

Graduate School: An Overview

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Research Degrees

Master's Degree

- Takes around 2 – 3 years after undergrad.
- Select an advisory committee.
- Requires additional course work.
- Involves a written thesis and defense.



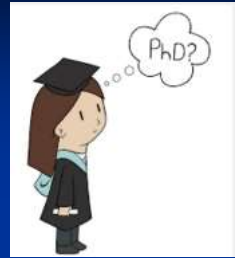
***There are also non-research Master's degrees (Master's in teaching)**

- does not necessarily require research project
- does not require a thesis.
- requires teaching "certification" depending on the state you will teach in.

Research Degrees

Ph.D. – (Doctor of Philosophy)

- Highest degree one can earn in a field.
- Generally takes 3-5 years.
- Also requires additional course work.
- Involves research projects and written dissertation.
- Often involves and/or requires:
 - ✓ publications in a peer-reviewed journal.
 - ✓ a teaching component
 - ✓ Additional “examinations”.



Who hires research scientists?

- **Academia**
 - ✓ Universities and Colleges
- **Industry**
 - ✓ Companies (for profit or non-profit)
 - ✓ Organizations
- **Government**
 - ✓ Research Institutes (NIEHS, NIH, NCI)
 - ✓ Federal agencies (FDA, EPA, NSF, USDA)
- **State & Local Agencies**
 - ✓ DHEC, Fish & Game Commission, Dept. Health & Human Services, DNR



Types of Scientific Research

Basic research

- Usually no profit motive or commercial application
- Requires funding
- There is no way to predict the value of science
- Does basic research make you money?
 - ✓ Sometimes
 - ✓ Usually NOT
 - ✓ “Celebrity of science” factor



Types of Scientific Research

Applied research

- Private industry applications and funding
- Seek answers to questions for immediate and profitable use
- Mostly associated with biotechnology
 - ✓ Pharmaceuticals
 - ✓ Agriculture
 - ✓ Biochemistry
 - ✓ Biological / genetic engineering
 - ✓ Microbiology

What it takes to get in to graduate school:

- Application (usually application fees)
- Transfer of transcript from undergrad
- 3.0 GPA (higher in the major)
- Acceptable GRE scores. [depends on program]
 - ✓ Some schools require scores for both the general and subject tests.
- Strong letters of recommendation
- Extracurricular experience in research recommended

How does a program considers applications?

- Is applicant academically capable?
- Is money and/or space available to take on new students?
- Is there a potential faculty mentor for them?
- How many potential candidates can be brought to campus for an interview? This often a financial constraint.

The interview

- Meet faculty members.
- Talk to other graduate students.
- Go with ideas and background of program & faculty.

After the interview, decisions are made

- Letter of regret.
- Letter or phone call with an offer.

Graduate students receive a **stipend** to go to school and at many institutions tuition is waived or paid by the department.

2 Types of stipends:

- **Teaching assistantship**
 - ✓ Paid by University
- **Research assistantship**
 - ✓ Paid by Department or Mentor's Grant

Choosing a graduate school:

- Think faculty, lab, and department rather than mascot.
- Reputation of program in field of interest.
- Funding availability. [Dept., mentor, or your own scholarship/fellowship, etc...]
- Cost of living of the area.
- Geographic region.



General timeline of a graduate program:

- Decide on a mentor and research project.
- Appoint an advisory committee.
- Research and coursework.
- Oral examinations (“qualifying exam”)
- Research
- Write dissertation
- Exit Seminar
- Defense
- Publication
- Apply for jobs

Graduate Degree Programs at MUSC

- Biochemistry
- Molecular Biology
- Bioinformatics
- Epidemiology
- Pharmacology
- Anatomy and Cell Biology
- Microbiology
- Immunology
- Nursing
- Pathology
- Physiology
- Neuroscience

Graduate Degree Programs at USC

- Biomedical Science
- Biological Sciences
- Genetic Counseling
 - (MS)
- Biostatistics
- Epidemiology
- Pharmaceutical Science
- Nursing (Ph.D., MS)
- Environmental health science
- Marine science

Graduate Degree Programs at Clemson

- Biochemistry
- Genetics
- Microbiology
- Biosystems engineering
- Environmental toxicology
- Biological sciences
- Zoology
- Animal physiology
- Entomology
- Fisheries and wildlife management
- Plant sciences