

**Graduate Program, Mechanical Engineering, UCSB** 

The convergence of research and innovation.

# The PhD Program at a Glance

#### **Mechanical Engineering**









### Achievement Goals

 $\succ$  Become a leader in your field.

- Gain a thorough understanding of the current literature and the development of a strong theoretical and/or experimental background.
- Identify fundamental research problems and propose innovative solutions to these problems.
- Present and publish research in the most prestigious journals and conferences.
- > Develop professional skills such as communication and presentation skills, teaching, laboratory development, proposal writing, team work, etc.



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#### Timeline – The First Year



\* At the end of the first quarter, you will be asked to decide on your first three choices for a faculty advisor.



## Timeline – The Screening Exam

#### > Screening Exam

- On your broad preparation and capabilities in 2 out of 5 areas (CSE, DCR, MEMS, SMMS, TFS).
- Administered by two professors in each area.
- If new student with BS, then fall of 2nd year. If new student with MS, then spring of 1st year.
- > Allowed two attempts.
- Please consult the document with topics, suggested courses and reading material on the ME graduate program website.





It is strongly advised that students take the "recommended classes" in the Graduate Handbook. Think of them as mandatory.



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## Timeline – The Candidacy Exam



\* Form a committee: 3 ME faculty + 1 faculty from another Dept (see Laura and ME Handbook)

\*\* The proposal is a document describing what the candidate will work on, why it is important, present preliminary results, etc. (check with advisor). This needs to be given to the committee at least 1 week before the exam.





#### Timeline – The PhD Defense

#### > Final PhD Defense YEAR 1 > Oral exam. **Screening Exam** Present your work to an audience (committee + friends, family, other YEAR 2 students). **Candidacy Exam** Why it is an important topic. What the open questions were. Describe your findings. YEAR 3 Discuss the impact. YEAR 4 $\succ$ Must demonstrate a thorough knowledge of your field. YEAR 5 Write a thesis\* > Public presentation, then committee PhD Defense asks questions.

\* The thesis thoroughly describes your research. It is submitted to the committee at least 1 week before the exam.

## PhD Course Requirements

- > PhD course requirements:
  - 36 units of coursework (if student with MS, then possibly only 9 [see Laura]).
  - 3 quarters of graduate seminar (ME 200A Monday 4pm).
  - Publication and presentation of at least 1 conference or journal article.
  - TA two quarters at 50% after advancing to candidacy.
  - For the specific classes to take for your area, please consult the ME graduate program website or the ME Graduate Handbook.
  - Also, attend ME207 to help select an advisor.
  - Register for classes! As you go you take fewer and fewer classes ,but you still must register for12 units each quarter. This is achieved by registering for as many 596 units as necessary. Register on time or pay \$50 late registration fee!



#### The First Quarter

- Take 2 courses.
- ≻ TA at 50%.
- > Attend ME207 to help select an advisor.
- Advisor selection: the Graduate Advisor will run following algorithm:
  - Ask students for their preferences by email (end of fall quarter).
  - Email faculty and ask about willingness to accept student.
  - Every students should be paired up with an advisor by the end of the winter quarter.
  - Very high "success" rate in past (not by chance).



#### Advice: Area & Advisor

UCSB Mechanical Engineering does not force prospective students to commit to any advisor. Once in the program, students thus have to decide on a research area and an advisor (students must have an official advisor by the end of second quarter of the first year).

 $\succ$  How to choose an area:

- Broad subject that inspires and motivates you.
- Aligned with your strengths and inclination, whether theoretical, computational, experimental, or a combination.

> How to choose an advisor:

- Cast a wide net, i.e., talk with as many professors as possible (your first choice may not be able to hire you).
- From technical viewpoint: research track record and objectives.
- From personal viewpoint: effective work relationship.
- Supervision style, publication expectations, financial support, career path of previous student.

\* "Advice on choosing research area and doctoral advisor" is available on ME graduate program website.