

# Computer Engineering - ABET accreditation

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- **Students**

- **Mission and Objectives**

1. be adept at the fundamental theory and practice of computer science and electrical engineering, as it applies to computer hardware and software.
2. understand all the elements required to design a complete computer system (hardware and software).
3. understand the interaction between hardware and software.
4. have the analysis, design, and implementation skills necessary to solve problems using computer engineering principles and techniques. *add: identification and understanding of problems, communication*
5. understand the ethical, legal, and social issues in the computing discipline, and in engineering discipline in general.

- **Outcomes and assessment**

- **Professional Component**

- **Faculty**

- **Facilities**

- **Institutional Support and Financial Resources**

- **Computer Engineering Program Criteria**

- **Co-operative education program**

## Outcomes and assessment: outcomes

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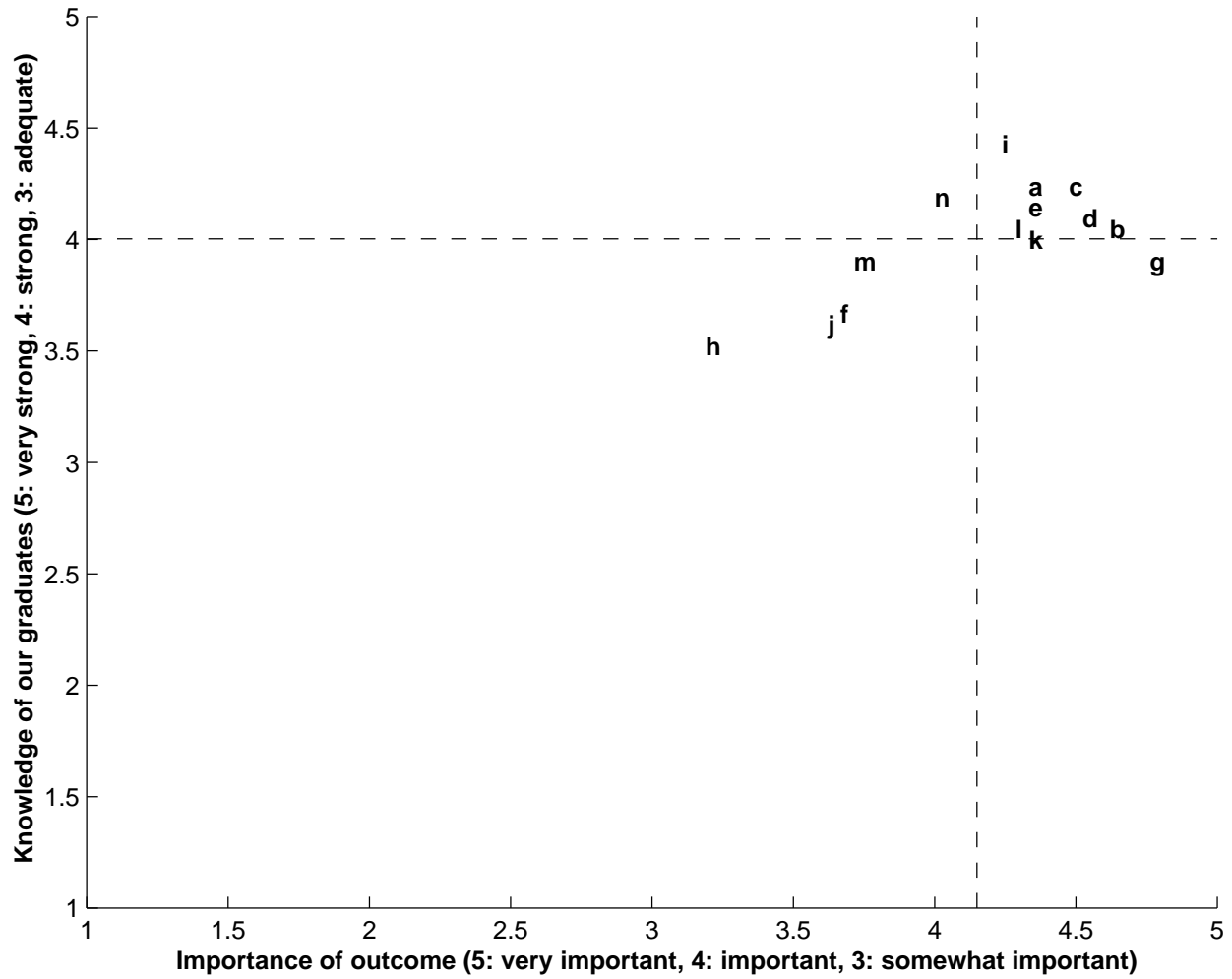
A computer engineer will have an ability to, or knowledge of:

- (a) apply mathematics, science, and engineering
- (b) design and conduct experiments
- (c) system/component/process design
- (d) multi-disciplinary teamwork
- (e) identify, formulate, and solve engineering problems
- (f) ethics
- (g) communicate
- (h) broad education
- (i) life-long learning
- (j) a knowledge of contemporary issues
- (k) techniques and tools of engineering practice
- (l) fundamental theory and practice of computer science and electrical engineering
- (m) design elements of a computer system
- (n) hw/sw interaction

# Outcomes and assessment: quantitative results

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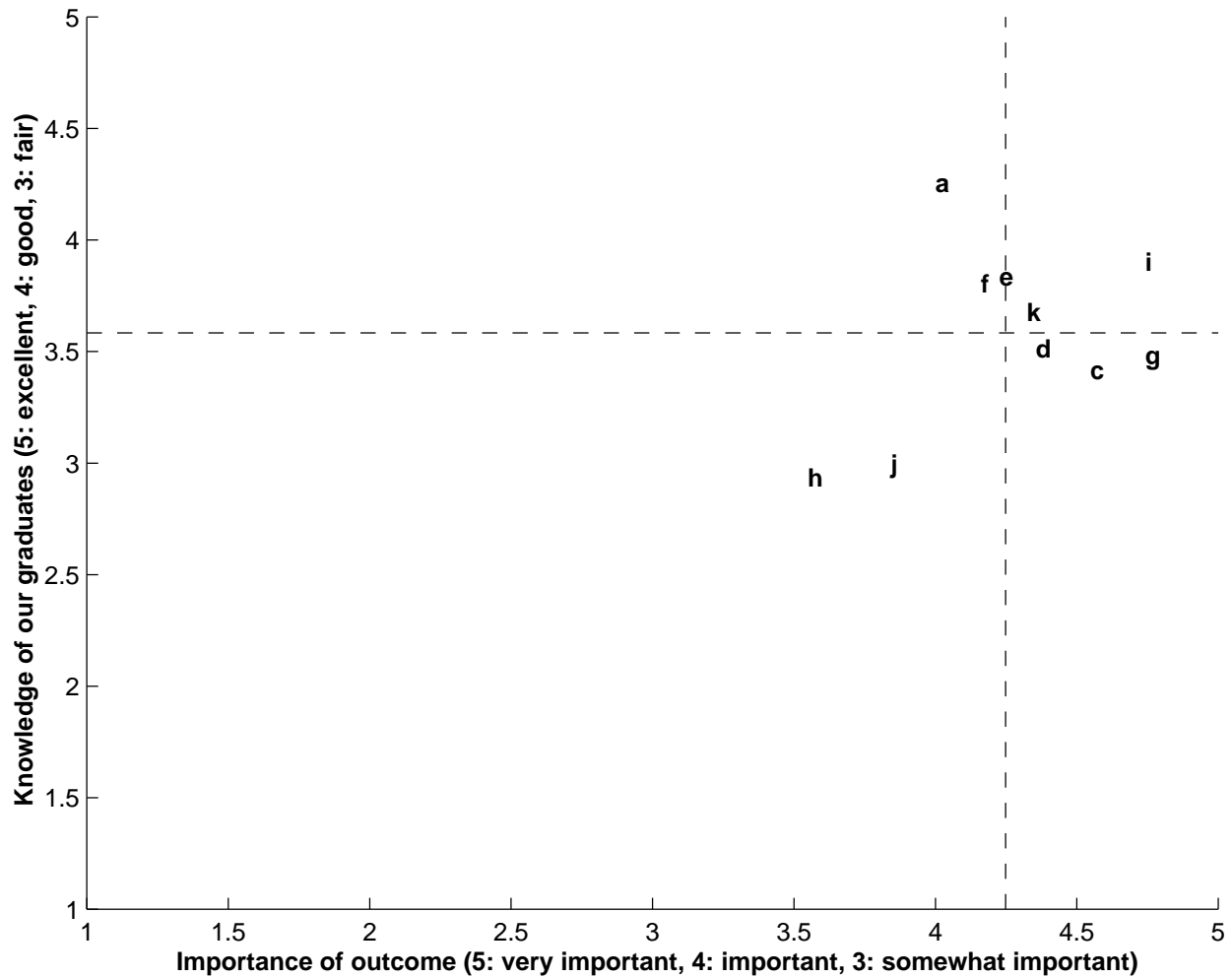
## Student exit interviews, Spring 2000



# Outcomes and assessment: quantitative results

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## Alumni survey results ('97-'98 graduates)

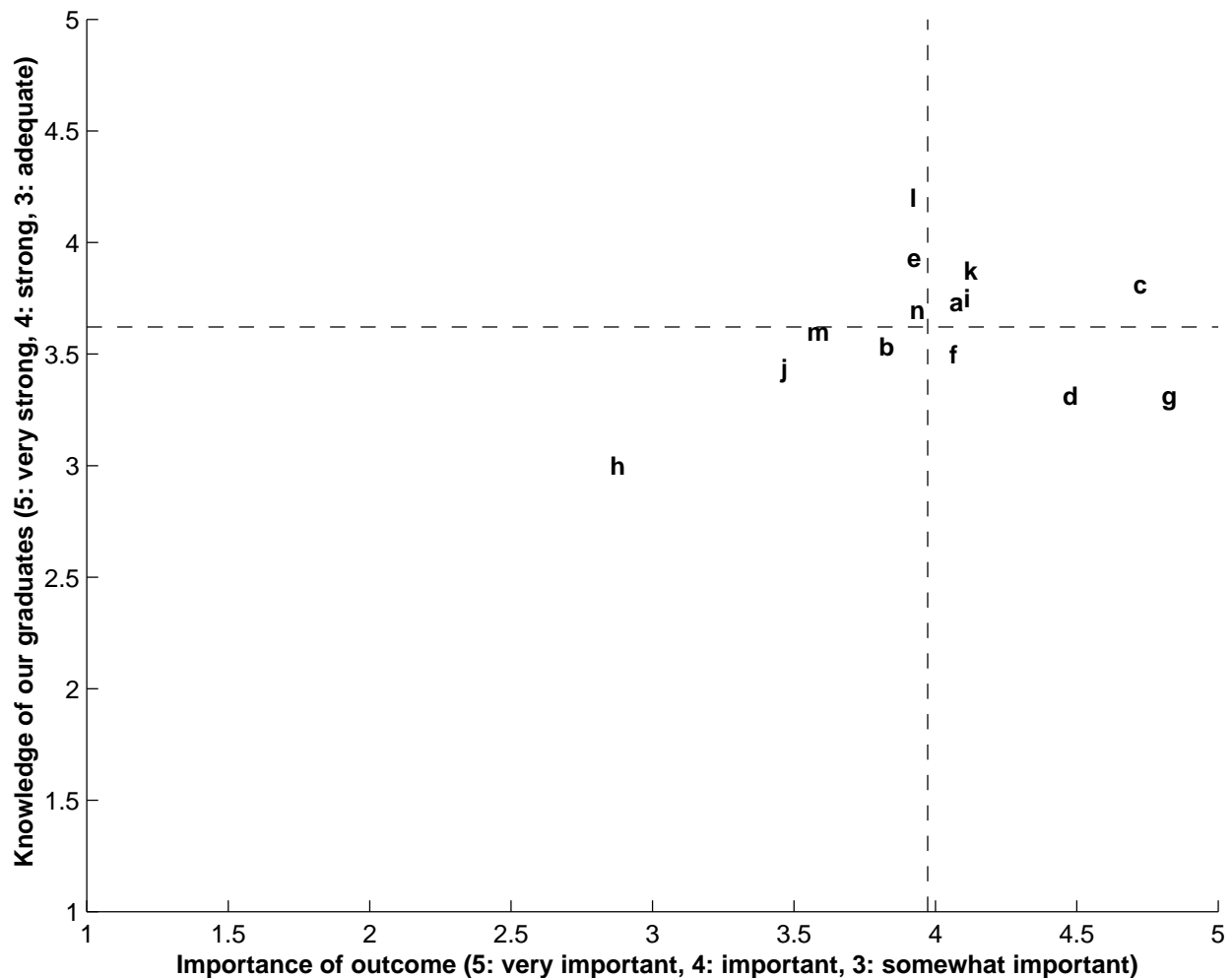


**Salaries:** ours \$50k to \$52k range. national average \$47k.

# Outcomes and assessment: quantitative results

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## Employer survey results (Industrial Advisory Board, April '99 and April '00)



**Co-op students:** rated 4.5 out of 5 by employers

## Outcomes and assessment: qualitative results - students

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- stick with one language in 3020 and 3530.
- need a large software project requirement
- courses tie together well
- Use more multimedia in lectures.
- Require a pre-test, or prior programming knowledge (or problem-solving skills), 3020
- Software engineering needs to be more practical
- Make the senior project course more like a “software engineering 2” course.
- Need more background in computer networks.
- Emphasis on theory vs. projects: *You need both. Learn the theory with a project.*
- take CS courses in first two years
- Add structured labs to COP 4600, and other courses.
- more team projects

## Outcomes and assessment: qualitative results - IAB / employers

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- Approved current program (7/97)
- Approved program objectives and outcomes (a)-(k) (9/98)
- April '99:
  - add 2nd course in software engineering (perhaps with a large software project)
  - do more oral presentations in existing courses
  - add a public speaking course
  - drop thermodynamics, statics, and materials
- October '99
  - students should take technical courses earlier in the tracking program.
  - need more teamwork experience; throughout the program, not just in a single course. Individual work also important.
  - need stronger debugging and problem-solving skills
  - our students, like most others nationwide, are weak in having software process experience
  - adding a course in business communications would be helpful; however, our graduates have relatively good verbal communication skills.

## Outcomes and assessment: qualitative results - IAB / employers (continued)

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- April '00: Pleased with progress. Revise Objective 4:

*A computer engineer will have the analysis, design, and implementation skills necessary to solve problems using computer engineering principles and techniques.*

add identification and understanding of problems, and communication skills.

- September '00:
  - more teamwork, communication skills
  - consider a track system for technical electives

## Outcomes and assessment: changes so far

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- Governing structure
- Major change to program, Nov 1998
- Language articulation
- CISE Industrial Advisory Board (IAB) formed
- ECE Industrial Advisory Committee (IAC) formed
- New courses (IPPD, for example)
- New facilities (Gartner Group, Microsoft, Harris, ...)
- New learning techniques
- Changes to college-wide engineering core

## Outcomes and assessment: changes being considered

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- Make prior programming experience (or a pre-test) a prerequisite for intro CS
- Currently students must take 2 out of 3 core areas: thermodynamics, statics & dynamics, and materials. Reduce this to 1 out of 6 areas. Drop Chemistry 2.
- Add a technical oral communication course.
- Add a second software engineering course with teamwork and a large software project, and perhaps merge it with the senior design course. Also include teamwork in tech electives.
- Merge some of the EEL courses with their associated labs.
- Add *identification and understanding of problems* and *communication skills* to objective (4).
- enrollment control
- See <http://www.cise.ufl.edu/~davis/Curr/ToDo.pdf> for other agenda items.
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