

# How to choose and apply to a graduate school

Prepared by the  
Department of Mathematics  
Vanderbilt University

# How do you decide whether or not to go to a graduate school?

- Do you enjoy reading math and science articles?
- Or have you found yourself working late at night on a problem that was not required for homework?
- Or do you want to keep doors open for participation in new technological developments?

***Grad School is for you!!***

# Job Rankings

In *The Jobs Rated Almanac*, 250 jobs are rated according to income, stress, physical demands, job security and work environment.

1. Web site manager
2. Actuary
3. Computer systems analyst
4. Software engineer
5. Mathematician
6. Computer programmer
7. Accountant
8. Industrial engineer
9. Hospital administrator
10. Web developer

# It's cool to be a mathematician!

- Just consider the success of the math characters in *Jurassic Park*, *Good Will Hunting*, *Pi*.
- “*Abstract tech is now sexy, the mathematician is a viable commercial hero*” -- Science, December 22, 2000.
- Clay Mathematics Institute identifies seven important math questions that resisted all fast attempts to solve them. A solution to any of these problems is worth \$1,000,000.
  - [www.claymath.org](http://www.claymath.org)

# Common Question: What can I do with a degree in math?

- Many get jobs outside of academia. In fact, last year 36% of the Ph.D.s got jobs in industry.
  - (source: American Mathematical Society)
- Information can be found at many websites:
  - Math careers
    - [math.fullerton.edu/careers.html](http://math.fullerton.edu/careers.html)
  - Take this math job and love it
    - [www.miracota.cc.ca.us/info/acad/mathematics/math.htm](http://www.miracota.cc.ca.us/info/acad/mathematics/math.htm)
  - MAA online review of 101 careers in math
    - [www.maa.org/reviews/careers.html](http://www.maa.org/reviews/careers.html)

# Program Information

## Choose what you like:

Consider the focus of the graduate program, i.e., specialization areas that are offered

E.g., Computational Analysis, Geometric Group Theory, Mathematical Biology, Noncommutative Geometry, Universal Algebra & Algebraic Logic

## Program requirements:

What is required for a degree?

Make sure these are clearly stated

## Explore!

Most of the time, students are not sure what their interest is. Often, this is shaped by a professor or a particular class.

# Vanderbilt University Programs



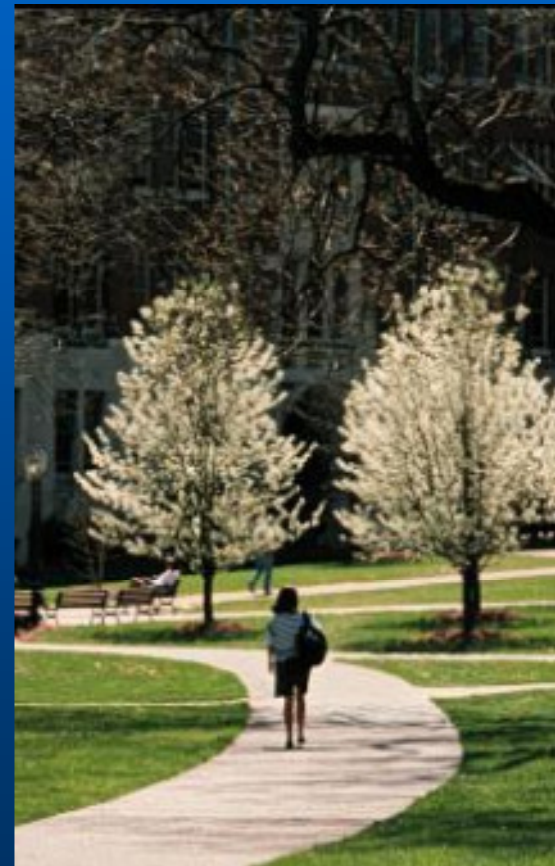
## *Traditional Mathematics*

- Algebra
- Analysis
- Combinatorics & Graph Theory
- Topology

# Vanderbilt University Programs

## *Focused Research Groups*

- Computational Analysis
- Geometric Group Theory
- Mathematical Biology
- Noncommutative Geometry
- Universal Algebra & Algebraic Logic



# Learning Environment

- Reputation of the faculty should be only *ONE* of a number of factors to consider
- Learning environment
  - How friendly and available are the faculty?
  - Is office space provided for graduate students?
  - How good are the computing facilities and libraries?
  - Is the staff friendly, supportive, and able to help?
- How available are advisors for each student?
- Is information for the qualifying examinations clear and available?

# Professional Environment

- **Colloquia**

- Are there regular colloquia?
- Where do the visitors come from? From in state? Out of state? Out of the country?

- **Seminars**

- Are there regular seminars?
- On which subjects are they held?
- Do graduate students participate?

# Professional Environment



- **Conferences**
  - Does the department host regional, national or international conferences?
- **Travel support**
  - How often are students supported to attend professional conferences?

# At Vanderbilt University

- Regular colloquia are held at least every other week with visitors from all around the world
- Regular weekly seminars with full participation by graduate students in the following areas:
  - Algebra
  - Analysis
  - Biomathematics,
  - Computational analysis
  - Graph theory & Combinatorics
  - Noncommutative geometry & operator algebras,
  - Topology & group theory
- Travel funds are available through application to the College of Arts & Science or from grants held by faculty members

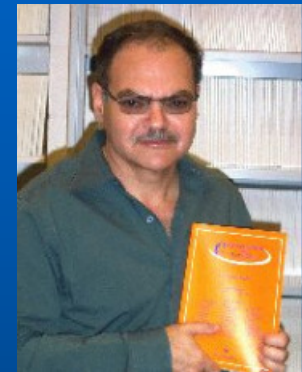
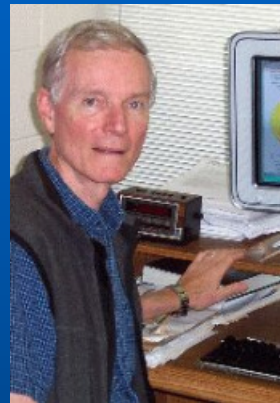
# Faculty

- **How many faculty does the graduate program have?**
  - Is there a sufficient number to provide a healthy academic environment, including seminars and colloquia
- **How many faculty are involved in research and have recent publications?**
- **What are the journals in which their research has been published?**
  - Check out the library
  - Look through the books written by the faculty
  - Information can be found on the web or supplied by the program

# Faculty

- **Are there any professional journals with editorial offices set up at the department?**
  - This identifies the particular strength of a research area
- **How many faculty have a web page or information about their research on the web?**
- **How many of the faculty have been involved in organizing a conference?**
  - This shows involvement with current events and the mathematical research in the area of the conference

# At Vanderbilt University



- There are 35 faculty members with research records
- Many have web sites which have information on their research or publications
- The journal, *Constructive Approximation*, has an editorial office at the department
- 15 faculty members serve on editorial boards of research journals

# Financial Assistance

- **Forms of financial assistance**
  - Teaching Assistantship
  - Research Assistantship
  - Scholarships
- **Most graduate students in mathematics are able to finance their studies through a TA, RA or fellowship**

# What to look for in a TA

- Amount of the stipend
- Is any summer support available?
- How many hours of work per week in a classroom or grading is required?
  - The following workloads impede satisfactory progress towards a graduate degree:
    - More than 20 hours per week of work
    - Teaching more than one class per semester
    - Being in a classroom with students more than 4 hours per week
- Is there training to become a successful teaching assistant in the classroom?
- What portion of the tuition is waived?

# At Vanderbilt University

- **Teaching Assistantships**
  - \$15,500 stipend for nine months
  - Full tuition waiver
  - Health insurance
- **Research Assistantships**
  - Occasionally available to advanced students through faculty research grants
  - Stipend starts at \$15,500
  - Full tuition waiver
  - Health insurance
- **University Fellowships**
  - \$20,000 service free award for nine months

# At Vanderbilt University

- **Honors Fellowships**

- University wide competitive fellowships
- Applicants are nominated by department
- Successful applications are awarded an honor fellowship *in addition to an assistantship*
  - \$3,000 Harold Stirling Vanderbilt Graduate Scholarships
  - \$5,000 University Graduate Fellowships

- **Provost's Graduate Fellowship**

- Offered to African American graduate students
  - \$15,000 service free stipend
  - Full tuition waiver
  - Health insurance

# At Vanderbilt University

## Teaching Assistantships

- At most, 20 hours per week is required from graduate teaching assistants
- During the first year, all TA's participate in teaching seminars and training developed by the Department of Mathematics
- All TA's participate in programs at the Center for Teaching, developing their skill and, in the case of international students, improving their English language skills
- During the first year, TA's are typically involved in help sessions and tutoring
- TA's enroll for 9 credit hours (3 courses) and tuition is waived

# Students

- **What is the student body in the program?**
  - How many students are in a Master's program?
  - How many are pursuing a Ph.D.?
- **Do the students get along?**
  - Are there professional or social gatherings?
  - Do the students work well together, both in class and out?
- **Are there study groups?**
  - Qualifying exams, tests, homework

# University, City, Surrounding Area



## *University*

- Math organizations?
- Other student organizations?
- Newspapers?
- Good academic environment?

# University, City, Surrounding Area

## *City & surrounding area*

- Cultural activities?
- Sports?
- Entertainment?

***One cannot live by math alone!***



# Nashville, Tennessee

- Nashville is the capitol of Tennessee
- Ranks in top 15 cities for work & family by *Fortune* magazine
- The greater metropolitan area has a population of > 1 million
- Major industries include tourism, publishing, music production, higher education, finance, insurance, automobile production, health care management



# Nashville, Tennessee



- **Nashville has numerous arts & entertainment attractions**
  - Frist Center for the Visual Arts, Tennessee Performing Arts Center, Nashville Symphony & Nashville Ballet, & music venues too numerous to count
- **Parks & recreation**
  - State-of-the-Art Student Recreation Center, Centennial Park, Edwin & Percy Warner Parks, Cheekwood Botanical Gardens
  - Beautiful lakes and woods nearby with a wide variety of outdoor recreation, including hiking, fishing, canoeing, and climbing

# Finding Information

- Visit the university web site
  - [www.math.vanderbilt.edu](http://www.math.vanderbilt.edu)
  - Telephone: +1-615-322-6672
  - Electronic mail: [grad@math.vanderbilt.edu](mailto:grad@math.vanderbilt.edu)
- Call the department that interests you and ask for further information
- Talk to the Director of Graduate Studies
- **Visit the university!!**
  - Talk to the faculty in the department
  - Spend some time with the graduate students
  - Many universities will help with travel costs

# Application Requirements

- **GRE**
  - Check for minimum requirement
  - Vanderbilt requires 1000 combined on verbal and quantitative
- **Subject GRE**
  - Many programs, including Vanderbilt, require this test
  - Graduate committee looks for scores which hit at least the 50th percentile
- **Test of English as a Foreign Language (TOEFL)**
  - Non-native English speakers are required to take this exam
- **Minimum GPA**
  - A 3.5 GPA in undergraduate mathematics courses and a 3.0 GPA overall is expected
- **Personal Statement**
  - Information on why you want to pursue graduate study

# Recommendations and Applications

- **Letters of recommendation**
  - A minimum of three letters
  - Written by undergraduate mathematics professors, preferably
- **Application forms & fees**
  - Vanderbilt has a fully online application form
  - Financial aid should be requested at the time of application
  - Fee at Vanderbilt is currently waived for online applications

# To obtain application forms

## Contact Vanderbilt University or the school of your choice

- Vanderbilt University Department of Mathematics
  - [www.math.vanderbilt.edu](http://www.math.vanderbilt.edu)
  - [grad@math.vanderbilt.edu](mailto:grad@math.vanderbilt.edu)
  - +1-615-322-6672
- Vanderbilt University Graduate School
  - [www.vanderbilt.edu/gradschool](http://www.vanderbilt.edu/gradschool)

# Department of Mathematics

## Vanderbilt University

**INFORMATION FOR ...**

**Current Students**

**Prospective Students**

**Visitors & Newcomers**

**Alumni & Friends**

**Job seekers**

**AND ABOUT OUR ...**

**Academic programs**

**People**

**Research**

**Centers & Seminars**

**Computational Resources**

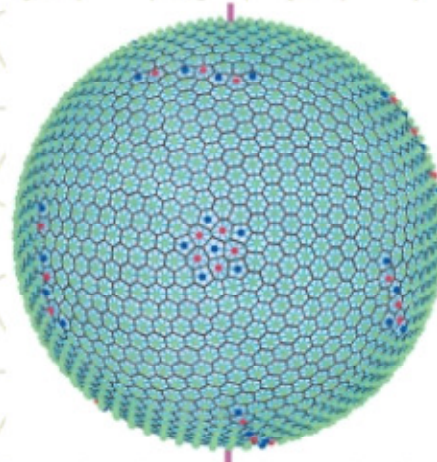
**Conferences & Workshops**

**Calendar**

**News**

*In the news:*

A Workshop on Computational Analysis on the Sphere will be held December 5-7, 2003, here in Nashville. It is organized by the Center for Constructive Approximation at Vanderbilt University and the Australian Center of Excellence for Mathematics and Statistics of Complex Systems. ... Click here for [more VUMath news](#).



# Department of Mathematics

## Vanderbilt University

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[Biomath study group](#)

[Constructive approximation](#)

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