334 Symposium 2009

Program and Course Outcomes through the Web

David Rossiter

This Presentation

- The subject of this symposium is ‘Enhancing and assessing students learning outcomes for the new 4 year curriculum’
- In this presentation we look at the web-based framework we have developed called PACOS for managing this and other OBE related information at the program and course level

Me

- Visiting Assistant Professor at HKUST for 13+ years
- 9 teaching awards
- Member of various related committees
  - Department OBE committee
  - Department 334 committee
  - University OBE steering committee

http://www.cse.ust.hk/obe_software

Program and Courses Outcomes System (PACOS) - Mozilla Firefox

File Edit View History Bookmarks Split Tools Help

http://www.cse.ust.hk/obe_software/

Program and Cours...

Program and Courses Outcomes System (PACOS)

Home | Overview | Download | Installation Guide | User Guide | License | About Us | Sitemap

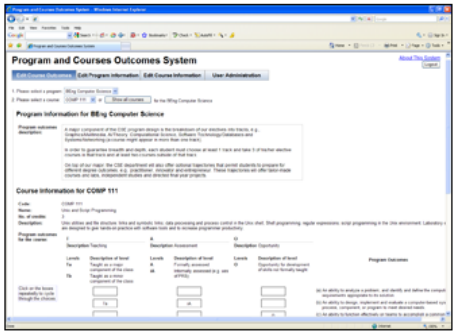
About This Project

Program and Courses Outcomes System (PACOS) is a free, open source web-based system. It was designed to be used by a department of a university or similar institution as a centralized web system for the members of the department to access and amend the course-outcome mappings of program(s) offered by the department.

Using the system, courses in the program(s) can be freely added, deleted, and amended, and their role in the context of the program(s) offered by the department made clear More Details ». The user can select the mappings of an individual course to the outcomes of the program(s) More Details », and the outcomes of the courses can be declared More Details ». A configurable graph showing a histogram of the outcomes is shown.

A course-outcomes matrix can be generated at any time, showing how all courses in the program contribute to the program outcomes More Details ».

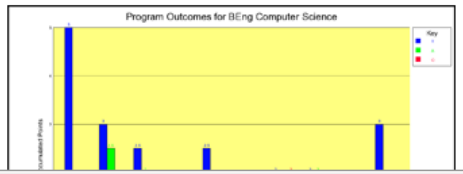
Please go to the overview page for further information about the PACOS system.

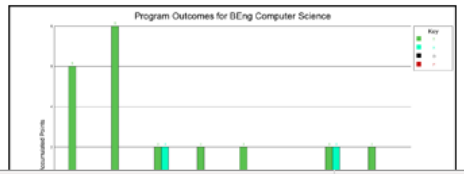


An example screen dump of the system (click for bigger image)

Example Screen Shots

Here are some example screen displays of the system being used.

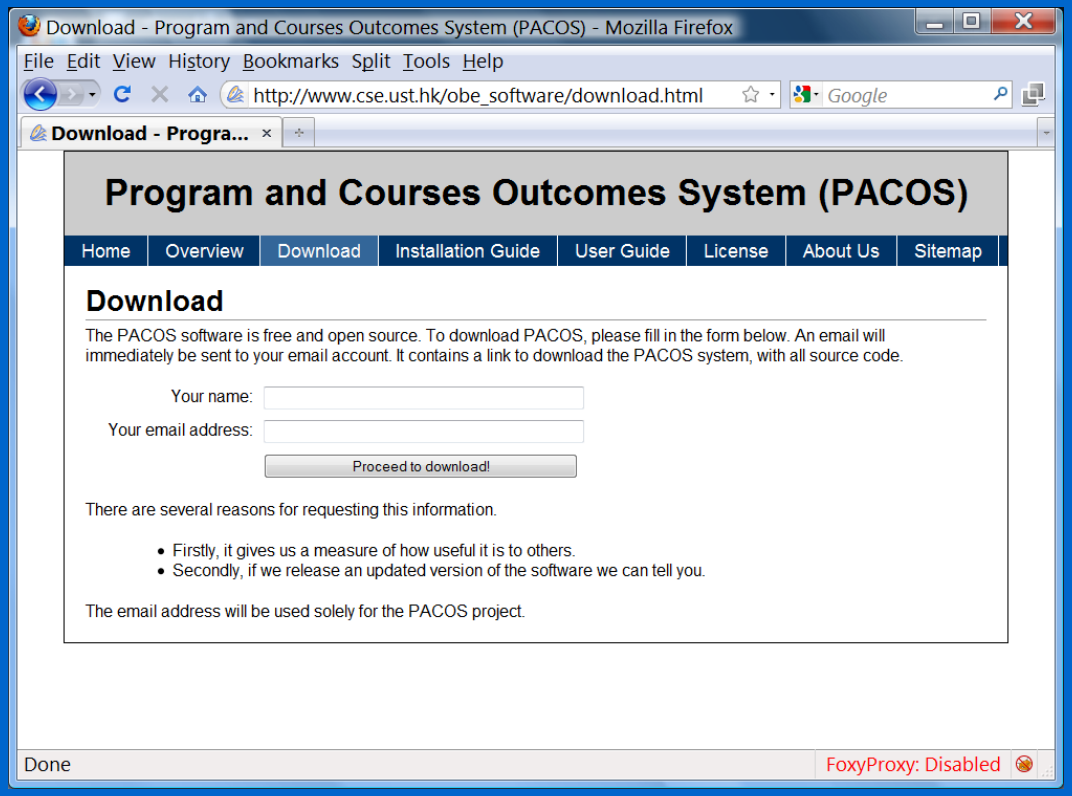




Done

FoxyProxy: Disabled

- Free and open source

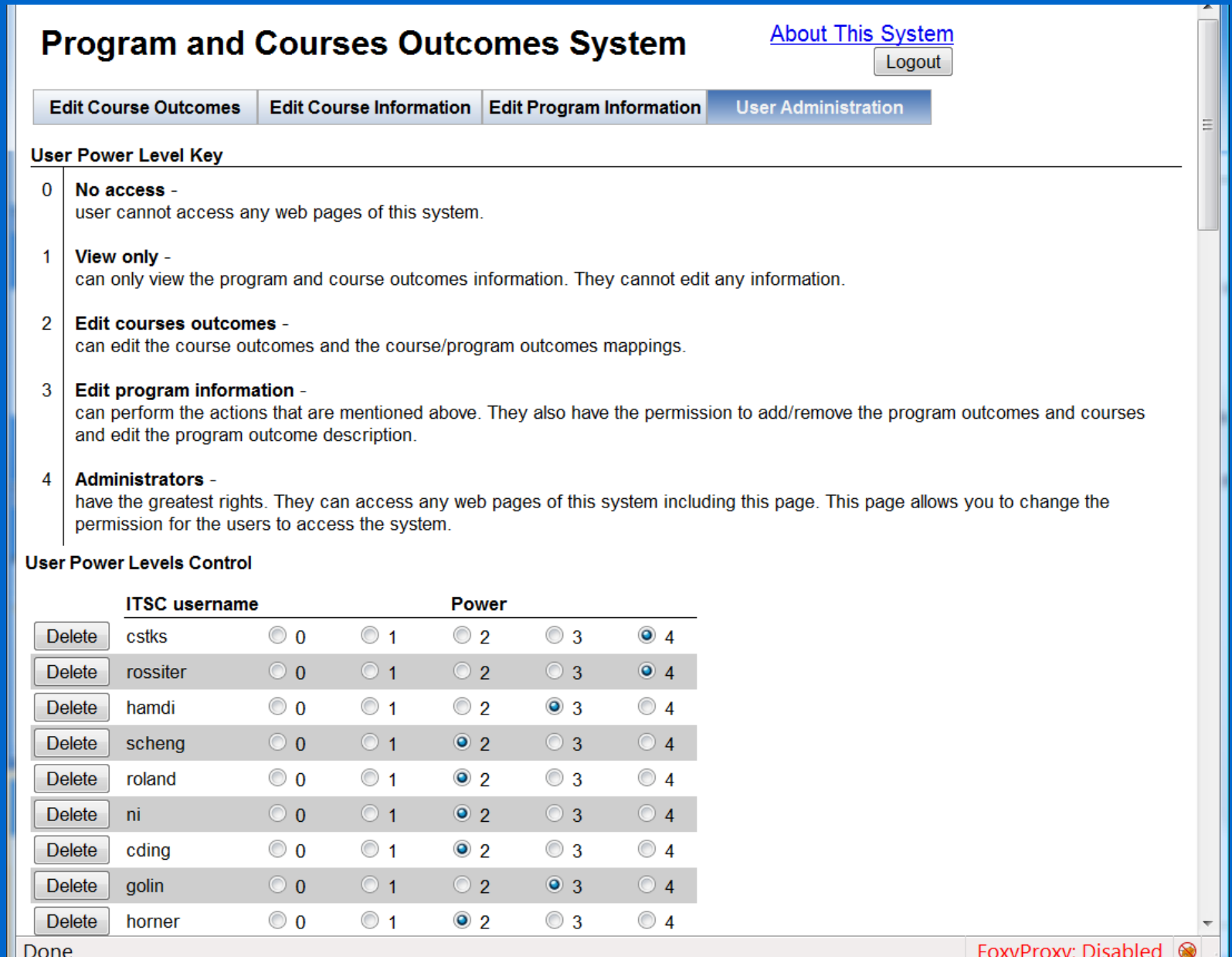


- Used by many departments in UST, also Lingnan University

PACOS

- Account handling
- Program management, outcomes
- Course outcomes, assessment
- Audit information
- Outcome mapping
- Graph display
- Exporting to Microsoft Excel

Account Handling



Program and Courses Outcomes System

About This System

Logout

Edit Course Outcomes | Edit Course Information | Edit Program Information | User Administration

User Power Level Key

0 **No access** -
user cannot access any web pages of this system.

1 **View only** -
can only view the program and course outcomes information. They cannot edit any information.

2 **Edit courses outcomes** -
can edit the course outcomes and the course/program outcomes mappings.

3 **Edit program information** -
can perform the actions that are mentioned above. They also have the permission to add/remove the program outcomes and courses and edit the program outcome description.

4 **Administrators** -
have the greatest rights. They can access any web pages of this system including this page. This page allows you to change the permission for the users to access the system.

User Power Levels Control

	ITSC username	Power				
Delete	cstks	0	1	2	3	4
Delete	rossiter	0	1	2	3	4
Delete	hamdi	0	1	2	3	4
Delete	scheng	0	1	2	3	4
Delete	roland	0	1	2	3	4
Delete	ni	0	1	2	3	4
Delete	cding	0	1	2	3	4
Delete	golin	0	1	2	3	4
Delete	horner	0	1	2	3	4

Done

FoxyProxy: Disabled

Slide from Trudy Banta This Morning: Generic 4-Year Outcomes

- Critical thinking
- Creativity
- Communication skills
- Global outlook
- Leadership and teamwork
- Cultural appreciation

Example Program Outcomes

(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline,

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution,

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs,

(d) An ability to function effectively on teams to accomplish a common goal,

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities,

(f) An ability to communicate effectively with a range of audiences,

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society,

(h) Recognition of the need for and an ability to engage in continuing professional development,

(i) An ability to use current techniques, skills, and tools necessary for computing practice,

(j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices, and

(k) An ability to apply design and development principles in the construction of software systems of varying complexity.

Program Outcomes

Program outcomes:

Delete Edit	(a) An ability to analyze a problem, and identify and define the computing requirements appropriate
Delete Edit	(b) An ability to design, implement and evaluate a computer-based system, process, component, o
Delete Edit	(c) An ability to function effectively on teams to accomplish a common goal.
Delete Edit	(d) An understanding of professional, ethical, legal, security and social issues and responsibilities.
Delete Edit	(e) An ability to analyze the local and global impact of computing on individuals, organizations, and
Delete Edit	(f) An ability to use current techniques, skills, and tools necessary for computing practices.
Delete Edit	(g) An ability to apply mathematical foundations, algorithmic principles, and computer science theo comprehension of the tradeoffs involved in design choices.
Delete Edit	(h) An ability to apply design and development principles in the construction of software systems of

Click Here to add a new outcome

Reviewing your Program Level Outcomes

- **Number of outcomes**

  Keep the number manageable; 10-20 outcomes are probably the acceptable range. Address intermediate outcomes at a year or course level

- **Check for overlap**

  Easily differentiable from each other. This is particularly important if you are going to map your curriculum

- **Check for clarity**

  Communicate clearly to students about what they need to achieve in the programme (i.e. it would give them a clear direction for their study)

- **Check for representativeness**

  Informs reader of attributes found in a graduate from the programme

- **Check for alignment**

  Alignment of outcomes at different levels: School, Program, Course. Alignment between ILOs, assessments and teaching and learning activities. Alignment with the University's graduate attributes (ABC LIVE) to produce all-round students with academic and professional competence.

back to top

Adding & Deleting Programs

Program Control

To delete a program:

1) Select a program: BEng Computer Science
2) Click Here to delete the selected program.

To add a new program:

1) Enter the program code here:

   The program code is an unique code for each program, e.g. 5414, this is the program code for BEng Computer Science.

2) Enter the program name here:

   The name of the program offered by a department, e.g. BEng Computer Science

3) Click Here to add the new program.

Managing Courses in the Program

Program courses:

To delete a course:

1) Select a course: COMP 001
2) Click Here to delete this course from the program BEng Computer Science

To add course(s):

1) Input the course code(s):

   You can enter more than one course at the same time. Use a comma to separate them i.e. comp000, comp123, math000.

2) Click Here to add the course(s) to the program BEng Computer Science

Example Course Outcomes

Course Learning Outcomes

By the end of this course, you will have the following skill set.

1. General Appreciation

1.1. Have a general appreciation of the use of the Internet in society

---

3. Server Based Skills

3.1. Be able to install and understand the operation of a server such as Apache

3.2. Develop server side code in an appropriate language such as PHP

4. Skills Related to Both

4.1. Have a working knowledge of the most common HTTP instructions and their methods of client-server interaction, including cookies

4.2. Understand XML and related technologies including DOM handling

4.3. Develop complex programs for browser-server communications, including use of Ajax

2. Browser Based Skills

2.1. Be knowledgeable about HTML and related display techniques including CSS

2.2. Understand how to build browser based programs using the JavaScript language, including DHTML and event handling

2.3. Be able to program advanced browser display technologies including Flash and SVG, and to appreciate the differences

2.4. Develop code for handling communication between web page components such as JavaScript, Flash, and applets

Course Outcomes

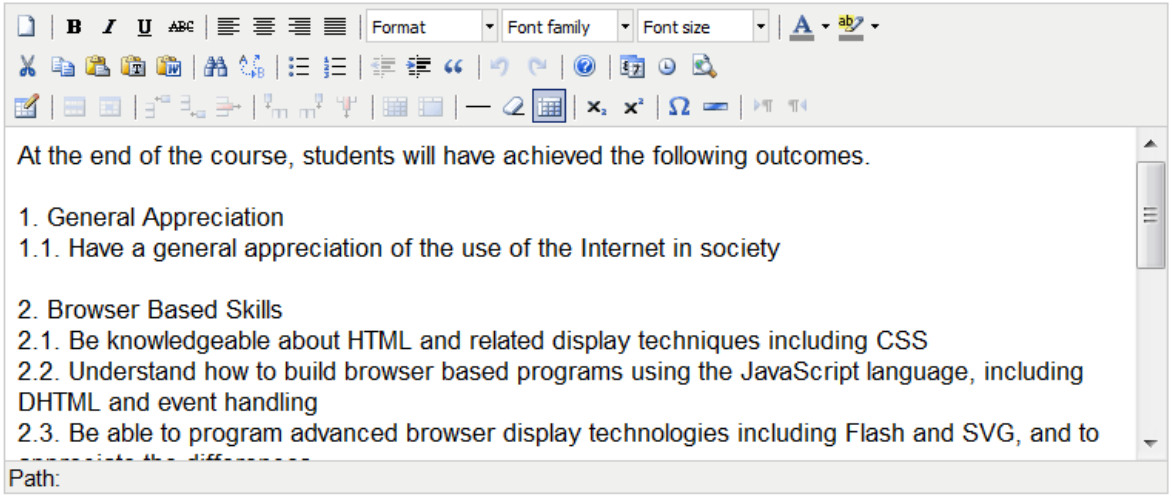
Code: COMP 303

Name: Internet Computing

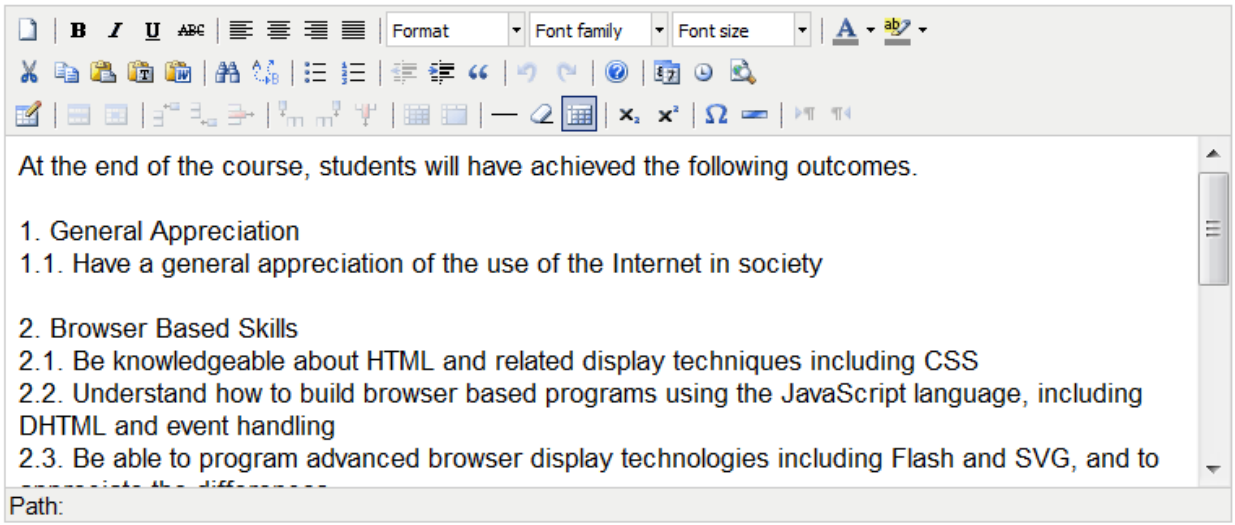
No. of credits: 3

Description: Technologies and standards for World Wide Web (WWW), user interfaces and Browsers, authoring tools, Internet protocols, Internet servers, database connectivity, Robots, Search engines, server-side programming, client-side programming, security and privacy, recent advances.

Course outcomes:



Audit Information



Click Here to update course outcomes, course assessment methods and program outcomes.

Hide previous modification information for this.

rossiter edited the course outcomes for COMP303 on 31-08-2009 at 16:57:49
rossiter edited the course outcomes for COMP303 on 23-06-2009 at 14:46:18
horner edited the course outcomes for COMP303 on 15-06-2009 at 16:44:54
csliao edited the course outcomes for COMP303 on 12-06-2009 at 11:20:12
csliao edited the course outcomes for COMP303 on 12-06-2009 at 11:05:17
csliao edited the course outcomes for COMP303 on 12-06-2009 at 11:02:52

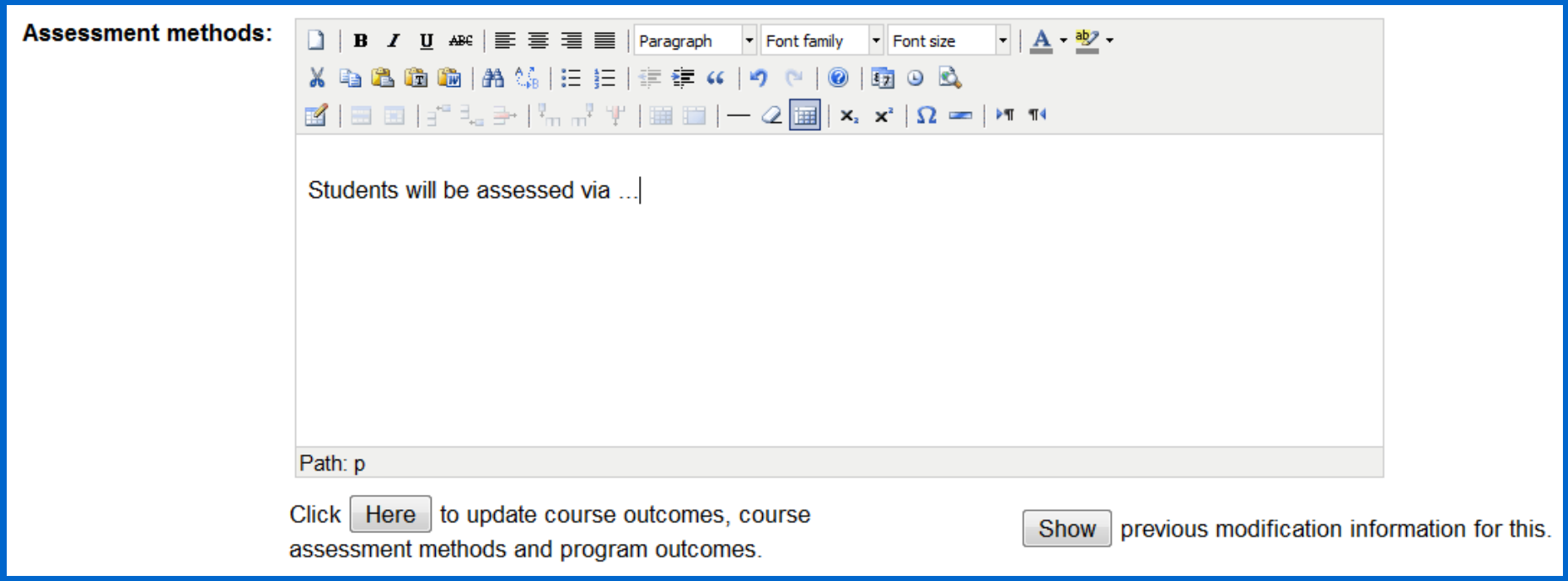
Assessment - Typical ‘Old Style’

- **Labs**
  - It is essential that you attend the lab sessions, otherwise it will be impossible to do the project work
- **Projects**
  - There will be three mini-projects, which will be based on the lab work
  - Project work will be collected using the CASS system, submission details will be given later
- **Midterm test**
  - This test will be approximately 1 hour 30 minutes, open book exam
  - The midterm will be around week 8
- **Final exam**
  - This will be a 2.5 hour, open book, open note exam

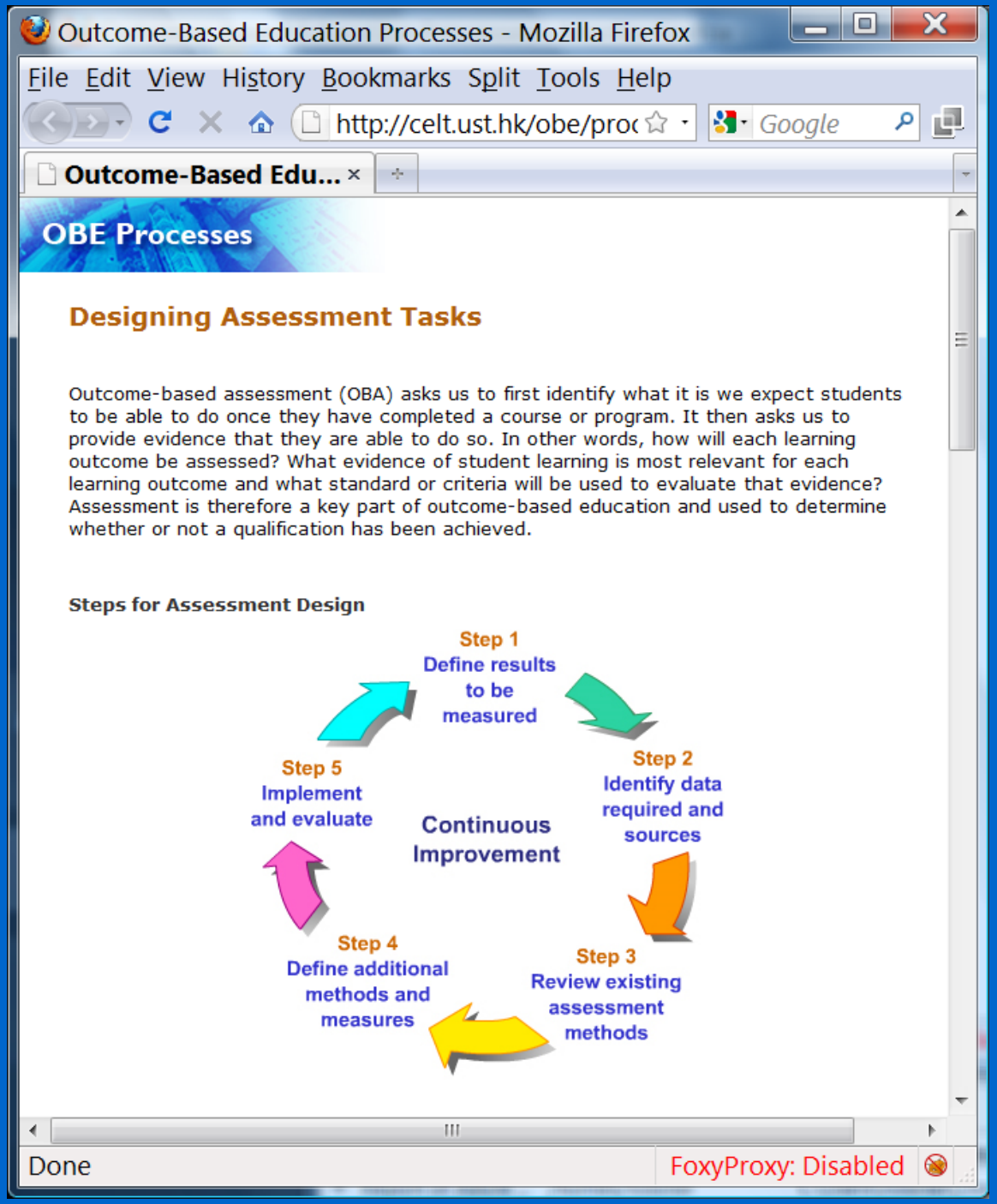
Slide from Trudy Banta This Morning: Methods of Assessment

- Paper and pencil tests
- Individual or group projects
- Portfolios
- Observation of practice
- Observation of simulated practice
- Analysis of case studies
- Attitude or belief inventories
- Interviews and focus groups
- Surveys

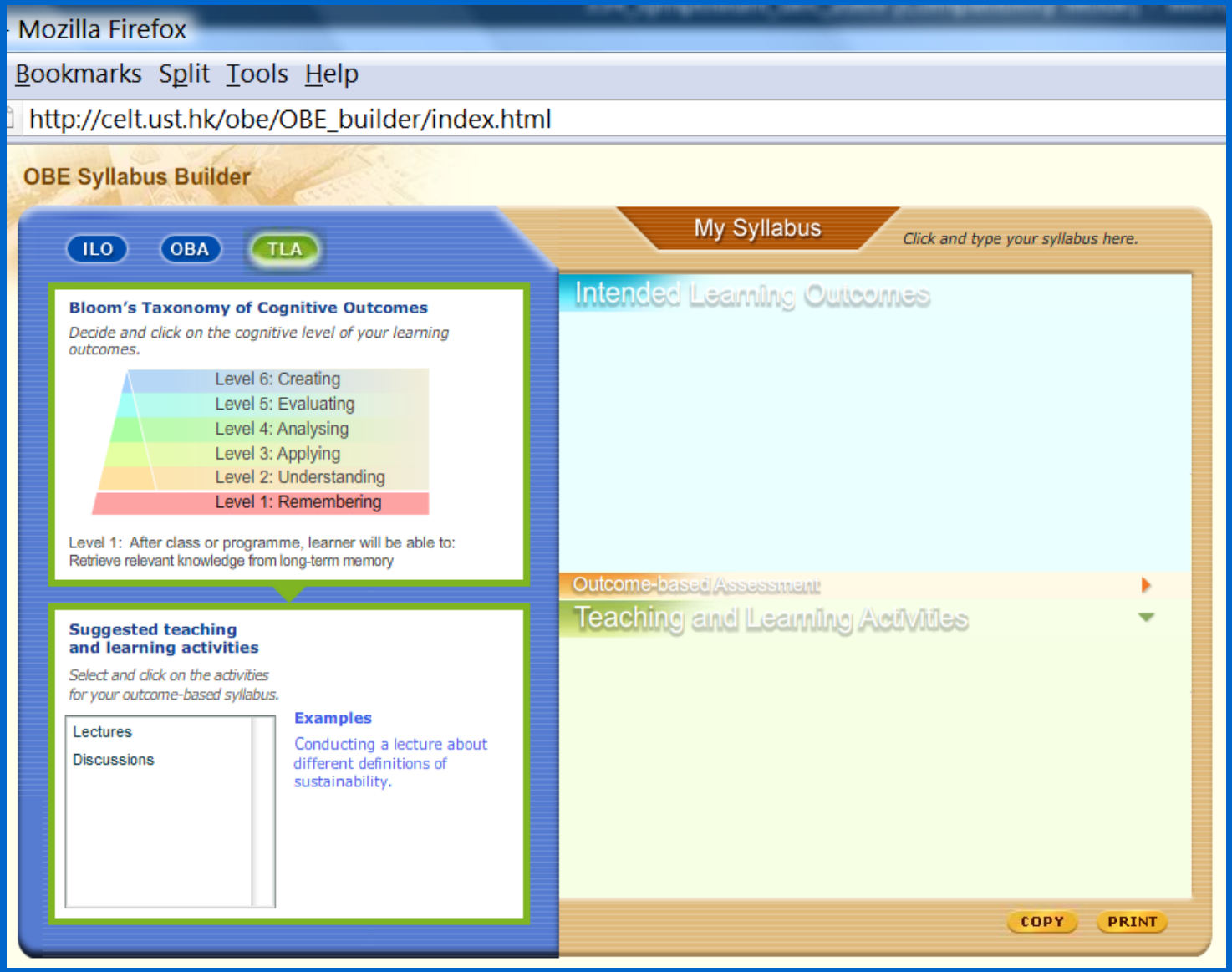
Course Assessment Methods



Course Assessment Methods



OBE Syllabus Builder



Example Relationship of Course and Program Outcomes

	a	b	c	d	e	f	g	h	i	j	k
. . .	.	.	.	.	.	.	.	.	.	.	.
COMP303	**Ta O**	**Tb O**	**A**						**TbAO**	**A O**	**Ta**
. . .	.	.	.	.	.	.	.	.	.	.	.

Setting Up the Outcome Mapping Choices

Outcome mapping choices:

Choice					Choice Level(s)				
			Abbreviation	Description				Abbreviation	Description
Delete	Edit	(1)	T	Teaching	Delete	Edit	(1.1)	Ta	Taught as a major component of the class
					Delete	Edit	(1.2)	Tb	Taught as a minor component of the class
					Click Here to add a new level to the 2 levels shown above				
Delete	Edit	(2)	A	Assessment	Delete	Edit	(2.1)	A	Formally assessed
					Delete	Edit	(2.2)	iA	Informally assessed (e.g. use of PRS)
					Click Here to add a new level to the 2 levels shown above				
Delete	Edit	(3)	O	Opportunity	Delete	Edit	(3.1)	O	Opportunity for development of skills not formally tau
					Click Here to add a new level to the 1 level shown above				

Applying The Mapping

Program outcomes for the course:

T	A	O
Description Teaching	**Description** Assessment	**Description** Opportunity

Levels	Description of level
Ta	Taught as a major component of the class
Tb	Taught as a minor component of the class

Levels	Description of level
A	Formally assessed
iA	Informally assessed (e.g. use of PRS)

Levels	Description of level
O	Opportunity for development of skills not formally taught

Click on the boxes repeatedly to cycle through the choices.

Ta		
Tb	A	
		O
Ta	iA	
		O
Ta	iA	
		O
Ta	A	

(a) An ability to analyze a prob
requirements appropriate to

(b) An ability to design, implem
process, component, or pro

(c) An ability to function effecti

(d) An understanding of profess
and responsibilities.

(e) An ability to analyze the loc
individuals, organizations, a

(f) An ability to use current tec
computing practices.

(g) An ability to apply mathema
computer science theory in
systems in a way that dem
involved in design choices.

(h) An ability to apply design a
software systems of varying

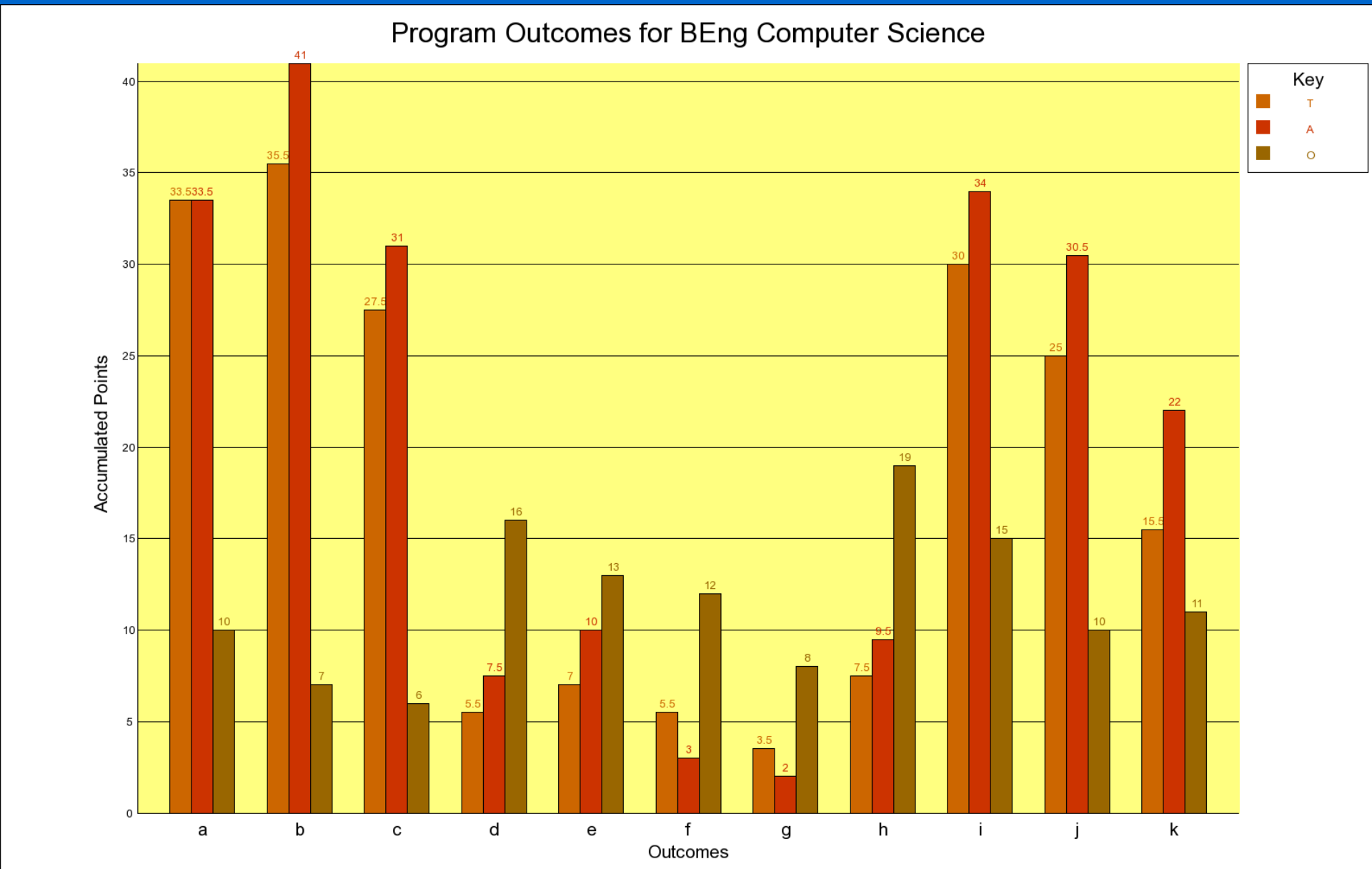
Click Here to update program outcomes

Show

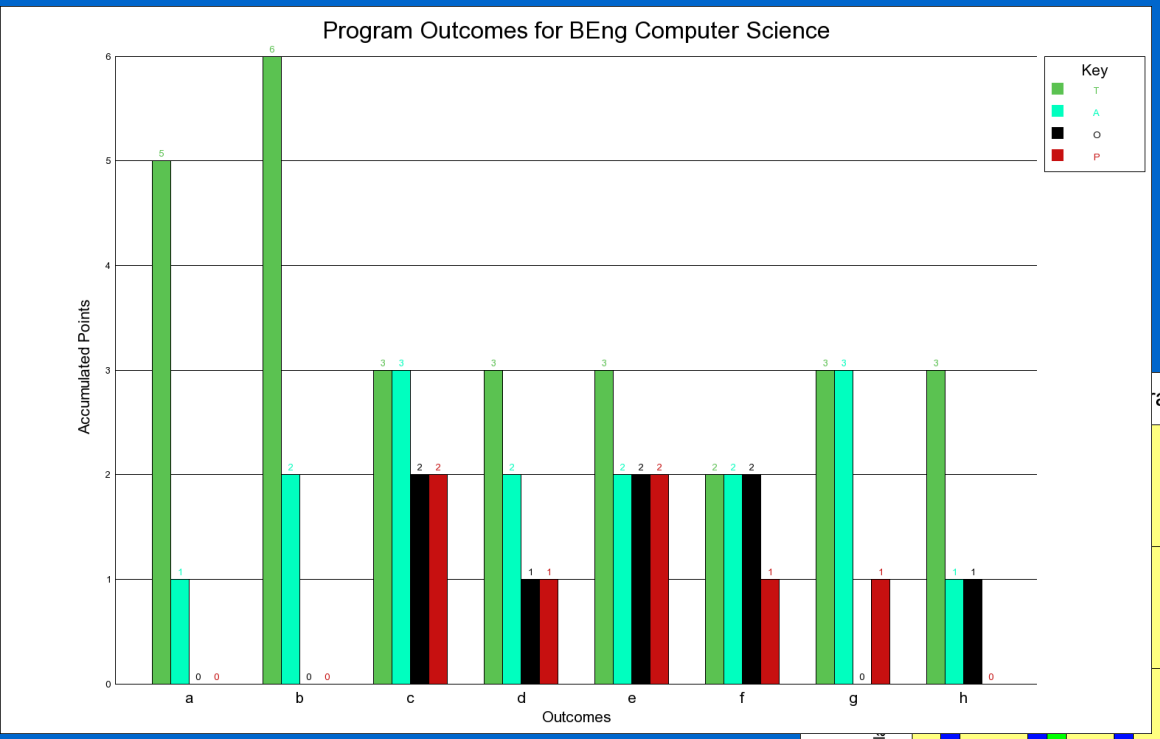
Mapping Summary

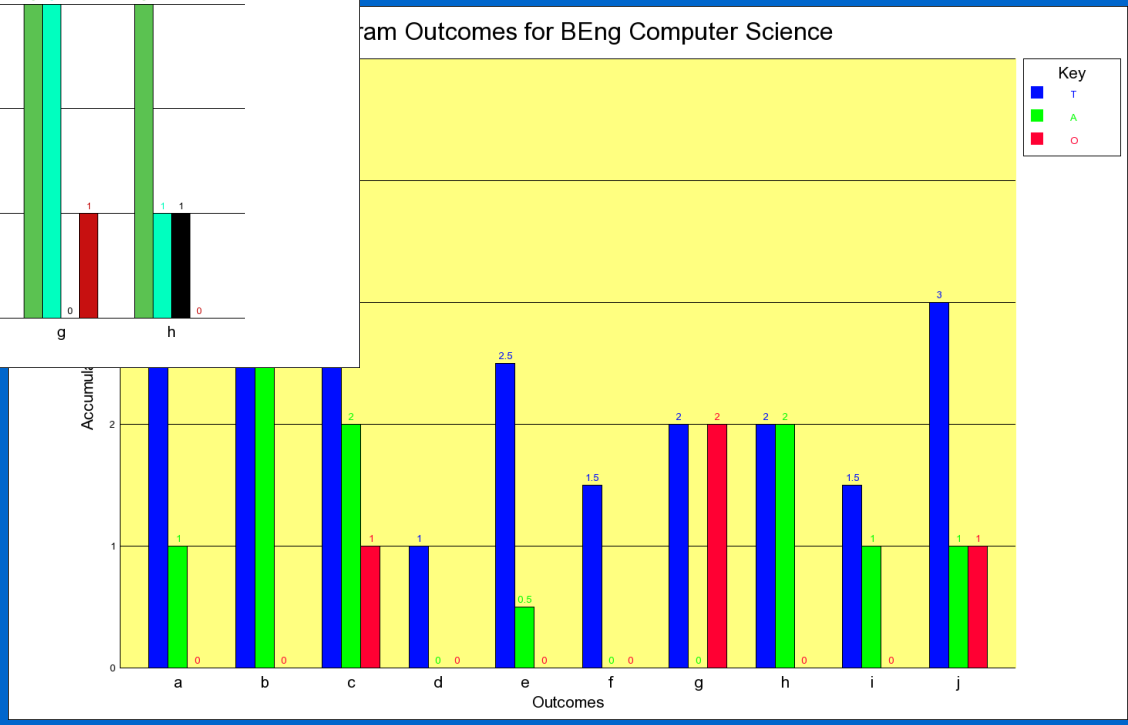
	a	b	c	d	e	f	g	h	Course Total
COMP 001	Ta	Tb A	O	Ta iA	O	Ta iA	O	Ta A	T = 5 A = 4 O = 3
COMP 002	Ta		Tb A O		O		A	Ta	T = 3 A = 2 O = 2
COMP 003									T = 3 A = 2 O = 2
COMP 099	Ta	Tb		A	Tb A O	Ta O			T = 4 A = 2 O = 2
COMP 100	Ta A								T = 1 A = 1 O = 0
COMP 100H									T = 1 A = 1 O = 0
COMP 101			A						T = 0 A = 1 O = 0
COMP 104			Tb A		O	Ta	iA	A	T = 2 A = 3 O = 1
COMP 111		Ta	O			A	Tb A	Ta O	T = 3 A = 2 O = 2

Graph Display



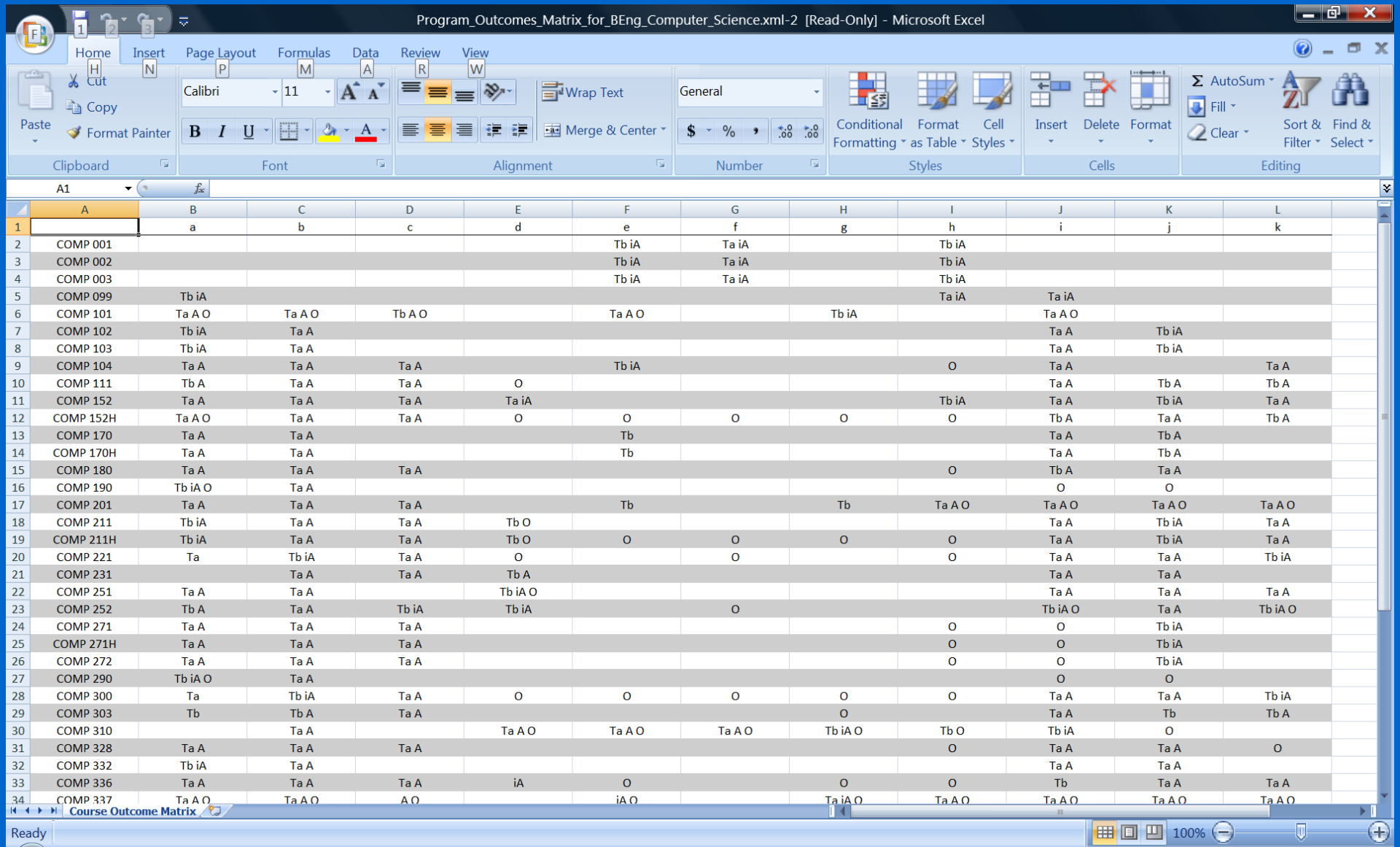
Automatically Generated, with Configurable Parameters





Exporting – Excel

Download as XML spreadsheet for Microsoft Excel 2003



	A	B	C	D	E	F	G	H	I	J	K	L
1		a	b	c	d	e	f	g	h	i	j	k
2	COMP 001					Tb iA	Ta iA		Tb iA			
3	COMP 002					Tb iA	Ta iA		Tb iA			
4	COMP 003					Tb iA	Ta iA		Tb iA			
5	COMP 099	Tb iA							Ta iA	Ta iA		
6	COMP 101	Ta A O	Ta A O	Tb A O		Ta A O		Tb iA		Ta A O		
7	COMP 102	Tb iA	Ta A							Ta A	Tb iA	
8	COMP 103	Tb iA	Ta A							Ta A	Tb iA	
9	COMP 104	Ta A	Ta A	Ta A		Tb iA			O	Ta A		Ta A
10	COMP 111	Tb A	Ta A	Ta A	O					Ta A	Tb A	Tb A
11	COMP 152	Ta A	Ta A	Ta A	Ta iA				Tb iA	Ta A	Tb iA	Ta A
12	COMP 152H	Ta A O	Ta A	Ta A	O	O	O	O	O	Tb A	Ta A	Tb A
13	COMP 170	Ta A	Ta A			Tb				Ta A	Tb A	
14	COMP 170H	Ta A	Ta A			Tb				Ta A	Tb A	
15	COMP 180	Ta A	Ta A	Ta A					O	Tb A	Ta A	
16	COMP 190	Tb iA O	Ta A							O	O	
17	COMP 201	Ta A	Ta A	Ta A		Tb		Tb	Ta A O	Ta A O	Ta A O	Ta A O
18	COMP 211	Tb iA	Ta A	Ta A	Tb O					Ta A	Tb iA	Ta A
19	COMP 211H	Tb iA	Ta A	Ta A	Tb O	O	O	O	O	Ta A	Tb iA	Ta A
20	COMP 221	Ta	Tb iA	Ta A	O		O		O	Ta A	Ta A	Tb iA
21	COMP 231		Ta A	Ta A	Tb A					Ta A	Ta A	
22	COMP 251	Ta A	Ta A		Tb iA O					Ta A	Ta A	Ta A
23	COMP 252	Tb A	Ta A	Tb iA	Tb iA		O			Tb iA O	Ta A	Tb iA O
24	COMP 271	Ta A	Ta A	Ta A					O	O	Tb iA	
25	COMP 271H	Ta A	Ta A	Ta A					O	O	Tb iA	
26	COMP 272	Ta A	Ta A	Ta A					O	O	Tb iA	
27	COMP 290	Tb iA O	Ta A							O	O	
28	COMP 300	Ta	Tb iA	Ta A	O	O	O	O	O	Ta A	Ta A	Tb iA
29	COMP 303	Tb	Tb A	Ta A				O		Ta A	Tb	Tb A
30	COMP 310		Ta A		Ta A O	Ta A O	Ta A O	Tb iA O	Tb O	Tb iA	O	
31	COMP 328	Ta A	Ta A	Ta A					O	Ta A	Ta A	O
32	COMP 332	Tb iA	Ta A							Ta A	Ta A	
33	COMP 336	Ta A	Ta A	Ta A	iA	O		O	O	Tb	Ta A	Ta A
34	COMP 337	Ta A O	Ta A O	A O		iA O		Ta iA O	Ta A O	Ta A O	Ta A O	Ta A O