

# UNIVERSITY *of* HOUSTON



GRADUATE PROGRAMS IN

- MECHANICAL ENGINEERING
- AEROSPACE ENGINEERING

Department of Mechanical Engineering  
Ken W. White- ME Graduate Director,

## DEPARTMENT OFFICERS

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DEPARTMENT CHAIR: DR. PRADEEP SHARMA

GRADUATE ADMISSIONS ASSISTANT: TRINA JOHNSON

PROGRAM DIRECTORS:

MECHANICAL ENGINEERING: DR. KEN WHITE

AEROSPACE ENGINEERING: DR. BONNIE DUNBAR

DR. KAROLOS GRIGORIADIS



Graduate Studies in Mechanical Engineering

## RESEARCH AREAS

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- **Fluid Mechanics:** Wind, computational fluid dynamics, turbulence, bioreactors, biomedical fluid dynamics
- **Heat Transfer:** micro/nanoscale heat transfer, solid-state energy transport, multiphase flow and heat transfer, Micro/nanofluidics, and renewable energy utilization
- **Structural Dynamics & Controls:** smart structures, space structures, clean engines, wind turbines, medical robotics
- **Materials:** Active materials, superconductors, ceramics, nanomaterials, composites for wind and off-shore, Microfabrication
- **Mechanics:** nanomechanics, atomistic computations of material properties, shape-memory structures



**Biomedical:** laser-based diagnostics, CFD in arterial flows

## OVERVIEW OF DEGREE PROGRAMS

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- **Master of Science** (*M.S. with or without thesis*)
  - in Mechanical Engineering
  - in Aerospace Engineering
- **Doctor of Philosophy** (*standard and “fast-track”*)
  - in Mechanical Engineering

**Typical duration for a full-time student:**

M.S. without thesis:	1 to 1.5 years
M.S. with thesis:	2 to 2.5 years
Ph.D.:	3 to 5 years



## DIRECT-ADMIT AND STANDARD PHD PROGRAMS

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	<u>Direct-Admit</u>	<u>Standard</u>
Courses (minimum):	10	7 plus MS
Theses/Defenses:	1	2
MECE Hours:	12	9
Math Requirement:	6	3 or 6
Elective Hours:	12	9 or 6
Research/Dissertation Hours:	36	30
<b>Total for PhD:</b>	<b>66</b>	<b>51</b>

Breadth Requirement: 2 of the courses in the MECE or Elective categories must be outside the focus area of the dissertation as determined by the Director of Graduate Studies.



## DEGREE PROGRAM: M.S. IN M.E. WITHOUT THESIS

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33 credit hours distributed as: (Note: Math 6385 after 6384)

- **Math requirement:**  
The first course in one of these sequences: (EXAM, Spring offering)  
MECE 6384, 6385      CHEE 6331, 6332      PHYS 6303, 6304
- 18 hours from the MECE 6000-level or above, exclusive of graduate seminar (MECE 6111) and Graduate Project (MECE 6368).
- 12 hours at the 6000-level or above from any department in the Colleges of Engineering, Natural Science, Business, and Law.
  - A total of no more than 6 hours can be from Business and Law.
  - Three hours can be satisfied by petition to complete the directed-study Graduate Project course, MECE 6368. (ME faculty/topic)
  - No more than 2 courses from PETR, IE and SUBS.
- The graduation requirements are a 3.00 GPA overall, and *separately*, a 3.00 GPA on the 21 or more hours comprised of all MECE courses and the course(s) used to satisfy the mathematics requirement.



Graduate Studies in Mechanical Engineering

# DEGREE PROGRAM: M. S. IN M.E. WITH THESIS

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30 credit hours distributed as:

- 9 hours are thesis credits (MECE 6399, MECE 7399).
- Math requirement:  
The first course in one of these sequences:  
MECE 6384, 6385      CHEE 6331, 6332      PHYS 6303, 6304.
- At least 9 hours from the MECE 6000-level or above, exclusive of the seminar (MECE 6111), research credits (MECE 6x98), MECE 6368 and thesis credits.
- The remaining hours must be at the 6000-level or above from any department in the Colleges of Engineering and Natural Science. No more than 2 courses from PETR, IE and SUBS.
- The graduation requirements :
  - 3.00 GPA overall, and *separately*, a 3.00 GPA on all MECE courses and the course(s) used to satisfy the mathematics requirement.
- A successfully defended thesis.



Graduate Studies in Mechanical Engineering

# DEGREE PROGRAM: DOCTOR OF PHILOSOPHY IN M.E.

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*Focus:* Research in Engineering Science

- The principal objective is to produce a dissertation that is a significant contribution to the field of study.
- **Two Paths:** standard (after MS) and direct-admit from the B.S. degree
- Successful qualifying examination. GPA of  $\geq 3.40$  is required for entrance to qualifying exam. Based on a minimum of 12 UH graduate hours and no more than the first 21 UH graduate hours.
- All courses must be from MECE and the Colleges of Engineering and Natural Science.
- Math requirement: Complete one of these sequences:  
MECE 6384, 6385      CHEE 6331, 6332      PHYS 6303, 6304
- a **Breadth Requirement** of two courses (6000-level and above) with content outside of concentration area.
- A minimum of one accepted journal publication prior to your defense.



Graduate Studies in Mechanical Engineering



## DEGREE PROGRAM: NOTES

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- **MECE 6368 Design Project**
  - Three hours can be satisfied by petition to complete the directed-study Graduate Project course, MECE 6368. (ME faculty/topic)
  - Description must include instructor's syllabus, including a plan for a grading policy **PRIOR** to start of classes.
  - All projects are not 3 credits of work! Must be 3 credits or do not submit.
- TA positions are only for PhD students and have all been decided.
- Most RA's are taken and most are for PhD students
- Face-to face class vs On-Line:
  - 4 classes required by Engin dean's office, but ISSSO requires 3.
  - So, you may take 2 On-line courses.



## FOR OTHER DEGREE PROGRAMS:

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SEE THE PROGRAM DESCRIPTION IN YOUR FOLDER AND

FOR M.S. OR PH.D. IN MATERIALS ENGINEERING,  
PROGRAM DIRECTOR DR. DMITRI LITVINOV

FOR M.S. IN AEROSPACE ENGINEERING,  
PROGRAM DIRECTOR DR. BONNIE DUNBAR AND KAROLOS  
GRIGORIADIS



Graduate Studies in Mechanical Engineering