Math Jobs

Presentation by Dr. Randall Pyke
Before and After Your Math Degree

- Employment areas
- Further studies
- Preparing for your career
- Searching for jobs
- The interview process
- Resources
Some Employment areas

• Banks; marketing, finance
• Logistics; ferries, airlines, shipping, mining
• Health Care; medical imaging, scheduling, budgeting, planning, epidemiology, gnomics
• Statistician; government, banks, hospitals
• Computer programming
More Employment areas

• Consulting. Here some mathematical consulting companies;
  – Quantimal.ca
  – AnalysisWorks.com
  – Applmath.com

• Teaching
  – Elementary/high school via PDP
    http://www.educ.sfu.ca/teachersed/pdp/students.html
  – College/University (require MSc)
Getting ideas for careers

• What area are you interested in?
• Where would you like to see yourself 5 – 10 years after graduation?
• Browse through scientific newspapers/journals;
  – SIAM (e.g. [http://www.siam.org/journals](http://www.siam.org/journals)) – SIAM Review, all SIAM journals are available electronically from the SFU library (same with the journals mentioned below)
• See what’s going on at IRMACS at the Burnaby campus; [http://www.irmacs.sfu.ca/](http://www.irmacs.sfu.ca/) (link to video recordings of talks given is provided there or see the end of this presentation)
• Check out the many, many interesting sites on the internet (articles and video) where you can learn about areas where mathematical methods are used.
Some resources for career information

- http://www.siam.org/careers/
- http://www.informs.org/Build-Your-Career
- http://www.maa.org/careers/
- http://www.weusemath.org/
- http://www.linkedin.com/today/
Broadening your skills

- Applied statistics/statistical modelling;
  - regression, (generalized) linear models, analysis of variance, nonparametric statistics, machine learning (data driven algorithms to make predictions), etc
- Computer programming
  - C+, Matlab, R (statistical modelling), Python, Excel (including VBA scripts)
- Mathematics
  - linear algebra, mathematical (computer) modelling, numerical analysis, graph theory
- Writing/presentation
  - Well-written homework solutions, clear presentations. Get feedback from instructors/students for improvements.
Searching for Jobs

• Job listing websites;
  – http://www.careers.ca/
  – http://www.monster.ca/
  – http://www.workopolis.com
  – http://www.orms-today.org/classifieds/
  – http://www.hsd.gov.bc.ca/links/jobs.htm
  – http://www.govjobs.ca/

• Visit company websites; Banks, IBM, UPS, SAS, consulting firms, etc
• Consider recruiting agencies
Examples of problems from industry where mathematics plays a key role

- Urban planning; traffic flow
- BC Ferries; ferry scheduling
- Cancer research; statistical analysis of genomic sequences
- Health care; epidemiology, hospital logistics
- Finance; risk analysis, developing risk software
- Design: modelling airplanes, cars, etc
- Forestry; fire fighting strategy, containment of disease
Commonly listed job requirements

- **Software skills***; Excel (including VBA scripts), SAS/SPSS, SQL, C++, R, CPLEX, MS products (Excel, People Soft,....)
- Technical skills; **statistics**, modelling, optimization
- **Project management skills**
- **Communication skills**
- Group work skills (working with others)
- Resolving conflicts/disagreements
- Visa requirements (esp. for US jobs; TN-visa!)
- Do you mind re-locating?

* You can obtain certificates in programming in these areas from BCIT and many colleges, often in one weekend.
What to put on your resume;

- Education background (degrees)
- Areas of study
- Software skills
- Projects/reports (research experience)
- CORS Diploma, or other certificates
- Writing, speaking, and group work skills
- References! Often will include some of your university teachers
The interview process

• Often first by phone or skype (several), followed by in-person interview
• May ask you technical questions in person
• May ask you to complete a ‘test’ project 
  (either during the interview or to ‘take home’)
• Your appearance/presentation is important!

For advice on preparing your resume and practicing your interview skills, see Career Services at SFU; http://www.sfu.ca/career.html
In addition to your education credentials, many jobs require a certain amount of **experience**. Keep in mind that you may be able to include some of your time as a student here, for example, if you did some summer research work or projects for courses.

You may have to work in temporary (contract) jobs at the beginning. This builds up your **experience** and gives you an opportunity to learn a variety of skills and to sample different work areas.
Further Studies

- Broad professional schools: Medicine, law, business (MBA)
- Specialized professional programs: Finance, industrial engineering, management science
- MSc/PhD: Mathematics, statistics, computer science, industrial engineering
- MBA; Operations Research, Management Science, Systems Science,

Math grads can ace GMAT, LSAT, MCAT (+ chem/bio) tests!

(often entrance requirements for these programs)
Math/physics majors at the top of the scores in LSAT
(source: Wikipedia)
BSc vs MSc vs PhD ??

- Some jobs in industry require MSc (and fewer require a PhD, but some high paying jobs do require a PhD).
- An MSc gives you an opportunity to do some independent work (thesis). This means a lot to employers.
- You can choose an area you are interested in for research in the MSc and PhD.
- Typically, an MSc requires two years and a PhD 4-5 years beyond that.
- As a *graduate student* (i.e., an MSc or PHd student) you will have opportunity to learn more mathematics, computing, modelling, etc and learn more about what employment areas are available, and meet people working in these areas. Also, to participate in meetings and summer schools (on interesting topics).
Augmenting your degree

- Research/independent study experience; class projects, reading courses, research assistant, NSERC USRA, Co-op, etc
- Create a LinkedIn page; set up a professional profile (www.linkedin.com)
- Attend scientific meetings, e.g. INFORMS, CORS, MITACS, PIMS, Fields Institute. Exposure to careers, networking (meet people working in areas of your interest), job events. (Search for conferences in Vancouver that may interest you, e.g. Environmental Business was a recent one.)
Job searching

- [link] http://www.monster.ca/
- [link] http://www.govjobs.ca/
- [link] http://www.sfu.ca/career.html Career Services, SFU (including Co-op)
This presentation:

http://www.sfu.ca/~rpyke/mathjobs