Computer Information Systems (CIS) Track Data Collection for its ABET Accreditation

Gurmukh Singh Ph.D.
Department of Computer and Information Sciences
SUNY at Fredonia, Fredonia, NY 14063
singh@fredonia.edu

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Presentation Objectives

- What is ABET and ABET Accreditation?
- Why do we need it?
- How to go for ABET Accreditation?
- What are requirements for ABET Accreditation?
- How to fulfill ABET Accreditation Requirements?
- Who is required to collect data for ABET Accreditation?
- How to collect data for ABET Accreditation for a given CS or CIS track?
- What is the deadline date for data collection and its submission?
- To whom ABET data is to be submitted?
- Any other relevant information or question concerning the ABET

Brief History of ABET and What does it stand for?

- ABET was founded in 1932 as Engineers' Council for Professional Development (ECPD)
- Originally headquartered at Engineering Societies Building and then at United Engineering Center in New York City
- Later on it was moved to Baltimore in 1996
- ECPD was renamed in 1980 to Accreditation Board for Engineering and Technology (ABET) to more accurately describe its emphasis on accreditation.
- In 1985, an anticipated boom in computer science education response, ABET helped establish Computing Sciences Accreditation Board (CSAB). CSAB is now one of ABET's largest member societies with more than 300 accredited programs.
- In 2005, the organization began operating simply as ABET [1], using its corporate name "Accreditation Board for Engineering and Technology, Inc." that was required by law from Uncle Sam.

What is ABET Accreditation: Why and Who Needs it?

- ABET is a non-profit/non-governmental accrediting agency for academic programs in areas listed below:
  - Applied science
  - Computing
  - Engineering
  - Engineering technology
- ABET is a recognized accreditor in America by the Council for Higher Education Accreditation [2]
- *ABET accreditation provides assurance that a college or university program meets the quality standards established by the profession for which the program prepares its students*

What is ABET Accreditation: Why and Who Needs it?

- ABET accredits postsecondary programs pertaining to all degree-granting institutions that have been recognized by national or regional institutional accreditation agencies or national education authorities worldwide.
- Two types of academic accreditation in USA:
  - Institutional
  - Specialized or programmatic
- **Institutional accreditation**
  - Provided by regional and national accreditors and evaluates overall institutional quality, but does not focus on a given academic program.
- **Specialized or programmatic accreditation**
  - Evaluates an individual program of study, rather than an institution as a whole
  - This accreditation type is granted to a specific program at a variety of degree levels (associate's, bachelor's, and master's)

What is ABET Accreditation: Why and Who Needs it?

ABET undertakes specialized accreditation for programs at various levels through its four accreditation commissions:

1. Applied Science Accreditation Commission (ASAC)
   - Accredits an applied science program at the associate's, bachelor's, or master's degree level
2. Computing Accreditation Commission (CAC)
   - Accredits a computing program at the bachelor's degree level only
3. Engineering Accreditation Commission (EAC)
   - Accredits an engineering program at the bachelor's or master's degree level
4. Engineering Technology Accreditation Commission (ETAC)
   - Accredits an engineering technology program at the associate's or bachelor's degree levels

How Many ABET Accredited Institutes?

- Till now, ABET has accredited
  - Over 3,400 applied science, computing, engineering, and engineering technology programs globally
  - At nearly 700 colleges and universities in 28 countries worldwide
- To find an ABET-accredited program in all 50 American states, one may refer to the following link:

  Accredited Program Search [3]

Step-by-Step Accreditation Process

Two distinct phases of ABET Accreditation Process:

- Assessment processes
  - Must be in place before a program's formal submission of a Request For Evaluation (RFE)
- The 18-month accreditation process itself
  - Begins with a Request For Evaluation (RFE) submission
  - Note that some programs must undergo a Readiness Review [4] prior to submitting an RFE to ABET.
  - Usually Readiness Review must be submitted before Nov. 1 of each year.
  - Questions for Readiness Review may be directed to

    ReadinessReview@abet.org

Step-by-Step Accreditation Process

- **Before the Accreditation Process:**
- **Assessment Planning:** Before an institution submits a formal RFE for a program, the program must have in place processes for internal assessment that may take several years to develop. During this preparation phase, a program must:
  - Implement the assessment process for program educational objectives and student outcomes [5]
  - Demonstrate a continuous improvement loop
  - Collect student work examples for CS or CIS Track [5]
  - Review the most up-to-date Accreditation Criteria, Accreditation Policy and Procedure Manual, and Self-Study Questionnaire(s) which are updated every year.

Criteria for Accrediting Computing Programs, 2015-2016

- All changes are affective for evaluations during the 2015-2016 accreditation cycle
- Criteria for accreditation of a given subject may change each academic year
- All changes have been approved by the ABET Board of Directors as of November 1, 2014
- Link to the ABET website for those changes is given below [6]:

  http://www.abet.org/cac-criteria-2015-2016/

- Please contact the ABET Accreditation Department if you have questions or need assistance.

Table 1: CIS Spring 2015 Courses Picked for ABET Data Collection

	Course # & Instructor	Learning Outcomes (LOs) to be assessed
1.	CSIT107, Raghunath	I2
2.	CSIT205, Singh	A1, A2, A5, I1
3.	CSIT221, Arnavut	A1, A2, A5, I1
4.	CSIT251, Mackey, Nazarenko, Pelz, & Scialdone	All Es, G1, G2
5.	CSIT312, Arnavut	A3, A4
6.	CSIT351, Nippard	All Bs, Cs, Ds, Js
7.	CSIT425, Scialdone	All Fs
8.	CSIT455, Tsetse	All Fs (for 15 students)
9.	CSIT300, 400, 497, 499, All Instructors	All Hs

Table 2: A. An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline (Only three outcomes out of five are listed here)

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
A1. Demonstrates an understanding of basic data structures and their representation	CSIT 121, 221, 341, CSIT 205	**CSIT 221, 205**	Selected questions extracted from course examinations and assignments; selected components of course projects
A2. Demonstrates an understanding of a high-level programming language and software design	CSIT 121, 105, 221, CSIT 205	**CSIT 205, 221**	Selected questions extracted from course examinations and assignments; selected components of course projects
A3. Demonstrates an understanding of number systems and digital logic	CSIT 241, 312	**CSIT 312**	Selected questions extracted from course examinations and assignments

Table 3: Rubric sheet for assessment of program outcome A.
An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
A1. Demonstrates an understanding of basic data structures and their representation.	Does not demonstrate knowledge about ADT such as an array, file, stack, etc.).	Demonstrates knowledge about ADT such as an array, file, stack, etc.).	Select an ADT appropriate for a given task and appropriately use it.	Extend a given ADT with additional features or use it for an application.
A2. Demonstrates an understanding of a high-level programming language and software design	Does not demonstrate ability to use objects.	Demonstrates the ability to use simple operations on predefined classes and declare simple classes.	Demonstrates the ability to recognize the need for simple design patterns and declare/extend appropriate data structures to meet the design needs.	Demonstrates the ability to extend a given data structure with additional features or use it in an application in a way that integrates multiple design concepts.

Table 4: Rubric sheet sample for assessment of program outcome A. *An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline (Fictitious data based on 12 students)*

CSITXXX, Spring 2015, Instructor				
PEO's	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
A1	1	1	2	8
A2	1	1	0	8
A3	0	1	2	7
A4	0	2	1	9
A5	0	1	2	9
Here XXX stands for course # 205, 221, & 312 (Please refer to CIS Assessment Plan 2014)				

Table 5: Rubric sheet for assessment of program outcome A. ***An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline (Data is based on 9 students) [6]***

CSIT341, Fall 2014, Barneva				
PEO's	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
A1	0	0	1	8
A5	0	1	0	8
B2	0	0	2	7
J4*	1	1	0	7
J1*	1	0	1	7
J2*	1	0	1	7
J3*	1	0	1	7

* Please note that these PEO's are valid for CS Track Assessment Plan 2014

Conclusions

- I tried to present some details of ABET Accreditation process that is relevant to CIS track in CIS Department SYNY at Fredonia
- It may be or may not be relevant to CIS track in other colleges and universities in NY or any other state in the USA
- Each department has to design its own Curriculum Map and Assessment Plan depending upon the courses offered
- Institute accreditation process is entirely different than the departmental track accreditation
- Data must be collected for the entire class
- Accreditation fee for a given track is $1000.00 in AY 2014-15 [1]
- Any question on ABET Accreditation, please email me or call me

References

1. http://www.abet.org/
2. http://www.chea.org/
3. http://main.abet.org/aps/Accreditedprogramsearch.aspx
4. http://www.abet.org/readiness-review/
5. http://www.fredonia.edu/department/cis/assessment.asp. Also refer to the above website for more information
6. Table 5 is designed on the basis of an email gotten from Dr. Reneta Barneva. This data set was collected for CSIT341 but I am not sure when.

Any Questions Please?

Thank You For Your Time!

The End