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1. Aims and Scope
The Mechanical Engineering (ME) program at KAUST aspires to become a world leading ME program by focusing on cutting-edge basic and applied research in the following areas: structures and mechanics of solids, composite materials, fluid dynamics, thermal sciences, combustion, energy, control and dynamics. Furthermore, within each of these research areas, the emphasis is on interdisciplinary research and collaborative research with top-tier institutions around the globe. The ME program also engages with the various research centers at KAUST, particularly the Clean Combustion Research Center.

The ME program course curriculum is modern and rigorous and courses in the program provide a solid foundation in each area, covering subjects such as mechanical behavior of engineering materials, continuum mechanics, thermodynamics, experimental and numerical combustion, computational fluid dynamics and control theory. Our graduates are technically well trained to be productive members of the modern world society at large and specifically suited for research careers in academia, industry and government research laboratories.

2. Assessment Test (If applicable)
Students are admitted to KAUST from a wide variety of programs and backgrounds. In order to facilitate the design of an appropriate study plan for each individual student, all admitted students without an MS are required to take a written assessment exam when they arrive on Campus. The purpose of the assessment is to determine whether students have mastered the prerequisites for undertaking graduate-level courses taught in the program. The Academic Advisor works with admitted students to develop a study plan if needed. Students are encouraged to prepare for the assessment by refreshing the general knowledge gained from their undergraduate education before arriving at KAUST. The remedial study plan requirements must be satisfactorily completed, in addition to the University degree requirements.

3. Master's Degree Requirements
It is the sole responsibility of the student to plan her/his graduate program in consultation with her/his advisor. Students are required to meet all deadlines. Students should be aware that most Core Courses are offered only once per year.

The Master’s Degree (M.S.) is awarded upon successful completion of a minimum of 36 credit hours. A minimum GPA of 3.0 must be achieved to graduate. Individual courses require a minimum of a 'B-' for course credit. Students are expected to complete the M.S. degree in three semesters and one Summer Session. Satisfactory participation in every KAUST’s Summer Session is mandatory. Summer Session courses are credit bearing and apply towards the degree.

The M.S. degree has the following components:
- Core Courses
- Elective Courses
- Research/Capstone Experience
- Graduate Seminar 298 (non-credit). All students are required to register and receive a Satisfactory grade for every semester of the program they attend.

3.1 M.S. Course Requirements

3.1.1 Core Courses (twelve credits)
To complete these twelve credit hours in Mechanical Engineering, the student should register for four (4) Core Courses among those listed in Master’s Course List.

- ME 200 A, B – Fluid Mechanics
- ME 211 A, B – Mechanics of Structures and Solids
ME 212 A, B – Continuum Mechanics  
ME 221 A, B – Control Theory  
ME 222 A, B – Mechatronics and Intelligent Systems  
ME 232 A, B – Advanced Dynamics  
ME 234 A, B – Introduction to Kinematics and Robotics  
ME 241 – Thermodynamics  
ME 242 – Heat and Mass Transfer

These Core Courses are designed to provide a student with the background needed to establish a solid foundation in the program area.

3.1.2 Mathematics Requirements (six credit)  
At least two graduate-level courses (i.e., courses numbered 200 and higher) in applied mathematics are required. It is recommended that students take Applied Mathematics I and II (AMCS 201 and 202), as these courses provide a strong foundation in applied mathematics which is essential for a research career in ME.

To complete these six credit hours, the student should register for two AMCS or STAT courses among those listed in Master's Course Requirements.

3.1.3 Elective Courses (six credits)  
To complete these six credit hours, the student should register for two Elective Courses among those listed in the Course List (see Section 5 - Program Courses and Descriptions).

Two graduate-level courses (i.e., courses numbered 200 and higher) must be chosen with the approval of the student's advisor.

ME 214 – Experimental Methods  
ME 224 – System Identification and Estimation  
ME 243 – Statistical Mechanics  
ME 244 – Combustion  
ME 250 – Energy  
ME 252 – Sustainable Energy Engineering  
ME 261 – Application of Atmospheric Pressure Plasma  
ME 300 – Advanced Fluid Mechanics  
ME 302 – Multi-Phase Flows  
ME 304 – Experimental Methods in Fluid Mechanics  
ME 305 A, B – Computational Fluid Dynamics  
ME 306 – Hydrodynamic Stability  
ME 307 – Turbulence  
ME 308 – Introduction to Plasma Physics and Magneto-hydrodynamics  
ME 310 – Mechanics and Materials Aspects of Fracture  
ME 313 A, B – Theory of Structures  
ME 314 – Plasticity  
ME 316 – Micromechanics  
ME 317 A, B – Mechanics of Composite Materials and Structures  
ME 319 A, B – Computational Solid Mechanics  
ME 320 – Geometry of Nonlinear Systems  
ME 324 – Advanced Control Systems  
ME 326 – Robust Control  
ME 340 – Advanced Combustion Theory  
ME 342 – Combustion Kinetics  
ME 344 – Gas Dynamics
ME 346 – Turbulent Combustion
ME 348 – Introduction to Spectroscopy and Laser Diagnostics
ME 394A – Contemporary Topics in Fluid Mechanics
ME 394B – Contemporary Topics in Solid Mechanics
ME 394C – Contemporary Topics in Control Theory and Practice
ME 394D – Contemporary Topics in Dynamics
ME 394E – Contemporary Topics in Thermal Science and Engineering

The elective courses (which exclude research, internship credits, and IED courses) are designed to allow each student to tailor his/her educational experience to meet individual research and educational objectives, with the permission of the student’s academic advisor.

3.1.4 Research/Capstone Experience (twelve credits)
See sections for thesis and non-thesis options below.

3.1.5 Winter Enrichment Program
Students are required to satisfactorily complete at least one full Winter Enrichment Program (WEP).

3.2 M.S. Thesis Option
Students wishing to pursue the thesis option must apply by the ninth week of their second semester for a thesis and must have at least a 3.2 cumulative GPA.

The selected thesis advisor must be a fulltime program-affiliated Assistant, Associate or Full Professor at KAUST. This advisor can only become project affiliated for the specific thesis project upon program level approval. Project affiliation approval must be completed prior to commencing research.

3.2.1 M.S. Thesis Defense Requirements
An oral defense of the M.S. Thesis is required, although it may be waived by the Dean’s Office under exceptional circumstances. A requirement of a public presentation and all other details are left to the discretion of the thesis committee.

A written thesis is required. It is advisable that the student submits a final copy of the thesis to the Thesis Committee Members at least two weeks prior to the defense date.

- Students are required to comply with the university formatting guidelines provided by the library [CLICK HERE](#)
- Students are responsible for scheduling the thesis defense date with his/her thesis committee.
- A pass is achieved when the committee agrees with no more than one dissenting vote, otherwise the student fails. The final approval must be submitted at the latest two weeks before the end of the semester.

3.2.2 M.S. Thesis Defense Committee
The M.S. Thesis Defense Committee, which must be approved by the student’s Dean, must consist of at least three members and typically includes no more than four members. At least two of the required members must be KAUST Faculty. The Chair, plus one additional Faculty Member must be affiliated with the student’s program. This membership can be summarized as:

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<th>Role</th>
<th>Program Status</th>
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Member Role Program Status
Notes:
- Members 1-3 are required. Member 4 is optional.
- Co-Chairs may serve as Members 2, 3, or 4, but may not be a Research Scientist.
- Adjunct Professors and Professors Emeriti may retain their roles on current Committees, but may not serve as Chair on any new Committees.
- Professors of Practice and Research Professors may serve as Members 2, 3 or 4 depending upon their affiliation with the student’s program. They may also serve as Co-Chairs.
- Visiting Professors may serve as Member 4.

View a list of faculty and their affiliations: CLICK HERE

3.3 M.S. Non-Thesis Option
Students wishing to pursue the non-thesis option must complete a minimum of six credits of Directed Research (299). Summer internship credits may be used to fulfill the research requirements provided that the Summer internship is research-based. Summer internships are subject to approval by the student’s academic advisor.

Students must complete the remaining credits through one or a combination of the options listed below:
- Broadening Experience Courses: Courses that broaden a student’s M.S. experience.
- Internship: Research-based Summer Internship (295). Students are only allowed to take one internship.
- PhD Courses: Courses numbered at the 300 level.

4. Doctor of Philosophy
The Doctor of Philosophy (Ph.D.) Degree is designed to prepare students for research careers in academia and industry. It is offered exclusively as a fulltime program.

There is a minimum residency requirement at KAUST of three and a half years for students entering with a B.S. Degree and two and a half years for students entering with a M.S. Degree. A minimum GPA of 3.0 must be achieved on all doctoral coursework. Individual courses require a minimum of a ‘B-' to earn course credit.

The Ph.D. Degree includes the following steps:
- Securing a Dissertation Advisor.
- Successful completion of Program Coursework.
- Passing the Qualifying Examination.
- Passing the Dissertation Proposal Defense to obtain candidacy status.
- Preparing, submitting and successfully defending a Doctoral Dissertation.

4.1 Ph.D. Course Requirements
The required coursework varies for students entering the Ph.D. Degree with a B.S. Degree or a relevant M.S. Degree. Students holding a B.S. Degree must complete all Program Core/Mandatory Courses and Elective Courses outlined in the M.S. Degree section and are also required to complete the Ph.D. courses below. Students entering with a B.S. Degree may also qualify to earn the M.S. Degree by satisfying the M.S. Degree requirements; however, it is the student’s responsibility to declare their intentions to
graduate with an M.S.

Students entering the Ph.D. Degree with a relevant M.S. Degree must complete the requirements below, though additional courses may be required by the Dissertation Advisor.

**Ph.D. Courses**
- At least two 300-level courses.
- Graduate Seminar 398 (non-credit): All students are required to register and receive a Satisfactory grade for every semester the program requires they attend.
- Winter Enrichment Program: Students are required to satisfactorily complete at least one full Winter Enrichment Program (WEP) as part of the degree requirements. Students who completed WEP requirements while earning the M.S. Degree are not required to enroll in a full WEP for a second time in the Ph.D. Degree.
- Satisfactory participation in every KAUST’s Summer Session is mandatory. Summer Session courses are credit bearing and apply towards the degree.

**4.2 Ph.D. Designation of Dissertation Advisor**
The selected Dissertation Advisor must be a full time program-affiliated Professor at KAUST. The student may also select an advisor from another program at KAUST. This advisor can only become project affiliated for the specific dissertation project with program level approval. Project affiliation approval must be completed prior to commencing research.

View a list of faculty and their affiliations: [CLICK HERE](#)

**4.3 Ph.D. Candidacy**
In addition to the coursework requirements, the student must successfully complete the required Ph.D. qualification milestones to progress towards Ph.D. candidacy status. These milestones consist of the subject-based qualifying examination and Ph.D. Proposal Defense.

**4.3.1 Ph.D. Dissertation Proposal Defense Committee**
The Ph.D. Dissertation Proposal Defense Committee, which must be approved by the student’s Dean, must consist of at least three members and typically includes no more than six members. The Chair, plus one additional Faculty Member must be affiliated with the student’s program.

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<td>1</td>
<td>Chair</td>
<td>Within Program</td>
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<td>2</td>
<td>Faculty</td>
<td>Within Program</td>
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<tr>
<td>3</td>
<td>Faculty</td>
<td>Outside Program</td>
</tr>
<tr>
<td>4</td>
<td>Approved Research Scientist</td>
<td>Inside KAUST</td>
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Notes:
- Members 1-3 are required. Member 4 is optional.
- Co- Chairs may serve as Members 2 or 3.
- Adjunct Professors and Professors Emeriti may retain their roles on current Committees, but may not serve as Chair on any new Committees.
- Professors of Practice and Research Professors may serve as Members 2 or 3 depending upon their affiliation with the student’s program. They may also serve as Co-Chairs.
Once constituted, the composition of the Proposal Committee can only be changed with the approval of both the Dissertation Advisor and the Dean.

View a list of faculty and their affiliations: CLICK HERE

4.3.2 Ph.D. Dissertation Proposal Defense
The purpose of the Dissertation Proposal Defense is to demonstrate that the student has the ability and is adequately prepared to undertake Ph.D.-level research in the proposed area. This preparation includes necessary knowledge of the chosen subject, a review of the literature and preparatory theory or experiment as applicable.

The Dissertation Proposal Defense is the second part of the qualification milestones that must be completed to become a Ph.D. Candidate. Ph.D. students are required to complete the Dissertation Proposal Defense within one year after passing the qualifying examination. The Dissertation Proposal Defense includes two aspects: a written Research Proposal and an oral Research Proposal Defense. Ph.D. students must request to present the Dissertation Proposal Defense to the Proposal Dissertation Committee at the beginning of the Semester they will defend their proposal.

There are four possible outcomes from this Dissertation Proposal Defense:
- Pass
- Pass with conditions
- Fail with retake
- Fail without retake

A pass is achieved when the committee agrees with no more than one dissenting vote, otherwise the student fails.

In the instance of a Pass with Conditions, the entire committee must agree on the required conditions and if they cannot, the Dean decides. The deadline to complete the conditions is one month after the defense date, unless the committee unanimously agrees to change it.

In the instance of a Fail without Retake, the decision of the committee must be unanimous. The deadline to complete the retake is six months after the defense date, unless the committee unanimously agrees to reduce it. Students who fail the Dissertation Proposal Defense, or who fail the Retake will be dismissed from the University.

A student who successfully passes the Dissertation Proposal Defense is deemed a Ph.D. Candidate.

4.4 Ph.D. Defense
To graduate, a Ph.D. candidate has to form a Ph.D. Dissertation Defense Committee, finalize the Ph.D. dissertation and successfully defend his/her Ph.D. dissertation.

4.4.1 Ph.D. Dissertation Defense Committee
The Ph.D. Dissertation Defense Committee, which must be approved by the student’s Dean, must consist of at least four members and typically includes no more than six members. At least three of the required members must be KAUST Faculty and one must be an Examiner who is external to KAUST. The Chair, plus one additional Faculty Member must be affiliated with the student’s Program. The External Examiner is not required to attend the Defense, but must write a report on the dissertation and may attend the Dissertation Defense at the discretion of the program.

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### 4.4.2 Ph.D. Dissertation Defense

The Ph.D. Degree requires the passing of the defense and acceptance of the dissertation. The final defense is a public presentation that consists of an oral defense followed by questions and may last a maximum of three hours.

The student must determine the defense date with agreement of all the members of the Dissertation Committee, meet deadlines for submitting graduation forms and inform the committee of his/her progress. It is the responsibility of the student to submit the required documents to the Graduate Program Coordinator at the beginning of the semester they intend to defend. It is also expected that the student submits their written dissertation to the committee at least two months prior to the defense date in order to receive feedback.

The written dissertation is required to comply with the University Formatting Guidelines which are on the library website: [CLICK HERE](#)

There are four possible outcomes from this Dissertation Final Defense:
- Pass
- Pass with conditions
- Fail with retake
- Fail without retake

A pass is achieved when the committee agrees with no more than one dissenting vote, otherwise the student fails. If more than one member casts a negative vote, one retake of the oral defense is permitted if the entire committee agrees. In the instance of a 'Pass with Conditions', the entire committee must agree on the required conditions and if they cannot, the Dean decides. The deadline to complete the revisions is up to one month after the defense date, unless the committee unanimously agrees to reduce it. The deadline to complete the retake is as decided by the defense committee with a maximum of six months after the defense date, unless the committee unanimously
agrees to reduce it. Students who fail without retake the Dissertation Defense or who fail the retake will be dismissed from the University.

Evaluation of the Ph.D. Dissertation Defense is recorded by submitting the Result of Ph.D. Dissertation Defense Examination form within three days after the Defense to the Registrar’s Office.

5. Program Courses and Descriptions

Course Notation:

Each course is listed prefaced with its unique number and post fixed with (L-C-R) where:

- **L** - the lecture hours to count towards fulfilling the student workload during the semester.
- **C** - the recitation or laboratory hours
- **R** - the credit hours towards fulfilling a degree course requirement.

E.g. CS220 Data Analytics (3-0-3) has a total of three hours of lectures per week, has no labs and earns three credits for the semester.

100-level courses are preparatory in nature and do not count towards the MS or PhD degrees.

**ME 100 – Basic Principles of Mechanics (3-0-0)**
Prerequisite: None.
SOLID MECHANICS: Equilibrium conditions and determination of forces on structures, Determination of internal force systems in structures, Definitions of stress and strain, Mechanical properties of solid materials, Structural components under axial loads, torsional loads, bending, and combined loads, beam theory.
FLUID MECHANICS: Fluid properties, fluid forces, fluid statics and kinematics, Conservation of mass, momentum and energy in fixed, deforming, and moving control volumes, boundary layer concept, lift and drag, pressure and friction drag, streamlining and drag reduction.

**ME 101 – Basic Principles of Thermodynamics (3-0-0)**
Prerequisite: None.
Pressure, temperature and general properties, work and heat transfer in processes, power, conservation principle for mass and energy, reversible processes, the 2nd law of thermodynamics, steady state devices, transient processes, heat engines, power producing cycles, refrigerator and heat pumps, basic constrained optimization based on Lagrange multipliers (needed for chemical equilibrium), basic differentiation skills and understanding of homogeneous functions (for mathematical thermodynamics)

**ME 199 – Directed Study in Mechanical Engineering (3 -0-0) (variable credit up to a maximum of 12 credits)**
A course of self-study in a particular topic as directed by faculty and approved by the division.

**ME 200 A, B – Fluid Mechanics (3-0-3)**
Prerequisite: ME 200B requires ME 200A.
Fundamentals of fluid mechanics. Microscopic and macroscopic properties of liquids and gases; the continuum hypothesis; review of thermodynamics; general equations of motion; kinematics; stresses; constitutive relations; vorticity, circulation; Bernoulli’s equation; potential flow; thin-airfoil theory; surface gravity waves; buoyancy-driven flows; rotating flows; viscous creeping flow; viscous boundary layers; introduction to stability and turbulence; quasi one-dimensional compressible flow; shock waves; unsteady compressible flow; acoustics.
ME 211 A, B – Mechanics of Structures and Solids (3-0-3)
Prerequisite: ME 211B requires ME 211A.
Static stress analysis. Basic concepts of continuum mechanics. Variational theorems and approximate solutions. Introduction to fracture mechanics, damage mechanics and theory of plasticity. A variety of special topics will be discussed in the second term such as, but not limited to: homogenization strategies, anisotropic damage theory, micromechanics of cracking in laminated media and micromechanics based damage models, identification of parameters of models of materials by Digital Image Correlation.

ME 212 A, B – Continuum Mechanics (3-0-3)
Prerequisite: ME 212b. Requires ME 211a and ME 212a.

ME 214 – Experimental Methods (2-1-3)
Prerequisite: ME 200 A, B or ME 211 A, B or equivalent (may be taken concurrently).
Lectures on experiment design and implementation. Measurement methods, transducer fundamentals, instrumentation, optical systems, signal processing, noise theory, analog and digital electronic fundamentals, with data acquisition and processing systems.

ME 221 A, B – Control Theory (2-1-3)
Prerequisite: ME 221b. Requires ME 221a.
An introduction to analysis and design of feedback control systems, including classical control theory in the time and frequency domain. Modeling of physical, biological, and information systems using linear and nonlinear differential equations. Linear vs. nonlinear models, and local vs. global behavior. Input/output response, modeling and model reduction, Stability and performance of interconnected systems, including use of block diagrams, Bode plots, the Nyquist criterion, and Lyapunov functions. Robustness and uncertainty management in feedback systems through stochastic and deterministic methods. Basic principles of feedback and its use as a tool for altering the dynamics of systems and managing uncertainty methods. Introductory random processes, Kalman filtering, norms of signals and systems. Topics in 221B: The aim of this course is to introduce the student to the area of nonlinear control systems with a focus on systems’ analysis and control design. Nonlinear phenomena including multiple equilibria, limit cycles and bifurcations will be presented. Lyapunov and input/output stability will be discussed. Examples of control design will be studied such as feedback linearization and sliding mode control.

ME 222 A, B – Mechatronics and Intelligent Systems (2-1-3)
Prerequisite: ME 222B requires ME 222A.
prototyping of real-time closed-loop computer control of electromechanical systems; robotic manipulation.

**ME 224 – System Identification and Estimation (3-0-3)**
Prerequisite: ME 221 A, B (ME 221B can be taken concurrently).

**ME 232 A, B – Advanced Dynamics (3-0-3)**
Prerequisite: ME 232B requires ME 232A.

**ME 234 A, B – Introduction to Kinematics and Robotics (3-0-3)**
Prerequisite: ME 234B requires ME 234A.
Introduction to the study of planar, rotational and spatial motions with applications to robotics, computers, computer graphics, and mechanics. Topics in kinematic analysis will include screw theory, rotational representations, matrix groups and Lie algebras. Applications include robot kinematics, mobility in mechanisms and kinematics of open and closed chain mechanisms. Additional topics in robotics include path planning for robot manipulators, dynamics and control and assembly. Course work will include laboratory demonstrations using simple robot manipulators.

**ME 241 – Thermodynamics (3-0-3)**

**ME 242 – Heat and Mass Transfer (3-0-3)**
Transport properties, conservation equations, conduction heat transfer, forced and natural convective heat and momentum transfer in laminar and turbulent flows, boundary layer concepts, thermal radiation and mass diffusion.

**ME 243 – Statistical Mechanics (3-0-3)**
Prerequisite: ME 241 or equivalent.
This is a course on Statistical mechanics that is divided into four (4) parts of assorted topics. It starts from an overview of some basic concepts in thermodynamics and exposes the formal structure of equilibrium statistical mechanics with applications to ideal non-interacting and interacting systems. The course then dwells on more advanced topics such as the liquid state, critical phenomena, Ising model and the renormalization group. In the third part, Kinetic theory is presented through a thorough discussion of the Boltzmann equation and the derivations of the continuum equations. Transport processes are then discussed and transport coefficients are calculated. The theory of Brownian motion is also described as another approach to describe non-equilibrium processes. In the last section, Monte Carlo methods are applied to calculate various macroscopic properties for some lattice models.
ME 244 – Combustion (3-0-3)
Prerequisite: ME 241 or equivalent.
Basic principles including chemical equilibrium, Arrhenius law, and Rankine-Hugoniot relations will be first discussed. Multi-component conservation equations with chemical reaction will be introduced. Various characteristics of premixed and diffusion flames will be studied which covers flame structure, flame stability, flame stabilization, flammability limit, quenching distance and thermal explosion. Combustion phenomena in gas turbines, gasoline engines, diesel engines and power plants will be discussed. A matched asymptotic expansion technique will be introduced and applied in analyzing flame structures.

ME 250 – Energy (3-0-3)
Prerequisite: ME 241 or equivalent.

ME 252 – Sustainable Energy Engineering (3-0-3)
Prerequisite: AMCS 201 and AMCS 202 (may be taken concurrently), ME 250.
An in-depth examination of engineering systems to convert, store, transport, and use energy, with emphasis on technologies that reduce or eliminate dependence on fossil fuels and/or emission of greenhouse gases. Topics include thermodynamics of energy conversion, energy resources, stationary power generation (vapor power cycles, combined cycles, solar thermal systems, nuclear fission and fusion, solar photovoltaics, fuel cells, wind, geothermal), carbon sequestration, alternative fuels (hydrogen, biofuels), and transportation systems (internal combustion engines, gas turbines, fuel cell and electric vehicles). The course will emphasize quantitative methods to assess and compare different technologies.

ME 261 – Application of Atmospheric Pressure Plasma (3-0-3)
Prerequisite: None.

ME 294 – Contemporary Topics in Mechanical Engineering (3-0-0)
A course of current interest. Topics are not permanent and the content of the course will change to reflect recurring themes and topical interest. The content will be approved by the division.

ME 295 – Internship (6 credits)
Prerequisite: Approval of Academic Advisor.
Master’s-level summer internship.

ME 297 – Thesis Research (variable credits)
Prerequisite: Approval of Thesis Advisor.
Master’s-level thesis research.

ME 298 – Graduate Seminar (non-credit)
All students are required to register and receive a Satisfactory (S) grades for three (3) semesters to meet degree requirements.

ME 299 – Directed Research (variable credits)
Prerequisite: M.S. status and consent of instructor. Course may be repeated for credit and must be taken on a satisfactory/unsatisfactory basis.

**ME 300 – Advanced Fluid Mechanics (3-0-3)**
Prerequisite: ME 200 a, b or equivalent; AMCS 201 and AMCS 202 (may be taken concurrently). A more rigorous mathematical introduction to fluid mechanics. Derivation of Navier-Stokes; physical properties of real gases; the equations of motion of viscous and inviscid dynamics; the dynamical significance of vorticity; vortex dynamics; Kelvin circulation theorem and consequences; Biot-Savart Law, exact solutions in vortex dynamics; motion at high Reynolds numbers; hydrodynamic stability; boundary layers; flow past bodies; compressible flow; subsonic, transonic, and supersonic flow; Lax theory of shock waves.

**ME 302 – Multi-Phase Flows (3-0-3)**
Prerequisite: ME 241, AMCS 201 and AMCS 202, ME 200 a, b, ME 211 a, b or equivalents. Selected topics in engineering two-phase flows with emphasis on practical problems in modern hydro-systems. Fundamental fluid mechanics and heat, mass and energy transport in multiphase flows. Liquid/vapor/gas (LVG) flows, nucleation, bubble dynamics, cavitating and boiling flows, models of LVG flows; instabilities, dynamics and wave propagation; fluid/structure interactions. Discussion of two-phase flow problems in conventional, nuclear and geothermal power plants, marine hydrofoils, and other hydraulic systems.

**ME 304 – Experimental Methods in Fluid Mechanics (2-1-3)**
Prerequisite: ME 200 a, b or equivalent Basic sampling theory. Spectral decomposition, aliasing, Nyquist criterion and dynamic range. Basic optics, lasers, diffraction limit. Particle tracking and streak photography. Point measurements of velocity, pitot static tube, hot wires, and laser-doppler velocimetry. Measurements of velocity fields in planes and volumes, using particle image velocimetry. Micro-PIV. Measurement of scalar fields. Holographic PIV. High-speed video technology. This course has a significant laboratory component.

**ME 305 A, B – Computational Fluid Dynamics (3-0-3)**
Prerequisite: ME 200 a, b or equivalent; AMCS 201 and AMCS 202 or equivalent; ME 305b requires ME 305a. Introduction to floating point arithmetic. Introduction to numerical methods for Euler and Navier-Stokes equations with emphasis on error analysis, consistency, accuracy and stability. Modified equation analysis (dispersion vs. dissipation) and Von Neumann stability analysis. Finite difference methods, finite volume and spectral element methods. Explicit vs. implicit time stepping methods. Solution of systems of linear algebraic systems. Higher-order vs. higher resolution methods. Computation of turbulent flows. Compressible flows with high-resolution shock-capturing methods (e.g. PPM, MUSCL, and WENO). Theory of Riemann problems and weak solutions for hyperbolic equations.

**ME 306 – Hydrodynamic Stability (3-0-3)**
Prerequisite: ME 200 a, b or equivalent; AMCS 201 and AMCS 202 (may be taken concurrently). Laminar-stability theory as a guide to laminar-turbulent transition. Rayleigh equation, instability criteria and response to small inviscid disturbances. Discussion of Kelvin-Helmholtz, Rayleigh-Taylor, Richtmyer-Meshkov and other instabilities, for example, in geophysical flows. The Orr-Sommerfeld equation, the dual role of viscosity, and boundary-layer stability. Modern concepts such as pseudo-momentum conservation laws and nonlinear stability theorems for 2-D and geophysical flows.

**ME 307 – Turbulence (3-0-3)**
ME 308 – Introduction to Plasma Physics and Magneto-hydrodynamics (3-0-3)
Prerequisite: ME 200 ab; AMCS 201 and AMCS 202.

ME 310 – Mechanics and Materials Aspects of Fracture (3-0-3)
Prerequisite: ME 211 A, B or equivalent.
Analytical and experimental techniques in the study of fracture in metallic and nonmetallic solids. Mechanics of brittle and ductile fracture; connections between the continuum descriptions of fracture and micro mechanisms. Discussion of elastic-plastic fracture analysis and fracture criteria. Special topics include fracture by cleavage, void growth, rate sensitivity, crack deflection and toughening mechanisms, as well as fracture of nontraditional materials. Fatigue crack growth and life prediction techniques will also be discussed. In addition, “dynamic” stress wave dominated, failure initiation growth and arrest phenomena will be covered. This will include traditional dynamic fracture considerations as well as discussions of failure by adiabatic shear localization.

ME 313 A, B – Theory of Structures (3-0-3)
Prerequisite: ME 313B requires ME 313A.
Geometry of spatial curves; finite 3-D rotations; finite deformations of curved rods; dynamics of rods; strings and cables; theory of plastic rods; statistical mechanics of chains; applications including frames and cable structures, polymers, open-cell foams, DNA mechanics, cell mechanics; small strain and von Karman theory of plates; applications to thin films, layered structures, functionally graded thin films, delamination, plastic collapse; surface geometry; finite deformations of shells; dynamics of plates and shells; membranes; theory of plastic plates and shells; fracture of plates and shells; elastic and plastic stability; wrinkling and relaxation; applications including solar sails, space structures, closed cell foams, biological membranes; numerical methods for structural analysis; discrete geometry; finite elements for rods, plates and shells; time-integration methods; thermal analysis.

ME 314 – Plasticity (3-0-3)
Prerequisite: ME 211 a, b.
Theory of dislocations in crystalline media. Characteristics of dislocations and their influence on the mechanical behavior in various crystal structures. Application of dislocation theory to single and polycrystal plasticity. Theory of the inelastic behavior of materials with negligible time effects. Experimental background for metals and fundamental postulates for plastic stress-strain relations. Variational princicremental elastic plastic problems, uniqueness. Upper and lower bound theorems of limit analysis and shakedown. Slip line theory and applications. Additional topics may include soils, creep and rate-sensitive effects in metals, the thermodynamics of plastic deformation, and experimental methods in plasticity.

ME 316 – Micromechanics (3-0-3)
Prerequisite: AMCS 201 and AMCS 202 or equivalent, ME 211 a, b and ME 212 a, b or instructor’s permission. The course gives a broad overview of micromechanics, emphasizing its connection to Mechanical Engineering. Courses molecular structure and its consequences on macroscopic properties. Topics include phase transformations in crystalline solids, including martensitic, ferroelectic and diffusional phase transformations, twinning and domain patterns, active materials; effective properties of composites and polycrystals, linear and nonlinear homogenization; defects, including dislocations, surface steps and domain walls; thin films, asymptotic methods, morphological instabilities, self-organization; selected applications to micro actuation, thin-film processing, composite materials, mechanical properties and materials design. Open to undergraduates with instructor’s permission.

ME 317 A, B – Mechanics of Composite Materials and Structures (3-0-3)
Prerequisite: ME 211a; ME 212a; ME 317b requires ME 317a.
Introduction and fabrication technologies. Elastic response of composite materials (especially fiber and particulate reinforced materials) from the fabrication to the in-service structure. Up scaling strategies from
the microstructure to the single ply: kinematic and static bounds, asymptotic expansion and periodical homogenization. Up-scaling strategies from the single ply to the structural scale: elastic deformation of multidirectional laminates (lamination theory, ABD matrix). Mechanics of degradation in composite materials: fiber-matrix debonding, plasticity, micro cracking and induced delamination. Tools for description of non-linear effects: damage mechanics for laminates, applications of fracture mechanics. Aging and fatigue. Basic criteria-based theories will also be reviewed, including first ply failure, splitting and delamination. Basic experimental illustration will include: hand lay up of a simple laminate, characterization using full field measurement of its material properties.

**ME 319 A, B – Computational Solid Mechanics (3-0-3)**
Prerequisite: AMCS201 and AMCS202 or equivalent; ME 211 A, B or ME 212 A, B (may be taken concurrently); ME 319B requires ME 319A.


**ME 320 – Geometry of Nonlinear Systems (3-0-3)**
Prerequisite: AMCS 202
Basic differential geometry, oriented toward applications in control and dynamical systems. Topics include smooth manifolds and mappings, tangent and normal bundles. Vector fields and flows. Distributions and Frobenius’ theorem. Matrix Control and Dynamical Systems. Lie groups and Lie algebras. Exterior differential forms and Stokes’ theorem.

**ME 324 – Advanced Control Systems (3-0-3)**
Prerequisite: AMCS 201 and AMCS 202 or equivalent; ME 221 ab or equivalent.

**ME 326 – Robust Control (3-0-3)**
Prerequisite: AMCS 201 and AMCS 202 or equivalents; ME 221 ab or equivalent.
Linear systems, realization theory, time and frequency response, norms and performance, stochastic noise models, robust stability and performance, linear fractional transformations, structured uncertainty, optimal control, model reduction, m analysis and synthesis, real parametric uncertainty, Kharitonov’s theorem and uncertainty modeling.

**ME 340 – Advanced Combustion Theory (3-0-3)**
Prerequisite: ME 244 or equivalent.

**ME 342 - Combustion Kinetics (3-0-3)**
Prerequisite: ME 244 or ME 241
Non-equilibrium processes in chemically reacting gases. Example applications to combustion, atmospheric chemistry, plasmas, chemical and materials processing, rocket nozzles and gaseous lasers. Bimolecular reaction theory (collision theory); transition state theory; unimolecular and association reactions; complex reactions; straight chain reactions; explosions and branched chain reactions; photochemistry, photophysics; energy transfer in fuel tracers; vibrational relaxation; experimental techniques.

**ME 344 – Gas Dynamics (3-0-3)**
Prerequisite: ME 241.
Concepts and techniques for description of high-temperature and chemically reacting gases from a molecular point of view. Introductory kinetic theory; chemical thermodynamics; statistical mechanics as applied to properties of gases and gas mixtures; transport and thermodynamic properties; law of mass action; equilibrium chemical composition; Maxwellian and Boltzmann distributions of velocity and molecular energy; examples and applications from areas of current interest such as combustion and materials processing.

**ME 346 – Turbulent Combustion (3-0-3)**
Prerequisite: ME 244, ME 307 or equivalent.

**ME 348 – Introduction to Spectroscopy and Laser Diagnostics (3-0-3)**
Prerequisite: ME 241 or ME 243 or equivalent
Fundamentals of microwave, infrared, Raman, and electronic spectroscopy. Laser-based diagnostic techniques for measurements of species concentration, temperature, pressure, velocity, and other flow field properties. Topics: rotational, vibrational, and electronic transition frequencies; spectral line shapes and line-broadening mechanisms; nuclear spin effects; electronic spectra of atoms and molecules; absorption; emission; laser induced fluorescence (LIF); Rayleigh and Raman scattering methods; Mie theory; laser Doppler velocimetry (LDV) and particle image velocimetry (PIV); applications and case studies. Laser Diagnostics for Thermal Engineering.

**ME 376 – Introduction to Combustion Engines (3-0-3)**
Prerequisites: ME 241 or ME 244
The objective of the course is to provide a thorough understanding of the processes that occur in an internal combustion engine and the reason why it is designed as it is. The course will after an introduction deal with the performance measures of ICE, the link between engine performance and vehicle requirements, fundamental combustion, thermodynamic cycles, multicylinder balance, in-cylinder flow and turbulence, Spark Ignition Combustion, Spark Ignition engine emissions, the combustion in Compression Ignition engines and it’s after treatment needs. The course ends with a rather comprehensive description of the gas exchange system with valve system, gas dynamics in inlet and exhaust systems, two-strokes and finally supercharging/turbocharging.

**ME 377 – Advanced Internal Combustion Engines (3-0-3)**
Prerequisites: ME 376
Introduction to Combustion Engines. The course starts with an in-cylinder pressure analysis for heat release evaluation. Modern and advanced Otto and Diesel type engines are investigated as well as the historical development of engines.
Advanced gas ex-change systems are discussed and special emphasis is provided on direct fuel injection since such systems have evolved dramatically the last years. New types of internal combustion engines such as HCCI and PPC are explained. Measuring techniques for the analyzing of engines as well as engine control are presented. Fuel aspects with emphasis on engine performance and emissions are presented.
ME 378 – Experimental Combustion (3-0-3)
Prerequisites: ME 244
Experimental methods for combustion study will be instructed. Widely studied canonical flames and burners, which include a coflow burner, a counterflow burner, jet flames and outwardly propagating flames will be introduced and detailed experimental conditions to control various flame characteristics, such as flame temperature and burning velocity, will be instructed. Practical diagnostic methods such as laser induced fluorescence and particle image velocimetry will be covered. Complementary experiments will be provided for practical knowledge and experience.

ME 394 – Contemporary Topics in Mechanical Engineering (3-0-0)
A course of current interest. Topics are not permanent and the content of the course will change to reflect recurring themes and topical interest. The content will be approved by the division.

ME 394A – Contemporary Topics in Fluid Mechanics (3-0-3)
Prerequisite: ME 200 a, b and consent of the instructor.
Lecture and/or seminar course on advanced topics in fluid mechanics. Topics are determined by the instructor and may vary from year to year. The course may be repeated for credit.

ME 394B – Contemporary Topics in Solid Mechanics (3-0-3)
Prerequisite: ME 211 a, b, ME 212 a, b and consent of the instructor.
Lecture and/or seminar course on advanced topics in solid mechanics. Topics are determined by the instructor and may vary from year to year. The course may be repeated for credit.

ME 394C – Contemporary Topics in Control Theory and Practice (3-0-3)
Prerequisite: ME 221 a, b and consent of the instructor.
Lecture and/or seminar course on advanced topics in control theory and practice. Topics are determined by the instructor and may vary from year to year. The course may be repeated for credit.

ME 394D – Contemporary Topics in Dynamics (3-0-3)
Prerequisite: ME 232 a, b and consent of the instructor.
Lecture and/or seminar course on advanced topics in dynamics. Topics are determined by the instructor and may vary from year to year. The course may be repeated for credit. Maximum number of credits is 3 per semester.

ME 394E – Contemporary Topics in Thermal Science and Engineering (3-0-3)
Prerequisite: ME 241 and ME 242 or ME 244 and consent of the instructor.
Lecture and/or seminar course on advanced topics in thermal science and engineering. Topics are determined by the instructor and may vary from year to year. The course may be repeated for credit.

ME 395 – Internship (6 credits)
Prerequisite: Approval of Dissertation Advisor. Doctoral-level summer internship.

ME 397 – Dissertation Research (variable credits)
Prerequisite: Ph.D. status and consent of instructor.
Individual investigation on topics of relevance to mechanical engineering. Course may be repeated for credit. Maximum number of credits is 12 per semester. Must be taken on a pass/fail basis.

ME 398 – Graduate Seminar (non-credit)
Prerequisite: None.
All candidates for the Ph.D. degree in mechanical engineering are required to attend one graduate seminar in Mechanical Engineering each week for the entire duration of their enrollment at KAUST. In case the ME seminar is not held in any particular week, then it is the student’s responsibility to attend any other technical seminar on campus that week. Graded satisfactory/unsatisfactory.

ME 399 – Directed Research (variable credits)
6. University Wide Courses
University wide courses are courses in areas not tied to any specific degree program. They are designed to meet institutional requirements, provide broadening experience or to provide supplemental preparation to support students in their degree.

These are listed below:

6.1 English as a Second Language
These courses are designed to provide English language training for students who do not fully meet the University's English language entrance requirements. Students will be assigned courses based on their level of English or proficiency.

ESL 101 English as a Second Language I (6-0-0)
ESL 101 is a foundational English skills course for reading, listening, speaking and writing. The course has a strong focus on teaching students the basics of academic writing and grammar structures in preparation for thesis work. Course materials are typically A2 level to help students acquire basic academic English skills required for graduate coursework.

ESL 102 English as a Second Language II (3-0-0)
ESL 102 is a pre-English skills course for reading, listening, speaking and writing. The course continues to focus on building academic writing and grammar skills and also have more emphasis on reading for academic purposes. Course materials are typically B1 level to help students further develop pre-intermediate English skills required for graduate coursework.

ESL 103 English as a Second Language III (3-0-0)
ESL 103 is an upper-intermediate English skills course for reading, listening, speaking and writing. The course helps to further develop academic English skills necessary to successfully complete research and thesis work. Course materials are typically B2 level to help students refine upper-intermediate English skills required for graduate coursework.

6.2 Enrichment Program – WEP Courses
The Winter Enrichment Program (WEP) takes place in January each year and is designed to broaden students’ horizon. WEP is an essential and core requirement of the degree programs at KAUST. Satisfactory completion of at least one WEP is required of all M.S. students as part of the completion of the degree requirements. Ph.D. students who did not receive their M.S. Degree at KAUST are also required to satisfactorily complete at least one WEP. To satisfy this mandatory requirement, full participation must occur within a single WEP period.

6.3 Innovation and Economic Development
Innovation and Economic Development (IED) courses are meant as a broadening experience and are not technical electives. Students should consult with their program to ensure credits can be applied toward their degree.

6.3.1 IED 210 – Technology Innovation and Entrepreneurship (3-0-3)
This course introduces students to using an entrepreneurial and design thinking view to solving real-world challenges including the pathway to commercializing research. It is about changing methods of thinking and equipping graduate students to be able to understand and manage innovation in the corporate world. This course is open to all M.S. students as an elective and to Ph.D. students with permission of their academic advisors.
6.3.2 IED 220 – New Venture and Product Innovation Challenge (6-0-6)
This intensive 8 week module will give a small select group of students, the opportunity and time to develop a detailed value proposition for a product based on an existing piece of intellectual property. This technology may be from the KAUST IP portfolio or potentially from a corporate partner. As part of the program, students will be provided with an overview of key creative subjects related to new product development including; key aspects of intra/entrepreneurship, innovation management including new product development, Go-to-Market strategies as part of commercialization roadmaps, as well as general knowledge on relevant creativity and design thinking. It will also enable students to develop these skills in a full time, heavily mentor-led and experiential learning environment that includes regular pitches and feedback from a wide range of pre-selected mentors from both inside and outside KAUST including international experts.

7. Grading
The KAUST grading system is a 4.0 scale utilizing letter grades and these are the only grades that will be assigned:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>A+</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>C</td>
<td>2.33</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
</tr>
<tr>
<td>IP</td>
<td>In-Progress</td>
</tr>
<tr>
<td>W</td>
<td>Withdrew</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>WF</td>
<td>Withdrew-Failed</td>
</tr>
</tbody>
</table>

7.1 Incomplete Grades
Students who complete the majority of the requirements for a course but are unable to finish the course may receive an Incomplete (I) grade. A grade of Incomplete will be assigned only with the consent of the instructor of the course after the instructor and the student have agreed on the academic work that needs to be completed and the date it is due (but no later than the end of the second week of the following semester or session). When the requirements for the course are completed, the instructor will submit a grade that will replace the Incomplete grade on the student’s academic record. ‘Incomplete’ not completed by the end of the second week of the following semester or session will be changed to Failing (F) grades.

Grades for students that are due to Graduate
Note that any Incomplete grades (as well as Fail grades) will mean a student will not graduate or receive a diploma during the Commencement Ceremony.

Incomplete grades are granted to individual students on a case-by-case basis. Incomplete grades should not be used as a mechanism to extend the course past the end of the Semester. Students are allowed only one Incomplete grade while in a degree program at KAUST.

7.2 In-Progress Grades
Thesis Research (297) or Dissertation Research (397) should be graded as In-Progress (IP) or Unsatisfactory (U) for each semester. These ‘IP’ Grades will be converted by the Registrar’s Office to ‘S’ Grades for all semesters once the office has been notified that the thesis or dissertation has been submitted to the library.
7.3 Research and Seminar Courses

- 297 = Thesis Research - Either 'IP' or 'U'
- 397 = Dissertation Research - Either 'IP' or 'U'
- 295/395 = Summer Internship - Either 'S' or 'U'
- 298/398 = Seminar - Either 'S' or 'U'
- 299/399 = Directed Research - Either 'S' or 'U'

8. Academic Standing

A student's academic standing is based on his/her cumulative performance assessment and a semester performance based on the number of credits earned and GPA during the most recently completed semester.

Academic Standing classifications are divided into four categories of decreasing levels of Academic Performance:

- Good Standing
- Academic Notice
- Academic Probation
- Academic Dismissal

Cumulative Grade Point Average

- A minimum GPA of 3.0 must be achieved in all coursework.
- Individual courses require a minimum of a B- for Course credit.

**Cumulative Assessment**

<table>
<thead>
<tr>
<th>GPA</th>
<th>Academic Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.00-4.00</td>
<td>Good Standing</td>
</tr>
<tr>
<td>2.67-2.99</td>
<td>Academic Notice</td>
</tr>
<tr>
<td>2.33-2.66</td>
<td>Academic Probation</td>
</tr>
<tr>
<td>Below 2.33</td>
<td>Academic Dismissal</td>
</tr>
</tbody>
</table>

**S/U Performance**

<table>
<thead>
<tr>
<th>Credits Earned</th>
<th>Academic Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 Credits</td>
<td>GPA Standing</td>
</tr>
<tr>
<td>3-5 Credits</td>
<td>GPA Standing less one category</td>
</tr>
<tr>
<td>6-8 Credits</td>
<td>GPA Standing less two categories</td>
</tr>
<tr>
<td>9+ Credits</td>
<td>Academic Dismissal</td>
</tr>
</tbody>
</table>

**Semester Assessment (Registered in 12 Credits)**

<table>
<thead>
<tr>
<th>Credits Earned</th>
<th>Academic Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>12+ Credits</td>
<td>GPA Standing</td>
</tr>
<tr>
<td>9-11 Credits</td>
<td>GPA Standing less one category</td>
</tr>
<tr>
<td>6-8 Credits</td>
<td>GPA Standing less two categories</td>
</tr>
<tr>
<td>0-5 Credits</td>
<td>Academic Dismissal</td>
</tr>
</tbody>
</table>

**Semester Assessment (Registered in 9 Credits)**

<table>
<thead>
<tr>
<th>Credits Earned</th>
<th>Academic Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>9+ Credits</td>
<td>GPA Standing</td>
</tr>
<tr>
<td>6-8 Credits</td>
<td>GPA Standing less one category</td>
</tr>
<tr>
<td>3-5 Credits</td>
<td>GPA Standing less two categories</td>
</tr>
<tr>
<td>0-2 Credits</td>
<td>Academic Dismissal</td>
</tr>
</tbody>
</table>

**Summer Session Assessment**

<table>
<thead>
<tr>
<th>Credits Earned</th>
<th>Academic Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Credits</td>
<td>GPA Standing</td>
</tr>
</tbody>
</table>
Definitions:

**Good Standing**
Student is making satisfactory academic progress towards the degree.

**Academic Notice**
Student is not making satisfactory progress towards the degree. A student placed on Academic Notice will be monitored in subsequent semesters to ensure satisfactory progress towards the degree (see Good Standing). If the student’s performance does not improve in the following semester, the student will be placed on Academic Probation.

**Academic Probation**
Student is not making satisfactory progress towards the degree. A student placed on Academic Probation will be monitored in subsequent semesters to ensure satisfactory progress towards the degree (see Good Standing). If the student’s performance does not improve in the following semester, the student will be academically dismissed.

**Academic Dismissal**
Student is not making satisfactory progress towards the degree and is unlikely to meet degree requirements. Dismissed students will be required to leave the University. If deemed eligible, dismissed students will have one week from receiving Notice of Dismissal to file an Appeal.

**Appeal Process for Students Academically Dismissed**
If the student is eligible to appeal, he/she must submit a written explanation why the dismissal should be rescinded along with any supporting documentation. The Committee on Academic Performance will hear the appeal and make a decision to grant or deny the appeal based on the appeal and documentation, the student’s past performance and the likelihood that the student is capable of successfully completing his/her academic program. If the appeal is denied, the student will be required to leave the University. The decision of the committee is final – no additional appeals are permitted.

**S/U Protection**
Due to the significant impact of Unsatisfactory (U) Grades, a Faculty Member giving a ‘U’ Grade for a course involving six or more credits must obtain concurrency of the Dean prior to submitting the grade. If the grade is given for only a single class (including Research Credit), the number of credits will be capped at six when using the Academic Standing Table displayed above.

**Returning to Good Standing**
A student not in Good Standing due to a GPA deficiency may return to Good Standing by improving his/her cumulative GPA such that it meets or exceeds 3.0. A student not in Good Standing due to ‘U’ Grades may return to Good Standing by completing at least twelve credits during the subsequent semester with no ‘U’ grades and a semester GPA of at least 3.0 in traditionally graded courses.

9. **Transferring Credits**
A student may petition to transfer graduate credits from KAUST or another University upon approval of the Program Director and the Registrar.

Each student’s application will be reviewed on a case-by-case basis.

The following rules apply:
• Students entering the program with an M.S. Degree from KAUST may transfer unused coursework toward the Ph.D. program requirements subject to program level approval.
• Up to three graduate-level courses not to exceed nine credits may be transferred for credit. Courses already used for another degree cannot be used as transferred credits.
• The course grade for any course to be transferred must be a ‘B’ or above.
• Courses transferred for degree credit must have been taken within three years prior to admission to KAUST.
• The student must submit a completed KAUST Transfer of Credit Form and include the Course Syllabus and Course Description.
• The student is responsible for supplying an official transcript:
  • The transcript may be no more than three months old.
  • The transcript must be in English or accompanied by a certified English translation.
  • The Grading Key must be included with the transcript.
  • The Transcript must include the course name, level, grade and credit value.
• The credit value of the course must be equivalent to a minimum of three KAUST credit hours.

Course Transfer and Equivalency
Graduate credit hours taken from any KAUST program may be applied to other KAUST graduate programs under the guidelines of the degree program to which the student is admitted. Graduate courses taken from another University or KAUST program that are equivalent in level and content to the designated courses in a major track may be counted towards meeting the major track requirement if their equivalence is confirmed by the Program Director.

Students transferring from other Ph.D. programs may receive some Dissertation Research and Coursework credit units on a case-by-case basis for related work performed at their original Institution. However, such students must satisfy the written and oral requirements for a research proposal (if the proposal had been submitted and approved at the original Institution, the proposal may be the same, if approved by the research advisor). The minimum residency requirement for enrolment of such students at KAUST is two years.

10. Policy for Adding and Dropping Courses
A course may be added during the first week of the semester. Students may add courses after the first week with the permission of the instructor. Instructors have the right to refuse admission to a student if the instructor feels that the student will not have the time to sufficiently master the material due to adding the course late. A course may be dropped without penalty at any time during the first two weeks of the semester. Between the second and ninth week, students can drop a course but the course will appear on the student’s transcript with the grade of Withdraw (W). After the ninth week of a full semester, courses may be dropped only under exceptional circumstances and with the approval of the Course Instructor, the Program Director and the Registrar.

11. Program Planning
It is the sole responsibility of the student to plan her/his graduate program in consultation with her/his advisor. Students are required to meet all deadlines. Students should be aware that most Core Courses are offered only once per year.