Professional development checklist

- These recommendations are Professor Laugesen's personal opinion (not part of departmental policy or official expectations).
- These activities are not part of the "Preparing Future Mathematicians" course.

Skills to develop during graduate school

- Asking questions
- Formulating research problems and outlining steps to solve them
- Understanding your adviser's expectations
- Thinking independently of your adviser, and demonstrating intellectual initiative
- Seeing and describing the big picture
- Thinking algorithmically
- Coding an algorithm
- Searching the literature (ArXiv, MathSciNet, Google Scholar)
- Writing mathematics clearly
- Writing mathematics elegantly (introduction, motivation, links between ideas)
- Setting goals for yourself, both short and long term
- Teaching skills (classroom management, group work, lecturing, problem writing, grading, ...)
- Presentation skills (writing and delivery)
- Proposal writing
- Mentoring students
- Recognizing ethical and legal boundaries
- Networking
- Job seeking

Specific activities during graduate school

- Choose your adviser carefully
  - Participate in a summer group research project, either early in your career or later as a senior student helping the lead professor
  - Organize a grad student seminar (study seminar or research presentations), for a half or whole semester
  - Join the lunch crowd with visiting speakers (see the Take the Speaker to Lunch form), and ask the speakers about their institutions, careers, research, teaching....
  - Build your network of professional contacts e.g. keep in touch with careers panelists
  - Speak on your research in a departmental seminar: follow advice on how to give a good talk, for example by Kra, McCarthy or Ellenberg
  - Make a professional website, and put up a brief CV
  - Create a LinkedIn page (if seeking non-academic employment)
  - Attend a conference in your field of specialty, and give a talk
  - Learn about the graduate student and career/job resources provided by the professional societies (AMS, MAA, SIAM, AWM) and by the Mathematics Department
  - Join one of the professional societies - check with the departmental Graduate Office to see whether you qualify for free student membership
  - Review a paper for Mathematical Reviews (that is, MathSciNet), under the guidance of your adviser
  - Referee a paper for a journal, under the guidance of your adviser
  - Mentor undergraduate research in the Illinois Geometry Lab
  - Take a mathematical writing course
  - Learn to use LaTeX well
  - Take a workshop or a course on mathematical software or programming (for example, through CSE)
  - Serve on a graduate student committee (e.g. TA Teaching Awards committee), or start a new committee or effort to improve the graduate student experience
  - Write a letter of recommendation for one of your undergraduate students
  - Attend a GEO meeting and learn about graduate student working conditions
  - Complete the TA mentoring program (departmental or Merit), as a mentee and later as a mentor
  - Complete the Graduate Teacher Certificate through the Center for Innovation in Teaching and Learning
  - Study for a Masters degree in the Teaching of Mathematics (you can get credit in this Masters for EOL 585)
  - Browse the College Mathematics Journal
  - Participate in a professional development event (teaching or research) sponsored by the Graduate School
  - Chart your progress along the Teaching and Career Development Timeline

- Conduct a few informational interviews with people in nonacademic careers that interest you e.g. friends, contacts, UIUC math alumni working in industry, or talk to the Director of Graduate Studies about your interests and see what contacts he can suggest....
- Try a summer internship in a government lab, or a company. You can apply for positions yourself, and also seek a match through PI4 - the Program for Interdisciplinary and Industrial Internships at Illinois. The PI4 grant can fund only U.S. students, but for an international graduate student, a corporate internship can often be arranged.

Talk to your adviser, fellow graduate students, the Director of Graduate Studies, the Associate Director of Graduate Studies, and so on, to gather ideas on how to get involved in these activities.

And remember to tour the bell tower in Altgeld Hall before you graduate!