Fuel Cycle	3
ME 762 Nuclear Power Engineering	3
ME 763 Nuclear Reactor Analysis	3
HPS 602 Radiation Detection	3
HPS 603 Radiation Physics and Instrumentation Laboratory	3
HPS 701 Applied Nuclear Physics	3
HPS 703 Radiation Interactions and Transport	3

HPS 719 Introduction to Radioanalytical Chemistry	1
HPS 720 Radiation Dosimetry	3
HPS 730 Advanced Radiation Biology	3

Elective Courses – Credits: 12

Complete 12 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

Dissertation – Credits: 18

ME 799 Dissertation	1 – 6
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Degree Requirements

1. Complete a minimum of 21 credits of course work beyond the degree of Master of Science in Engineering (M. S.) or equivalent with an overall minimum GPA of 3.20 and a minimum GPA of 2.70 (B-) in each class. Ph. D. candidates who do not maintain this GPA requirement will be placed on probation.
2. Out of the 21 credits of course work a minimum of 18 of these credits must be 700-level courses, and no more than 6 credits can be from ME 791 Graduate Independent Study. In addition to these course requirements, a minimum of 18 credits of Dissertation is required.
3. The student's Doctoral Advisory Committee may add other requirements in accordance with the individual's background and area of study. No more than 15 non-matriculated credits including transfer credits are allowed.
4. The student must identify a Dissertation Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Doctoral Advisory Committee that includes at least five members:
 1. One Dissertation Advisor. A student may have two co-Advisors but they count as one committee member.
 2. Three Mechanical Engineering Department faculty members. At the discretion of the Dissertation Advisor and student, one of these three can be from a relevant supporting field outside of the department or university.
 3. 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.
5. The program of study must be submitted by the second semester of study. The program of study is to be prepared by the student and their doctoral advisor, and must be approved by the student's Doctoral Advisory Committee and the GPC.

6. The student must pass a written Qualifying Exam consisting of two sections, Mathematics and a Major subject area chosen from the following list:

1. Dynamics and Control
2. Fluid Mechanics
3. Material Science
4. Solid Mechanics and Mechanical Design
5. Thermal Sciences
6. Nuclear Engineering

These examinations are prepared by a department committee and based on undergraduate senior level courses. Qualifying exams are held every semester. The first attempt at taking the qualifying exam must be scheduled during the first year of study. They can be taken a maximum of two times. Failure to take the exam within the first year or failure to pass the exam in the second attempt will automatically result in terminating the student from the program.

7. Students must submit a written report to their Doctoral Advisory Committee consisting of a relevant literature review, dissertation research objectives, and outline of planned work to meet those objectives. The student must also present this proposal to their committee and be prepared to discuss and defend their objectives and plan. This report and presentation is known as the "Preliminary Exam".

1. The Preliminary Exam must be scheduled within one semester of passing the Qualifying Exam.
2. The Preliminary Exam can be taken only once per semester but may be repeated until passed.

8. The student is advanced to candidacy for the Ph. D. upon completion of all course work, the Qualifying Exam and the Preliminary Exam.

Graduation Requirements

See Plan Graduation Requirements below.

Subplan 3 Requirements: Post-Bachelor's

Total Credits Required: 63

Course Requirements

Required Courses – Credits: 18

Complete 18 credits from any Mechanical Engineering 600- or 700-level courses.

New Core Elective Courses – Credits: 9

Complete 9 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

New Core Independent Study – Credits: ~~6~~ 3

Students are required to take ~~6~~ 3 credits of Independent Study

ME 791 Independent Study in Mechanical Engineering

1 – 3

New Core Design Project-Credits: 3

ME 796 Design Project in Mechanical Engineering

1 – 3

New Core Master Degree in Mechanical Engineering

After successfully completing the requirements above, students are eligible to earn the Master ~~Degree~~ of Science in Engineering-Mechanical Engineering

Elective Courses – Credits: ~~27~~ 12

Complete ~~27~~ 12 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

Dissertation – Credits: 18

ME 799 Dissertation

1 – 6

Degree Requirements

1. Complete a minimum of 45 credits of course work beyond the degree of Bachelor of Science in Engineering (B. S.) or equivalent with an overall minimum GPA of 3. 20 and a minimum GPA of 2. 70 (B-) in each class. Ph. D. candidates who do not maintain this GPA requirement will be placed on probation. Students on academic

- probation may be transferred to the M. S. M. E. Program depending on the student's academic record.
2. Out of the 45 credits of course work, a minimum of 33 credits must be in 700-level courses, and no more than 9 credits can be from ME 791 Graduate Independent Study. In addition to these course requirements, a minimum of 18 credits of Dissertation is required.
 3. The student's doctoral advisory committee may add more requirements in accordance with the individual's background and field of study. No more than 15 non-matriculated credits including transfer credits is allowed.
 4. The student must identify a Dissertation Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Doctoral Advisory Committee that includes at least five members:
 1. One Dissertation Advisor. A student may have two co-Advisors but they count as one committee member.
 2. Three Mechanical Engineering Department faculty members. At the discretion of the Dissertation Advisor and student, one of these three can be from a relevant supporting field outside of the department or university.
 3. 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.
 5. The program of study must be submitted by the second semester of study. The program of study is to be prepared by the student and their doctoral advisor, and must be approved by the student's Doctoral Advisory Committee and the GPC.
 6. The student must pass a written Qualifying Exam consisting of two sections, Mathematics and a Major subject area chosen from the following list:
 1. Dynamics and Control
 2. Fluid Mechanics
 3. Material Science
 4. Solid Mechanics and Mechanical Design
 5. Thermal Sciences
 6. Nuclear Engineering

These examinations are prepared by a department committee and based on undergraduate senior level courses. Qualifying exams are held every semester. The qualifying exams must be scheduled during the first year of study. They can be taken a maximum of two times. Failure to take the exam within the first year or failure to pass the exam in the second attempt will automatically result in terminating the student from the program.

7. Students must submit a written report to their Doctoral Advisory Committee consisting of a relevant literature review, dissertation research objectives, and outline of planned work to meet those objectives. The student must also present this proposal to their committee and be prepared to discuss and defend their objectives and plan. This report and presentation is known as the "Preliminary Exam".

1. The Preliminary Exam must be scheduled within one semester of passing the Qualifying Exam.
 2. The Preliminary Exam can be taken only once per semester but may be repeated until passed.
8. The student is advanced to candidacy for the Ph. D. upon completion of all course work, the Qualifying Exam and the Preliminary Exam.

Graduation Requirements

See Plan Graduation Requirements below.

Subplan 4 Requirements: Post-Bachelor's Nuclear Engineering

Total Credits Required: 63

Course Requirements

Required Courses – Credits: 18

Complete 3 courses (9 credits) from the following list and 9 credits from any Mechanical Engineering 600- or 700-level courses.

ME 655 Fundamentals of Nuclear Engineering	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 707 Radiation Heat Transfer	3
ME 708 Convective Boiling and Condensation	3
ME 711 Advanced Thermodynamics	3
ME 754 Introduction to Nuclear Criticality Safety	3
ME 755 Nuclear Criticality Safety Engineering	3
ME 756 Monte Carlo Methods in Nuclear Engineering	3
ME 760 Waste Management And The Nuclear Fuel Cycle	3
ME 762 Nuclear Power Engineering	3
ME 763 Nuclear Reactor Analysis	3
HPS 602 Radiation Detection	3
HPS 603 Radiation Physics and Instrumentation Laboratory	3
HPS 701 Applied Nuclear Physics	3
HPS 703 Radiation Interactions and Transport	3
HPS 719 Introduction to Radioanalytical Chemistry	1

HPS 720 Radiation Dosimetry	3
HPS 730 Advanced Radiation Biology	3

New Core Elective Courses – Credits: 9

Complete 9 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

New Core Independent Study – Credits: ~~6~~ 3

Students are required to take ~~6~~ 3 credits of Independent Study

ME 791 Independent Study in Mechanical Engineering	1 – 3
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New Core Design Project-Credits: 3

ME 796 Design Project in Mechanical Engineering	1 – 3
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New Core Master Degree in Mechanical Engineering

After successfully completing the requirements above, students are eligible to earn the Master ~~Degree~~ of Science in Engineering-Mechanical Engineering

Elective Courses – Credits: ~~27~~ 12

Complete ~~27~~ 12 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

Dissertation – Credits: 18

ME 799 Dissertation	1 – 6
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Degree Requirements

1. Complete a minimum of 45 credits of course work beyond the degree of Bachelor of Science in Engineering (B. S.) or equivalent with an overall minimum GPA of 3. 20 and a minimum GPA of 2. 70 (B-) in each class. Ph. D. candidates who do not

- maintain this GPA requirement will be placed on probation. Students on academic probation may be transferred to the M. S. M. E. Program depending on the student's academic record.
2. Out of the 45 credits of course work, a minimum of 33 credits must be in 700-level courses, and no more than 9 credits can be from ME 791 Graduate Independent Study. In addition to these course requirements, a minimum of 18 credits of Dissertation is required.
 3. The student's doctoral advisory committee may add more requirements in accordance with the individual's background and field of study. No more than 15 non-matriculated credits including transfer credits is allowed.
 4. The student must identify a Dissertation Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Doctoral Advisory Committee that includes at least five members:
 1. One Dissertation Advisor. A student may have two co-Advisors but they count as one committee member.
 2. Three Mechanical Engineering Department faculty members. At the discretion of the Dissertation Advisor and student, one of these three can be from a relevant supporting field outside of the department or university.
 3. 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.
 5. The program of study must be submitted by the second semester of study. The program of study is to be prepared by the student and their doctoral advisor, and must be approved by the student's Doctoral Advisory Committee and the GPC.
 6. The student must pass a written Qualifying Exam consisting of two sections, Mathematics and a Major subject area chosen from the following list:
 1. Dynamics and Control
 2. Fluid Mechanics
 3. Material Science
 4. Solid Mechanics and Mechanical Design
 5. Thermal Sciences
 6. Nuclear Engineering

These examinations are prepared by a department committee and based on undergraduate senior level courses. Qualifying exams are held every semester. The qualifying exams must be scheduled during the first year of study. They can be taken a maximum of two times. Failure to take the exam within the first year or failure to pass the exam in the second attempt will automatically result in terminating the student from the program.
 7. Students must submit a written report to their Doctoral Advisory Committee consisting of a relevant literature review, dissertation research objectives, and outline of planned work to meet those objectives. The student must also present this proposal to their committee and be prepared to discuss and defend their

objectives and plan. This report and presentation is known as the "Preliminary Exam".

1. The Preliminary Exam must be scheduled within one semester of passing the Qualifying Exam.
 2. The Preliminary Exam can be taken only once per semester but may be repeated until passed.
8. The student is advanced to candidacy for the Ph. D. upon completion of all course work, the Qualifying Exam and the Preliminary Exam.

Graduation Requirements

See Plan Graduation Requirements below.

Subplan 5 Requirements: Integrated BS-PhD

Total Credits Required: 54-60

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 Ph.D. degree.

Course Requirements

Required Courses – Credits: 18

Complete 18 credits from any Mechanical Engineering 600- or 700-level courses.

New Core Elective Courses – Credits: 9

Complete 9 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

New Core Independent Study – Credits: ~~6~~ 3

Students are required to take ~~6~~ 3 credits of Independent Study

ME 791 Independent Study in Mechanical Engineering

1 – 3

New-Core Design Project-Credits: 3

ME 796 Design Project in Mechanical Engineering

1 – 3

New-Core Master Degree in Mechanical Engineering

After successfully completing the requirements above, students are eligible to earn the Master-Degree of Science in Engineering-Mechanical Engineering

Elective Courses – Credits: ~~18-24~~ 3-9

Complete ~~18-24~~ 3-9 credits of 600- or 700-level coursework from within the College of Engineering. The total number of credits depends on the number of graduate credits taken toward the ~~student's~~ student's B. S. degree. Courses from outside the College of Engineering may be taken with advisor approval.

Dissertation – Credits: 18

ME 799 Dissertation

1 – 6

Degree Requirements

1. Complete a minimum of 36-42 credits of course work beyond the degree of Bachelor of Science in Engineering (B. S.) or equivalent with an overall minimum GPA of 3. 20 and a minimum GPA of 2. 70 (B-) in each class. The exact number of credits needed depends on the number of graduate credits applied toward the students' B. S. degree. Ph. D. candidates who do not maintain this GPA requirement will be placed on probation. Students on academic probation may be transferred to the M. S. M. E. Program depending on the student's academic record.
2. Out of the 36-42 credits of course work, a minimum of 33 credits must be in 700-level courses, and no more than 9 credits can be from ME 791 Graduate Independent Study. Students who took 700-level courses toward their B. S. degree can count these credits toward the required total of 33 700-level credits. In addition to these course requirements, a minimum of 18 credits of Dissertation is required.
3. The student's doctoral advisory committee may add more requirements in accordance with the individual's background and field of study. No more than 15 non-matriculated credits including transfer credits is allowed.
4. The student must identify a Dissertation Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Doctoral Advisory Committee that includes at least five members:
 1. One Dissertation Advisor. A student may have two co-Advisors but they count as one committee member.

2. Three Mechanical Engineering Department faculty members. At the discretion of the Dissertation Advisor and student, one of these three can be from a relevant supporting field outside of the department or university.
 3. 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.
5. The program of study must be submitted by the second semester of study. The program of study is to be prepared by the student and their doctoral advisor, and must be approved by the student's Doctoral Advisory Committee and the GPC.
6. The student must pass a written Qualifying Exam consisting of two sections, Mathematics and a Major subject area chosen from the following list:
1. Dynamics and Control
 2. Fluid Mechanics
 3. Material Science
 4. Solid Mechanics and Mechanical Design
 5. Thermal Sciences
 6. Nuclear Engineering

These examinations are prepared by a department committee and based on undergraduate senior level courses. Qualifying exams are held every semester. The qualifying exams must be scheduled during the first year of study. They can be taken a maximum of two times. Failure to take the exam within the first year or failure to pass the exam in the second attempt will automatically result in terminating the student from the program.

7. Students must submit a written report to their Doctoral Advisory Committee consisting of a relevant literature review, dissertation research objectives, and outline of planned work to meet those objectives. The student must also present this proposal to their committee and be prepared to discuss and defend their objectives and plan. This report and presentation is known as the "Preliminary Exam".
1. The Preliminary Exam must be scheduled within one semester of passing the Qualifying Exam.
 2. The Preliminary Exam can be taken only once per semester but may be repeated until passed.
8. The student is advanced to candidacy for the Ph. D. upon completion of all course work, the Qualifying Exam and the Preliminary Exam.

Graduation Requirements

[See Plan Graduation Requirements below.](#)

Subplan 6 Requirements: Integrated BS-PhD Nuclear Engineering

Total Credits Required: 54-60

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 Ph.D. degree.

Course Requirements

Required Courses – Credits: 18

Complete 9 credits from any Mechanical Engineering 600- or 700-level courses and an additional 9 credits from the following list of courses:

ME 655 Fundamentals of Nuclear Engineering	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 707 Radiation Heat Transfer	3
ME 708 Convective Boiling and Condensation	3
ME 711 Advanced Thermodynamics	3
ME 754 Introduction to Nuclear Criticality Safety	3
ME 755 Nuclear Criticality Safety Engineering	3
ME 756 Monte Carlo Methods in Nuclear Engineering	3
ME 760 Waste Management And The Nuclear Fuel Cycle	3
ME 762 Nuclear Power Engineering	3
ME 763 Nuclear Reactor Analysis	3
HPS 602 Radiation Detection	3
HPS 603 Radiation Physics and Instrumentation Laboratory	3
HPS 701 Applied Nuclear Physics	3
HPS 703 Radiation Interactions and Transport	3
HPS 719 Introduction to Radioanalytical Chemistry	1
HPS 720 Radiation Dosimetry	3
HPS 730 Advanced Radiation Biology	3

New-Core Elective Courses – Credits: 9

Complete 9 credits of 600- or 700-level coursework from within the College of Engineering. Courses from outside the College of Engineering may be taken with advisor approval.

New Core Independent Study – Credits: ~~6~~ 3

Students are required to take ~~6~~ 3 credits of Independent Study

ME 791 Independent Study in Mechanical Engineering

1 – 3

New Core Design Project-Credits: 3

ME 796 Design Project in Mechanical Engineering

1 – 3

New Core Master Degree in Mechanical Engineering

After successfully completing the requirements above, students are eligible to earn the Master ~~Degree~~ of Science in Engineering-Mechanical Engineering

Elective Courses – Credits: ~~18-24~~ 3-9

Complete ~~18-24~~ 3-9 credits of 600- or 700-level coursework from within the College of Engineering. The total number of credits depends on the number of graduate credits taken toward the ~~student's~~ student's B. S. degree. Courses from outside the College of Engineering may be taken with advisor approval.

Dissertation – Credits: 18

ME 799 Dissertation

1 – 6

Degree Requirements

1. Complete a minimum of 36-42 credits of course work beyond the degree of Bachelor of Science in Engineering (B. S.) or equivalent with an overall minimum GPA of 3. 20 and a minimum GPA of 2. 70 (B-) in each class. The exact number of credits needed depends on the number of graduate credits applied toward the students' B. S. degree. Ph. D. candidates who do not maintain this GPA requirement will be placed on probation. Students on academic probation may be transferred to the M. S. M. E. Program depending on the student's academic record.
2. Out of the 36-42 credits of course work, a minimum of 33 credits must be in 700-level courses, and no more than 9 credits can be from ME 791 Graduate Independent Study. Students who took 700-level courses toward their B. S. degree can count these credits toward the required total of 33 700-level credits. In addition to these course requirements, a minimum of 18 credits of Dissertation is required.

3. The student's doctoral advisory committee may add more requirements in accordance with the individual's background and field of study. No more than 15 non-matriculated credits including transfer credits is allowed.
4. The student must identify a Dissertation Advisor within the first semester of joining the program. The student, in consultation with their Advisor, will form a Doctoral Advisory Committee that includes at least five members:
 1. One Dissertation Advisor. A student may have two co-Advisors but they count as one committee member.
 2. Three Mechanical Engineering Department faculty members. At the discretion of the Dissertation Advisor and student, one of these three can be from a relevant supporting field outside of the department or university.
 3. 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.
5. The program of study must be submitted by the second semester of study. The program of study is to be prepared by the student and their doctoral advisor, and must be approved by the student's Doctoral Advisory Committee and the GPC.
6. The student must pass a written Qualifying Exam consisting of two sections, Mathematics and a Major subject area chosen from the following list:
 1. Dynamics and Control
 2. Fluid Mechanics
 3. Material Science
 4. Solid Mechanics and Mechanical Design
 5. Thermal Sciences
 6. Nuclear Engineering

These examinations are prepared by a department committee and based on undergraduate senior level courses. Qualifying exams are held every semester. The qualifying exams must be scheduled during the first year of study. They can be taken a maximum of two times. Failure to take the exam within the first year or failure to pass the exam in the second attempt will automatically result in terminating the student from the program.

7. Students must submit a written report to their Doctoral Advisory Committee consisting of a relevant literature review, dissertation research objectives, and outline of planned work to meet those objectives. The student must also present this proposal to their committee and be prepared to discuss and defend their objectives and plan. This report and presentation is known as the "Preliminary Exam".
 1. The Preliminary Exam must be scheduled within one semester of passing the Qualifying Exam.
 2. The Preliminary Exam can be taken only once per semester but may be repeated until passed.

8. The student is advanced to candidacy for the Ph. D. upon completion of all course work, the Qualifying Exam and the Preliminary Exam.

Graduation Requirements

See Plan Graduation Requirements below.

Plan Graduation Requirements

1. 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.
2. The student must submit and successfully defend their dissertation by the posted deadline. The defense must be advertised and is open to the public.
3. After the dissertation defense, the student must electronically submit a properly formatted pdf copy of their dissertation to the Graduate College for format check. Once the dissertation format has been approved by the Graduate College, the student will submit the approved electronic version to ProQuest. Deadlines for dissertation defenses, format check submissions, and the final ProQuest submission can be found [here](#).