



Outcome Based Accreditation and Core Body of Knowledge (CBOK)

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Outcomes Based Accreditation

- A new approach that all accreditation agencies are now using
- **The key idea:** The department/school being accredited shows that their graduates will possess a set of attributes
 - De-emphasizes counting courses of hours in certain topics

The onus shifts from:

- OLD: determining whether enough hours/courses are spent on a topic

to

- NEW: evaluating all sources of evidence that the graduate attributes have a high probability of being met
 - Time in class on a topic is one form of evidence
 - But there are many other 'quality indicators' including:
 - Satisfaction of employers
 - Students passing tests on the topics
 - All paths through the sets of courses leads to the outcomes
 - Students can do project work successfully
 - Faculty have the background and are up to date

CSAC Graduate Attributes

- A graduate of a CS, SE or interdisciplinary program must be able to:

- GA1. Demonstrate knowledge of:
 - a) Software engineering
 - b) Algorithms and data structures
 - c) Systems software
 - d) Computer elements and architecture
 - e) Theoretical foundations
 - f) Discrete mathematics
 - g) Probability and statistics

Graduate attributes cont.

- GA2. Analyse and solve problems
 - Use knowledge and skills including research and experimentation
 - Reach substantial conclusions

- GA3. Design software and systems
 - For open-ended problems
 - With evaluation of designs based on predefined criteria
 - Considering safety, economic, cultural, and societal issues

Graduate attributes cont.

- GA4. Use appropriate resources
 - Techniques
 - Computing tools
- GA5. Work individually and as a team

Graduate attributes cont.

- GA6. Communicate effectively
 - With the computing community + society at large
 - Written reports, including documentation
 - Making presentations
 - Giving instructions to others

- GA7. Act professionally
 - With respect to ethical, societal, environmental, health, safety, legal and cultural issues

Graduate attributes cont.

- GA8. Be prepared for life-long learning
 - Ability to demonstrate learning of tools, languages, technologies, standards
 - So as to maintain their knowledge and contribute to the advancement of knowledge.

- GA9. Demonstrate breadth of knowledge
 - In areas other than CS and mathematics
 - Ability to communicate with professionals in those fields

CSAC accredits three types of programs

- Computer Science
- Software Engineering
 - Graduates should have knowledge in key subareas of GA1a
 - Requirements, design, construction, testing, management/process, HCI, standards
- Interdisciplinary
 - Only algorithms and data structures in GA1 are critical
 - Breadth outside CS/math (GA9) is emphasized

You can modify the graduate attributes to meet specific needs

- Simply justify why
 - What is the special type of computer scientist you are graduating?
 - Why do they need different attributes?

The new accreditation questionnaire

- Has many similarities with the old one
- Some simplifications
- The old ‘must have n courses’ become ‘general expectations’
 - Helps maintain link between old and new approach
 - Outcomes are primary: Accreditation can still be achieved if other evidence shows GA1-9 are met
- Key addition:
 - Information on attributes achieved in each required CS/Math course

A look at the form you would fill out

- Questionnaire p 5, 6 and 15
- Sample completed questionnaire

- These are being sent to CACS-AIC members along with this email
 - Please do not use these to prepare for accreditation since we may make revisions in the Fall after we use them for certain universities
 - When you want accreditation, please contact accreditation@cips.ca

Currently accredited programs

- Computer Science
 - 19 Universities, 61 programs currently accredited
- Software Engineering
 - 12 Universities, 20 programs currently accredited
 - (CEAB currently has 15 universities / 15 programs
 - 4 of these accredited by both agencies)
- Interdisciplinary
 - 2 Universities, 2 programs currently accredited

Combined reviews

- We have done two accreditation visits that also combine *provincially-mandated* or *senate-mandated* reviews
- We encourage you to consider doing this
 - Many universities and provinces allow it, or could be convinced to do so
 - E.g. Ontario's review requirements (degree level expectations) are also outcomes based and can be readily mapped to graduate attributes

Fee plan – as of 2011

- Fees are paid each year throughout the period of accreditation
 - Approx. \$700 per year per university, or \$900 if both CS and SE programs are accredited
 - With a phase-in to to be fair to both departments and CIPS during the transition
 - Result: Smaller annual budget line item
 - No need to justify every 5-6 years
 - All accredited universities are on board with this

- Accreditation is now for 6 years by default

Seoul Accord

- Mutual recognition of your computing programs internationally
 - <http://seoulaccord.org/>
 - US (ABET), Canada, UK, Australia, South Korea, Hong Kong, Taiwan, Japan
 - Analogous to the Washington Accord for Engineering
- CIPS/CSAC itself undergoes accreditation by the Seoul Accord
 - It has passed the first phase

CBOK: Core Body of Knowledge

- Body of knowledge expected to be known by *all* computing and IT professionals in Canada
 - Computer scientists, software engineers, business technology managers, CIO staff, database administrators, data centre managers, etc.
 - [The draft is here at http://www.cips.ca/CBOK](http://www.cips.ca/CBOK)
- Other national societies have such a BOK
 - Used for certification (e.g. I.S.P.), calibrating accreditation requirements, etc.

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Process we are using to develop CBOK

- 1. Committee work: Professors at universities and colleges, academics, business leaders
 - Input from industry needs, other BOKs (e.g, UK (SFIA), Australia, SWEBOK, ACM curricula, etc.
 - Many iterations throughout 2010
 - Sought good references for all topics

Process we are using

- 2. Now: Survey sent through many channels
 - CACS-AIC was the most successful channel
 - <https://www.surveymonkey.com/s/cips-cbok-cacs-aic>
 - We do need more industrial participation from all sectors
 - Contact me if you have names I can contact
- We will now look at a spreadsheet of initial results