

## 2010 CRA Career Mentoring Workshop

### Mentoring and Managing Students

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### What is a mentoring?

**Mentoring** - a very special **relationship**-  
ultimate goal to help mentee achieve  
success

- involves **professional/personal** development
- develops and lasts over an **extended period** of time, with varying intensity and purposes
- provides **information, help, advice and contacts**
- encourages and acts as an **advocate**

**In general, effective mentoring relationship is characterized by **mutual respect, trust, understanding and empathy.****

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## Graduate Student mentoring

### Responsibilities:

- Research
- Financial support
- Professional/Personal Development
- Research Environment
- CSE Research Culture

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## Responsibilities: Research

### Apprenticeship:

- How to find good research problems
  - Give them problem, guide them in finding problem, let them find their own problem
- How to get proper skills: literature, methodologies
- Perform research - creative, when successful
- Writing papers and proposals
  - Organizing and revising papers
- Reviewing papers
- Giving talks - conference, job and elevator

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## support

- **Stipend & Tuition**
  - Support student from your research grant
  - Help to find fellowships and other sources
- **Help travel support to conferences**
  - Grant
  - Department, Dean
  - Professional Societies: SIGPLAN, SIGSOFT, etc.
  - Conferences
- **Internships**
  - Summer internships at companies - IBM, HP, Intel, Google, Microsoft, NVIDIA, etc.

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## Responsibilities: Professional/Personal Development

- Set high standards and challenges for the students
- Guide, direct, encourage and foster independence
- Help with communication skills
- Help them become professional
- Help build confidence or provide reality checks -
  - Success is great catalyst for encouraging students

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## Promote and act as **advocate**

- Talk to colleagues about students
- Introduce them at conferences/workshops
  - encourage them to talk to others
- Credit them in talks and conversations
- Nominate them for awards, prizes, fellowships
- Help them find right job
- After graduation, suggest them for program committees, conference committees, NSF panels, etc.

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## Responsibilities: **Environment**

- **Single student - project**
  - Not feel isolated
- **Team of students working on same general project -**
  - Clearly identifiable research projects
  - Clearly identifiable contributions
- **Establish nourishing atmosphere**
  - Inclusive - especially if underrepresented
  - Cooperation vs. competitive
  - Treat students equally (as much as possible)

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## **Responsibility: Culture and Ethics**

- **Educate students about the acceptable practices and ethics in CSE Research**
- **Publishing**
  - **Conferences versus journals**
  - **Dual submissions**
    - Conference & conference (workshop)
    - Conference & journal
  - **Resubmitting essentially the same paper**
  - **LPU - least publishable unit**
- **Reviewing**
  - **Constructive criticism**
  - **Confidentiality**

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## **Establish research culture**

- **Maintain data and accurately reporting of experimental data**
- **Deciding on authorship; Order of authorship**
- **Who gives talks?**
- **Ownership of research ideas & software**
  - **After graduation**
- **Employing students**
  - **Within university**
  - **Outside endeavors**

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## Ethical Concerns

### Clear power differential - can exploit

- You make take credit for students work
- Emotionally - you disclose inappropriate info
- Sexually
- You demand many long hours for good recommendations or pay
- You keep students longer than necessary - their paper production.

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## Guiding principle: **Be flexible**

- Different students - require different amounts of and kinds of attention, advice, information and encouragement
- Understand challenges: language, cultural, isolation
- Some students feel comfortable approaching you; other not
- There will be different styles of work habits - may not match yours!

**Each student/mentoring is different -**

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## Finding Good Students

- **Be active but selective: recruit good and interested students to work with you**
- **Identify students with potential and encourage them to pursue higher degree: M.S. and Ph.D.**
  - **Bright students - may need to encourage them**  
Especially true for women and minorities
- **Less talented students - creativity, background, etc**
  - **Take more time - Careful when still untenured**
  - **Might be more rewarding and enjoyable**

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## Barriers to good mentoring

- **You doesn't have enough time to devote to mentoring** **Being too busy is not acceptable - just your priority**
- **You and/or your student**
  - **are in competition with each others**
  - **lack personal experience with people of different backgrounds**
  - **have poor listening skills**
  - **Have unrealistic expectations**

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## Best Practices

- Establish “**protected**” weekly time to meet with students and keep it
- Set **realistic** deadlines and goals
- Be **prompt** in providing feedback
- Learn to work with the mentee - nurture **self-sufficiency**
- Be **approachable** and available
- Be **constructive** - critical feedback is essential for improvement but do it kindly and temper criticism with praise

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## Why be a good mentor?

- **Most rewarding and satisfying** professional and personal activities
  - Having a student succeed and eventually become a friend and colleague is great joy
- Best mentors are most likely to be able to recruit **students of high caliber** who can help produce better research, papers, and grant proposals
- Provides stimulation through exposure to **new ideas and different approaches**
- **Recognition** for finding talent and **having influence**

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## Resources

- **"Adviser, Teacher, Role Model, Friend - On being a mentor to students in S & E", NAS, NAE, IOM, National Academy Press, 1997**
  - <http://www.nap.edu/readingroom/mentor>
- **CRA-W Career Mentoring Workshops Booklet**
  - Getting tenure, Building research career, Finding funding, Time management
  - <http://www.cra.org/craw>
- **Research Student and Supervisor: An Approach to Good Supervisory Practice**
  - February 22, 2010 **Council of Graduate Schools, Washington, D.C.**

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