UNIVERSITY of CALIFORNIA Riverside
BOURNS COLLEGE OF Engineering

ABET Committee Meeting Minutes

Date: February 23, 2012
Location: WCH 444
Attendees: M. Boretz, J. Schultz, , A. Roy Chowdhury, E. Keogh, D. Cocker, M. Princevac, J. Garay, C. Ravishankar
Absent: R. Abbashian, D. Kisailus

Power Point charts used in the meeting are attached.

The agenda was:

- Minutes from February 9, 2012 meeting
- Action Items
- Program status
- Table 6.2 Faculty Workload
- Surveys
- Mock Review
- ABET Assessment Items of Interest
- Others

The minutes of the February 9, 2012 meeting were approved.

The action items were reviewed. The recommendation was made that Action 1 "Provide an outline of the Self-Study Report with the table of contents shown in the "ABET Self-Study Questionnaire." Mitch had prepared a list of the writing assignments for these. They were vetted with the Program ABET coordinators and effected staff. The charts are shown in the attachment. Adding target dates to the elements of these charts will provide most of the information identified in Action 3 "Program schedule of events, milestones, and/or actions required to complete the Self-Study Report." The remaining task schedules are to be identified by the coordinators.

The coordinators are confident the draft Self-Study Reports will be completed by the end of March with the intent to have our Mock Review in the first weeks of April.

Dennis had the action to obtain guidance from the Dean regarding the data required for Table 6.2 (Faculty Workload) in the Self-Study Report. Dennis described Reza's suggestion that the campus position that teaching four courses per year defined full-time workload. This approach would result in the faculty supporting the programs with a 100% workload. The program coordinators were not comfortable with this approach and

suggested contact with ABET to obtain a better indication for what is expected. Dennis took the action to pursue this issue.

The Mock Review is targeted for some time in the first two weeks of April. Two consultants have agreed to participate. We're exploring candidates for the third position. The two confirmed so far are Dr. Edwin Jones, retired professor from Iowa State and active ABET evaluator and Dr. Calvin White, former Chair MSE Department at Michigan Tech., and has been on campus ABET visits 8 times in the past 10 years. Tentatively Dr. Jones will cover electrical engineering, computer science, and computer engineering program. Dr. White will address the mechanical engineering and material science and engineering. The third consultant will concentrate on Bioengineering, Chemical Engineering and Environmental Enginieering.

The coordinators are still exploring the use of additional surveys to support their position on Program Educational Objectives and Student Outcomes.

Dennis presented a subset of the charts from the ABET Assessment Workshop last October 24 in Baltimore. Some of the charts elicited concern by several coordinators. The concern is that some of the ABET review of best practices are not compatible with the program approaches. This needs further attention.

ABET Coordinator Meeting

February 23, 2012

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Agenda

- Minutes of February 9, 2012
- Action Items
- Program status
- Table 6.2 Faculty Workload
- Surveys
- Mock Review
- ABET Assessment Items of Interest
- Others

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Feb 28, 2012

ABET 2012
ACTION ITEMS

Action	Individual	Commitment Date	Status	
1. Provide outline of Self-Study	~~Program Directors or designee~~	~~1-26-12~~		
	~~J. Schultz~~	~~2-2-12; 2-23-12~~	~~Submitted draft 1-25-12~~	
	~~A. Roy Chowdhury~~	~~2-2-12; 2-23-12~~	~~Submitted working doc 1-30-12~~	
	~~M. Princevac~~	~~2-23-12~~	**Considered complete based**	
	~~J. Garay~~	~~2-2-12; 2-23-12~~	**on completion of the writing**	
	~~D. Cooker~~	~~2-23-12~~	**assignment on 2-24-12**	
	~~D. Cooker~~	~~2-23-12~~		
	~~E. Keogh~~	~~2-2-12; 2-23-12~~		
	~~E. Keogh~~	~~2-2-12; 2-23-12~~		
2. List all information needed by programs from Dean's Office , Student Affairs, campus, etc	Dennis	1-26-12	List provided in Jan 26 meeting	G
3. Program schedule of events, milestones, and/or actions required to complete Self-Study	Program Directors or designee	1-26-12	Still require tasks in support of Self-Study in addition to Action Item #1	
	J. Schultz	2-2-12; **2-23-12**	J. Schultz submitted 2-22-12	Y
	A. Roy Chowdhury	2-2-12; **2-23-12**		R
	M. Prncevac	**2-23-12**		R
	J. Garay	2-2-12; **2-23-12**		R

R Red – Missed Goal

Y Yellow – Behind Schedule

G Green – On Schedule

B Blue – Ahead of Schedule

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ABET 2012
ACTION ITEMS (CONTINUED)

Action	Individual	Commitment Date	Status	
3. Program schedule of events, milestones, and/or actions required to complete Self-Study	Program Directors or designee	1-26-12		
	D. Cocker	2-23-12		R
	D. Cocker	2-23-12		R
	E. Keogh	2-2-12; **2-23-12**		R
	E. Keogh	2-2-12; **2-23-12**		R
4.. Provide recommended sources for addressing ethics training	Dennis	Feb 7, 2012	Presented at 2-9-12 meeting	G
5. Contact the Career Center for employer satisfaction and/or actions	Mitch	2-1-12	Completed 1-26-12	G
6. Resolve issue of % time faculty on program	Dennis	2-16-12	Received Dean's guidance on 2-16-12	Y
7. Obtain alumni list for survey from Jun	Mitch	2-17-12	Completed 2-17-122	G
8. Prepare a writing assignment list for all participants	Mitch	2-13-12	Completed 2-10-12	G
9. Obtain guidance from Reza on completing Table 6.2	Dennis	2-17-12	Received Dean's guidance on 2-16-12	Y
10. Obtain ABET intentTable6.2	Dennis	3-2-12	When completed will complete Actions 6 and 9	

R Red – Missed Goal

Y Yellow – Behind Schedule

G Green – On Schedule

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Recommendation: Replace Action Item #1 (Provide Outline of Self-Study) with writing assignments shown below

Self-study section	Description	Responsibility
Course catalog	Do we submit one course catalog, or one copy per degree program? We can submit it on a CD.	Dennis
BACKGROUND		
A	Contact information	Dept.
B	Program history	Dept.
C	Options	Dept.
D	Organizational structure. DONE but not yet inserted into the master files.	Dennis has this ready.
E	Program delivery mode. DONE and inserted.	Mitch
F	Program locations. DONE and inserted.	Mitch
G	Responses to the last ABET review	Dept.
H	Joint accreditation. DONE and inserted.	Mitch
CRITERION 1. STUDENTS		
A	Student admissions	Rod/Ravi
B	Evaluating student performance	Ravi
C	Transfer students and transfer courses	Ravi
D	Advising and career guidance	Ravi
E	Work in lieu of courses	Ravi
F	Graduation requirements	Ravi
G	Transcripts…we provide them later, but please check on what we need to say about transcripts in the self-study	Ravi
CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES		
A	Mission statement. DONE and inserted	Dennis
B	Program Educational Objectives	Dept.
C	Consistency of the PEOs with the mission	Dept.
D	Constituencies	Dept.

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Table 6-2. Faculty Workload Summary

Name of Program

Faculty Member (name)	PT or FT[1]	Classes Taught (Course No.,Credit Hrs.) Term and Year[2]	Program Activity Distribution[3]			% of Time Devoted to the Program[5]
			Teaching	Research or Scholarship	Other[4]	
Faculty with normal Load	FT	List 4 classes	100			100
Associate Dean	FT	List 2 classes	50		50	100
Center Director	FT	List 2 classes	50	50		100
Dept. Chair	FT	List 2 classes	50		50	100
Faculty with 1 course buy-out	FT	List 3 classes	75	25		100

1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the self-study is being prepared.
3. Program activity distribution should be in percent of effort in the program and should total 100%.
4. Indicate sabbatical leave, etc., under "Other."
5. Out of the total time employed at the institution.

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ABET Mock Review

- **2 of 3 consultants have committed**
  - Professor Edwin C. Jones [E CPE]
    - Retired from Iowa State Univ.
    - Active as ABET Evaluator and Trainer
    - Will cover EE, CS, and CompE
  - Professor Calvin L. White
    - Former Chair of MSE Department @ Michigan Tech Univ.
    - Evaluator 8 times since 2000
    - Will cover ME and MSE
- **Will occur within the first 2 weeks of April**

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Selected Slides from ABET Program Assessment Workshop

October 26, 2011

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Basic Assessment Process

ABET Terms	Definitions 2011
Program Educational Objectives	Broad statements that describe what graduates are expected to attain within a few years after graduation. They are based on the needs of the program's constituencies.
Student Outcomes	Student outcomes describe what students are expected to know and able to do by the time of graduation. These relate to the knowledge, skills, and behaviors that students acquire as they progress through the program.
Performance Indicators	Specific, measurable statements articulating the key characteristics of the outcome. They enable faculty to "know it when they see it".
Assessment	Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes and program educational objectives. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the objective or outcome being measured. Appropriate sampling methods may be used as part of an assessment process.
Evaluation	Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which student outcomes and program educational objectives are being attained. Evaluation results in decisions and actions regarding program improvement.

For each test/exam item and homew[illegible]map to outcomes and enter data for each student on each item/as[illegible]nt. Acceptable per[illegible]e level =75%

Outcome / Course	A	B	C	D	E	F	G	H	I	J	K
100	77	[illegible]	[illegible]	---	---	90	78	---	76	82	91
201	75	78	---	82	81	---	75	---	[illegible]	75	75
222	7[illegible]	79	79	---	79	79	---	79	[illegible]	---	79
252	[illegible]	82	82	[illegible]	82	82	---	80	[illegible]	82	---
299	[illegible]	---	87	[illegible]	91	83	---	76	76	---	72
301	[illegible]7	---	81	---	---	90	78	---	74	82	---
312	[illegible]1	76	---	88	[illegible]3	---	90	76	---	---	78
316	[illegible]---	73	76	---	[illegible]	82	---	87	73	[illegible]7	75
318	[illegible]76	70	---	75	[illegible]	---	75	---	76	[illegible]76	---
322	[illegible]74	77	74	---	81	88	---	77	74	---	89
399	[illegible]--	---	77	---	---	---	---	---	74	---	---
415	[illegible]4	82	77	---	82	[illegible]	86	77	---	---	91
499	[illegible]	80	---	92	81	[illegible]	92	---	75	92	---
Average	[illegible]3	77.4	79.3	83.8	82.5	8[illegible]	82.0	78.86	[illegible]3	80.9	81.3

Three different le[illegible] of achievement:

- Exceeds Expectati[illegible] (EE): more than 80% of the students hav[illegible]hieved an a[illegible]ge score of 75% or more;
- Meets Expectations (ME[illegible]tween 70% and 80% of the students h[illegible]eved an average score of 75% or more;
- Does Not Meet Expectations (DN[illegible] than 70% of th[illegible]nts have achieved an average scoreof 75% or more

Table 4.1 Educational Objectives for the 2006-2011 ABET Cycle

Educational Objectives	Data Source(s)	Method(s) of Assessment	Length of Assessment Cycle (Yrs)	Years of Data Collection	Target for Performance
1. Be effective in the design of engineering solutions and the practical application of engineering principles	Alumni	Survey	3 years	2007. 2010	80%
	Advisory Committee	Focus Group	2 years		Consensus Agreement of Achievement
2. Effectively lead, work and communicate in cross functional teams	Alumni	Survey	3 years	2007. 2010	75% of those who are working in cross-functional teams
	Advisory Committee	Focus Group	2 years		Consensus Agreement of Achievement
3. Conduct themselves with high standards of ethics	Alumni	Survey	3 years	2007. 2010	100% of those who have been confronted with an ethical issue
	Advisory Committee	Focus Group	2 years		Consensus Agreement of Achievement
4. Be successfully employed in an engineering or related field, or accepted into graduate programs	Alumni	Survey	3 years	2007. 2010	90%
5. Expand their knowledge and capabilities through continuing education or other lifelong learning experiences	Alumni	Survey	3 years	2007. 2010	100%
6. Serve their communities, whether locally, nationally, or globally.	Alumni	Survey	3 years	2007. 2010	60%

Results 2007: All students who had graduated in 2002-2006 were surveyed. There were 308 graduates of which we were able to locate email addresses for 225 (73%). There were 98 respondents (44%). Of this number, 88 (89%) were practicing engineering, 8 were in graduate school (8%) and the remainder were in other fields. The survey asked the alumni whether or not they had had an opportunity to demonstrate each of the objectives and, if so, how well they believed the program had prepared them. The results are presented in Table XX.

Table XX 2007 Alumni survey results – Percent of graduates who indicated that they were prepared

Educational Objectives—Graduates will:	2002 N=17	2003 N=17	2004 N=20	2005 N=18	2006 N=25	Total N=98
1.Be effective in the design of engineering solutions	16 (95%)	15 (87%)	17 (85%)	15 (83%)	19 (75%)	82 (84%)
2. Effectively lead, work and communicate in cross functional teams (of those who had experience)	15 (88%)	16 (92%)	18 (89%)	14 (78%)	20 (80%)	83 (85%)
3. Conduct themselves with high standards of ethics (of those confronted with an ethical issue)*	14 (80%) 100%	15 (87%) 100%	12 (60%) 100%	9 (50%) 100%	10 (40%) 100%	100%
4. Be successfully employed in an engineering or related field, or accepted into graduate programs	16 (95%)	16 (97%)	20 (100%)	18 (100%)	24 (96%)	94 (96%)
5. Expand their knowledge and capabilities through continuing education or other lifelong learning experiences	17 (100%)	17 (100%)	20 (100%)	18 (100%)	25 (100%)	96 (98%)
6. Serve their communities, whether locally, nationally.	15 (88%)	13 (79%)	14 (68%)	9 (50%)	10 (40%)	61 (62%)

*First row of numbers are those who indicated that they had confronted an ethical issue, second row of number is the percent of those who had confronted an ethical issue who indicated that they were well-prepared to respond appropriately.

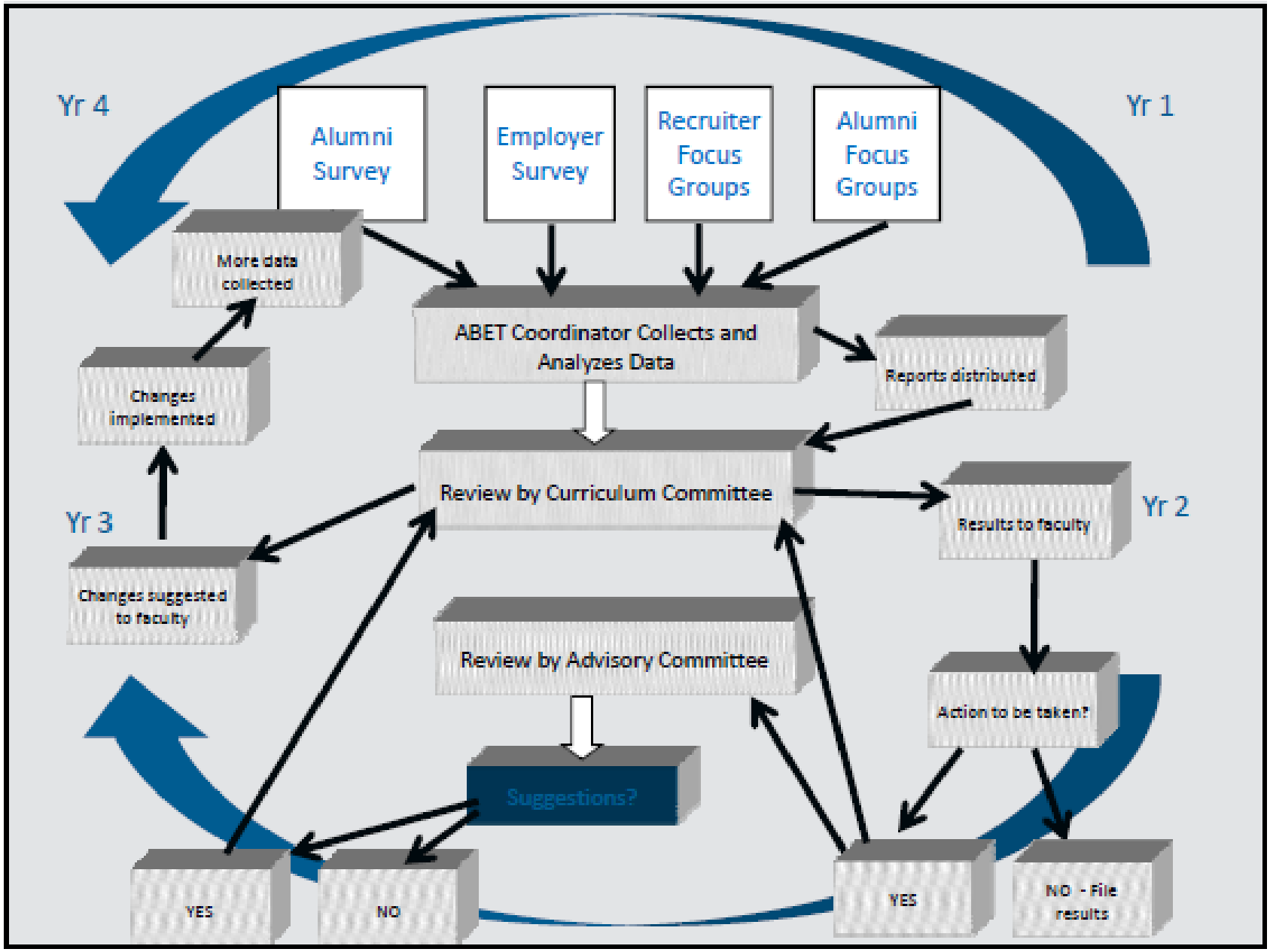
2007 Evaluation of Alumni Survey results: This was the first cycle where we used an electronic survey format to poll our alumni on their achievement of the objectives (Survey Monkey). We attribute the positive response rate to the fact that we were able to streamline the assessment process and better track who had responded and who had not. The survey results overall indicate that the alumni are meeting the objectives. There was some concern that the recently graduated classes (05 and 06) were not as positive in their responses as the alumni who had been out three years or more. On further analysis and a review of the written comments, it is clear that the quality of the work experience increases with time and many of the recent graduates had not had experiences which provided them with an opportunity to experience some of the objectives (e.g., work in cross-functional teams, confront an ethical issue, get involved in service activities).

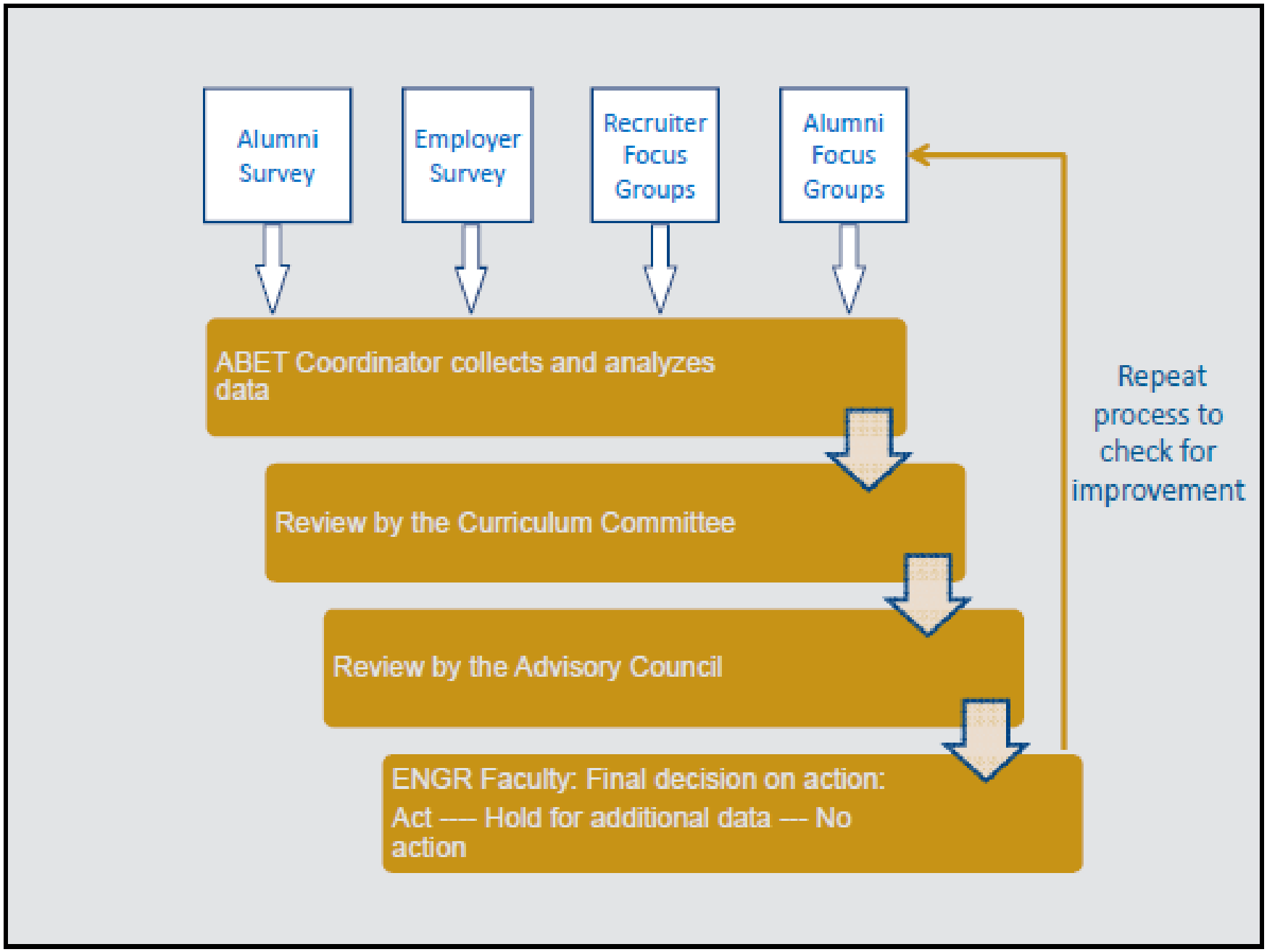
2007 Actions taken: The faculty were satisfied with the results and concluded that the alumni were meeting the educational objectives and there was not a need to take any action at this time. However, there was some concern about the engagement of early graduates in service activities. This is an area that we will continue to monitor.

Results 2010: All students who had graduated in 2005-2009 were surveyed. There were 312 graduates of which we were able to locate email addresses for 240 (77%). There were 96 respondents (40%). Of this number, 89 (93%) were practicing engineering, 5 were in graduate school (5%) and the remainder were in other fields. The survey asked the alumni whether or not they had had an opportunity to demonstrate each of the objectives. The results are presented in Table XX.

COMMON MISTAKES IN REPORTING DATA

- Too many data, not enough information
  - Reporting numbers or percentages without putting them into context
    - How many students/graduates in cohort
    - How many students/graduates provided data
- Not describing how the data are evaluated
- Using very complex charts describing your assessment processes


Yr 4
Yr 1
Alumni Survey
Employer Survey
Recruiter Focus Groups
Alumni Focus Groups
More data collected
ABET Coordinator Collects and Analyzes Data
Reports distributed
Changes implemented
Review by Curriculum Committee
Yr 3
Yr 2
Results to faculty
Changes suggested to faculty
Review by Advisory Committee
Action to be taken?
Suggestions?
YES
NO
YES
NO - File results


Alumni Survey
Employer Survey
Recruiter Focus Groups
Alumni Focus Groups
ABET Coordinator collects and analyzes data
Review by the Curriculum Committee
Review by the Advisory Council
ENGR Faculty: Final decision on action:
Act –– Hold for additional data –– No action
Repeat process to check for improvement

COMMON MISTAKES IN CRITERIA

- **Criterion 2: Program Educational Objectives**
  - Constituencies not involved in establishing and reviewing objectives
  - Process for review does not exist or is not regular
- **Criterion 3: Student Outcomes**
  - Documentation of some outcomes is missing

COMMON MISTAKES IN CRITERIA

- **Criterion 4: Continuous Improvement**
  - Assessment processes poorly defined or not fully implemented
  - Limited indication of how results are used
  - No direct evaluation of alumni accomplishment of PEOs
  - No evidence of improvement efforts

COMMON MISTAKES

- Discussing all outcomes/objectives at once instead of one at a time.
- Using the terms “objectives” and “outcomes” interchangeably.
- Referencing the outcomes/objectives by numbers or letters that refer back to a chart.
- Don’t require the reader to go back in the self-study for the reference.

Program Educational Objectives	Supporting Student Outcomes
1. Be effective in engineering design and the practical application of engineering theory	a) ability to apply knowledge of math & science b) ability to design and conduct experiments/ analyze data c) ability to design a system, component, or process to meet needs with realistic constraints e) ability to identify, formulate, and solve engineering problems k) ability to use the techniques, skills, and modern engineering tools needed for engineering practice j) knowledge of contemporary issues
2. Exhibit teamwork and effective communication skills	d) ability to function on multidisciplinary teams g) ability to communicate effectively l) a willingness to assume leadership roles and responsibilities
3. Be characterized by effective leadership skills and high standards of ethics	e) ability to identify, formulate, and solve engineering problems f) understanding of professional and ethical responsibility i) Recognition of and ability to engage in lifelong learning j) knowledge of contemporary issues l) a willingness to assume leadership roles and responsibilities
4. Expand their knowledge and capabilities	h)broad education to understand effect of engineering solutions in a global, economic, environmental, and societal context i) Recognition of and ability to engage in lifelong learning j) knowledge of contemporary issues

ASSESSMENT CHECKLIST

- Questions are known, explicit and meaningful
- Objectives are defined
- Outcomes are defined and number of performance indicators are manageable
- Data are efficiently and systematically collected
- Assessment methods are appropriate to program context
- Results are evaluated
- Evaluation is more than looking at the results of learning outcomes
- Action is appropriate
- Results of Actions are assessed & evaluated

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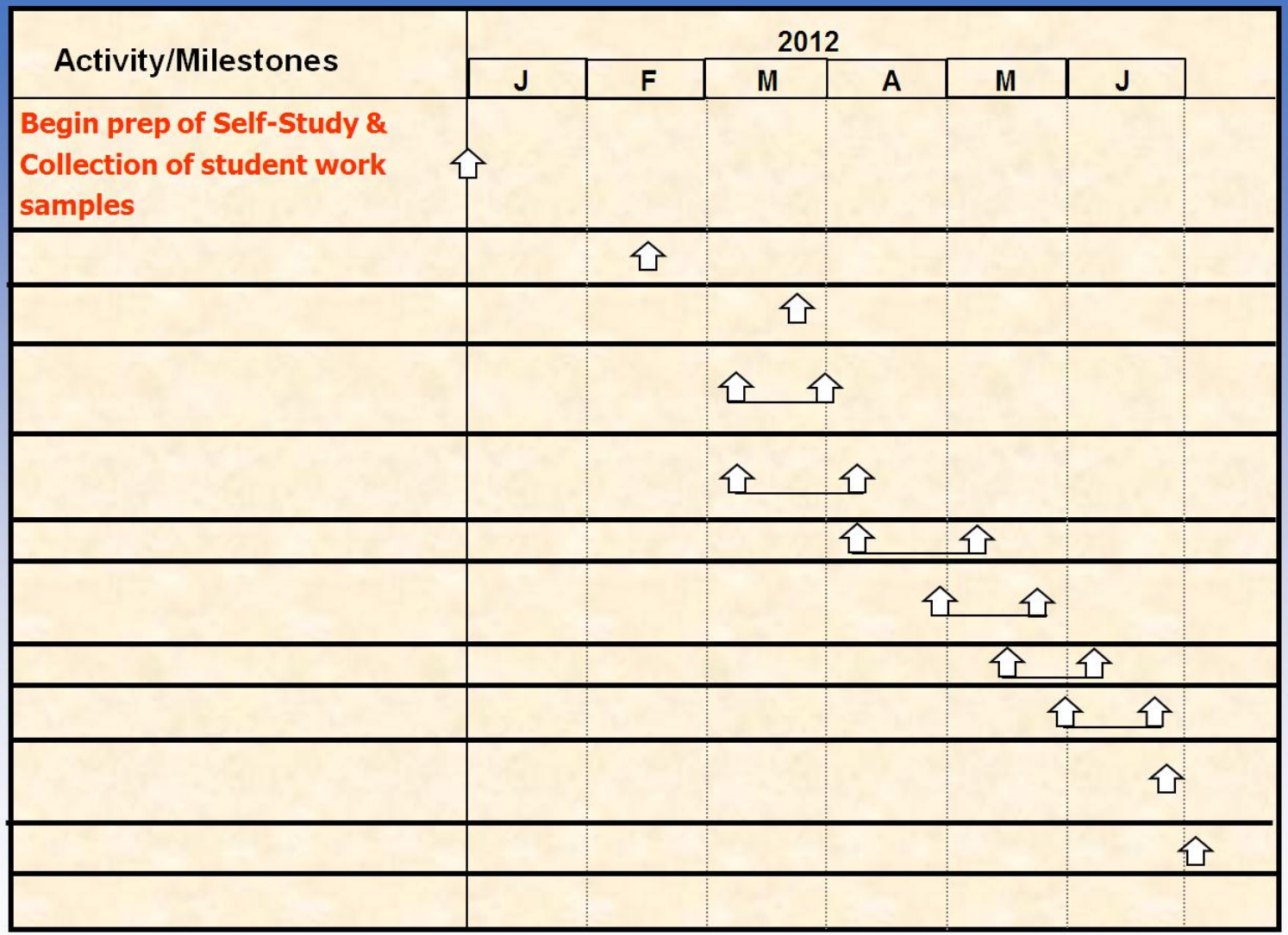
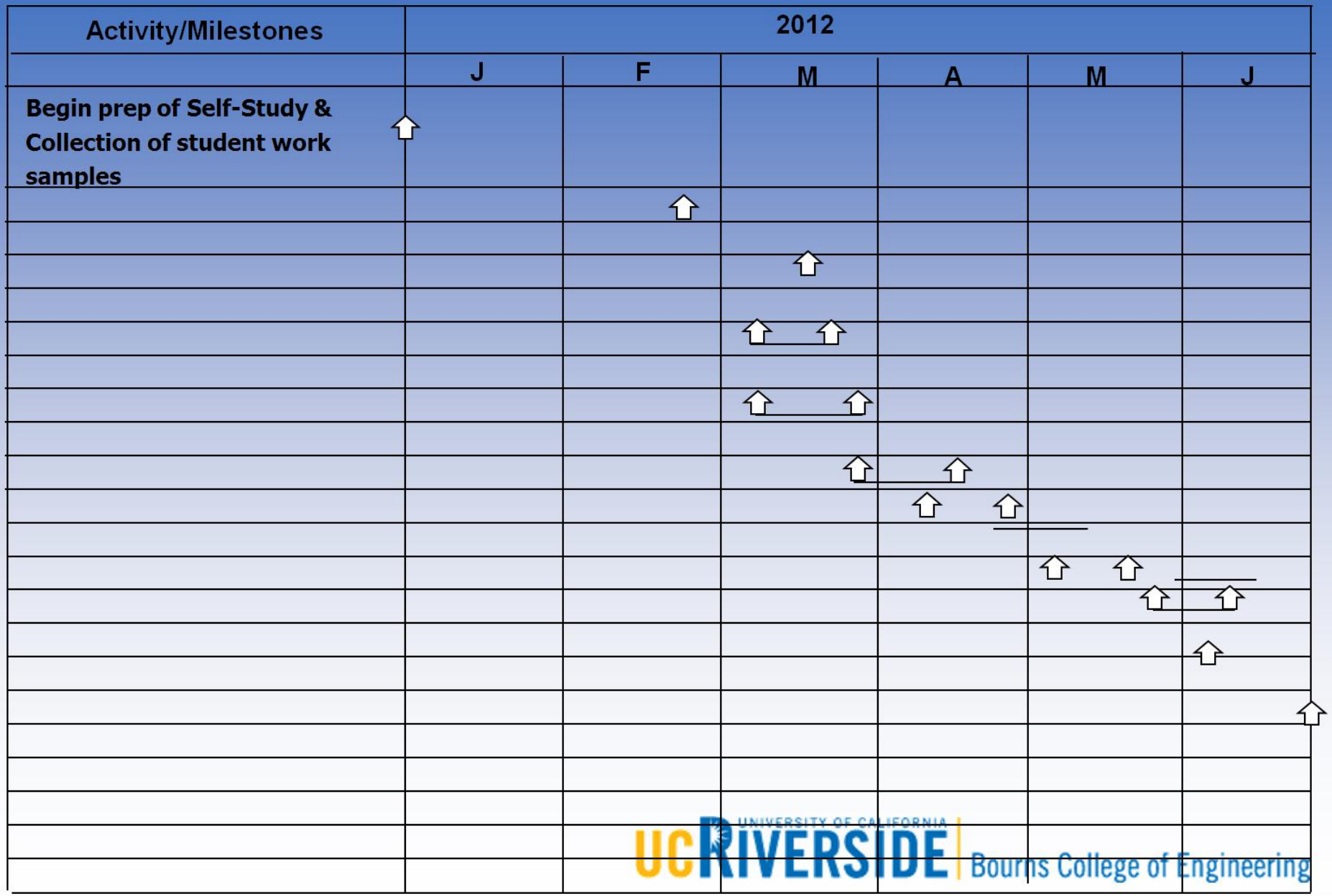
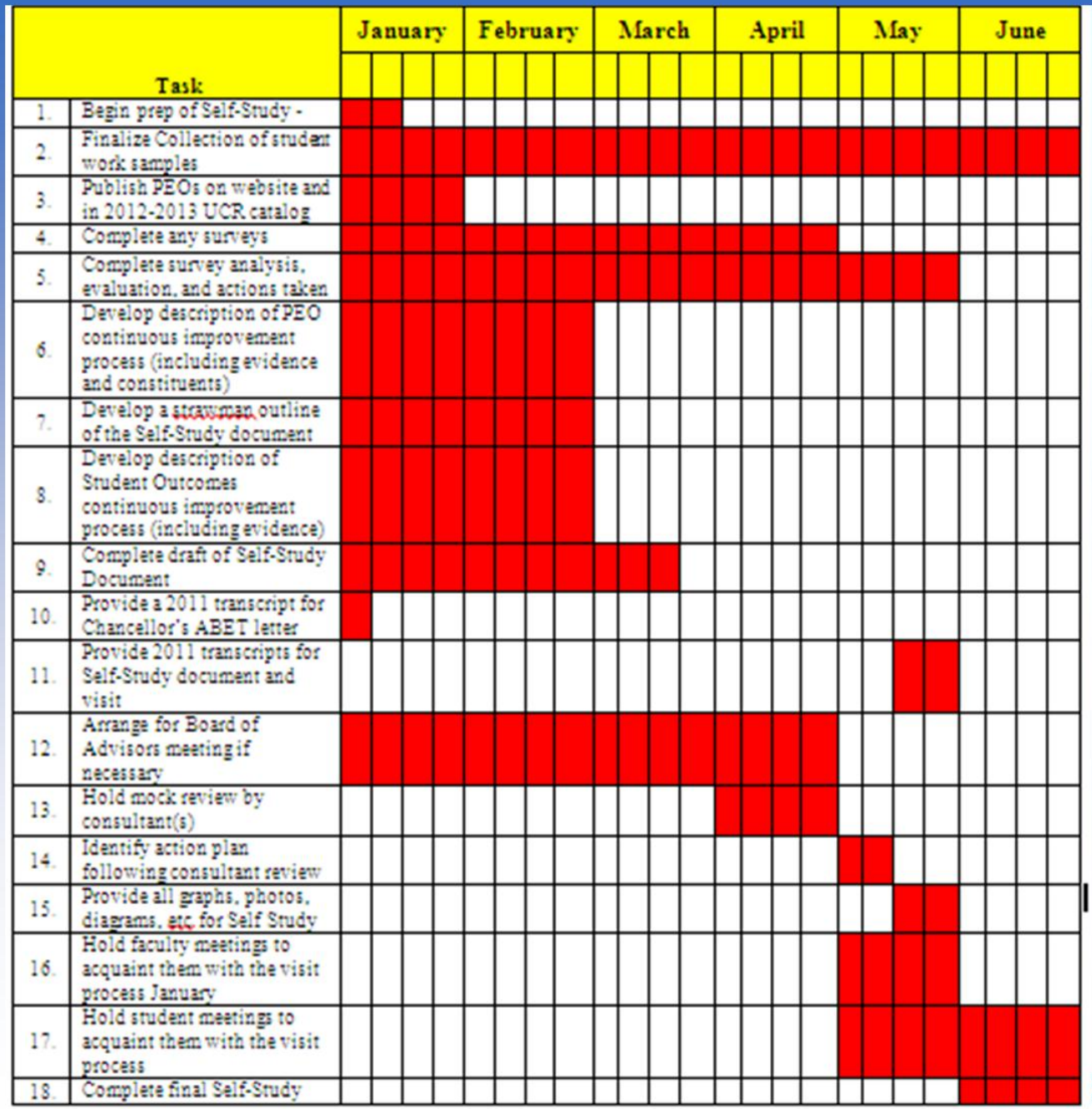
BACK-UPS

Program “X” 2012 ABET Self-study Document Schedule



Program "X" 2012 ABET Self-study Document Schedule




Task
January
February
March
April
May
June
1. Begin prep of Self-Study -
2. Finalize Collection of student work samples
3. Publish PEOs on website and in 2012-2013 UCR catalog
4. Complete any surveys
5. Complete survey analysis, evaluation, and actions taken
6. Develop description of PEO continuous improvement process (including evidence and constituents)
7. Develop a strawman outline of the Self-Study document
8. Develop description of Student Outcomes continuous improvement process (including evidence)
9. Complete draft of Self-Study Document
10. Provide a 2011 transcript for Chancellor's ABET letter
11. Provide 2011 transcripts for Self-Study document and visit
12. Arrange for Board of Advisors meeting if necessary
13. Hold mock review by consultant(s)
14. Identify action plan following consultant review
15. Provide all graphs, photos, diagrams, etc for Self Study
16. Hold faculty meetings to acquaint them with the visit process January
17. Hold student meetings to acquaint them with the visit process
18. Complete final Self-Study

Administrative Organizational Structure for Engineering Programs

University of California Riverside

T. White
Chancellor

University of California Riverside

D. Rabenstein
Exec. Vice Chancellor
And Provost

Bourns College of Engineering

R. Abbaschian
Dean

Bioengineering Program

V. Rodgers, Chair

Mechanical Engineering Program

T. Stahovich, Chair

Chemical Engineering Program

N. Myung, Chair

Environmental Engineering Program

N. Myung, Chair

Electrical Engineering Program

J. Farrell, Chair

Computer Science Program

L. Bhuyan, Chair

Material Science & Engr Program

J. Garay, Chair

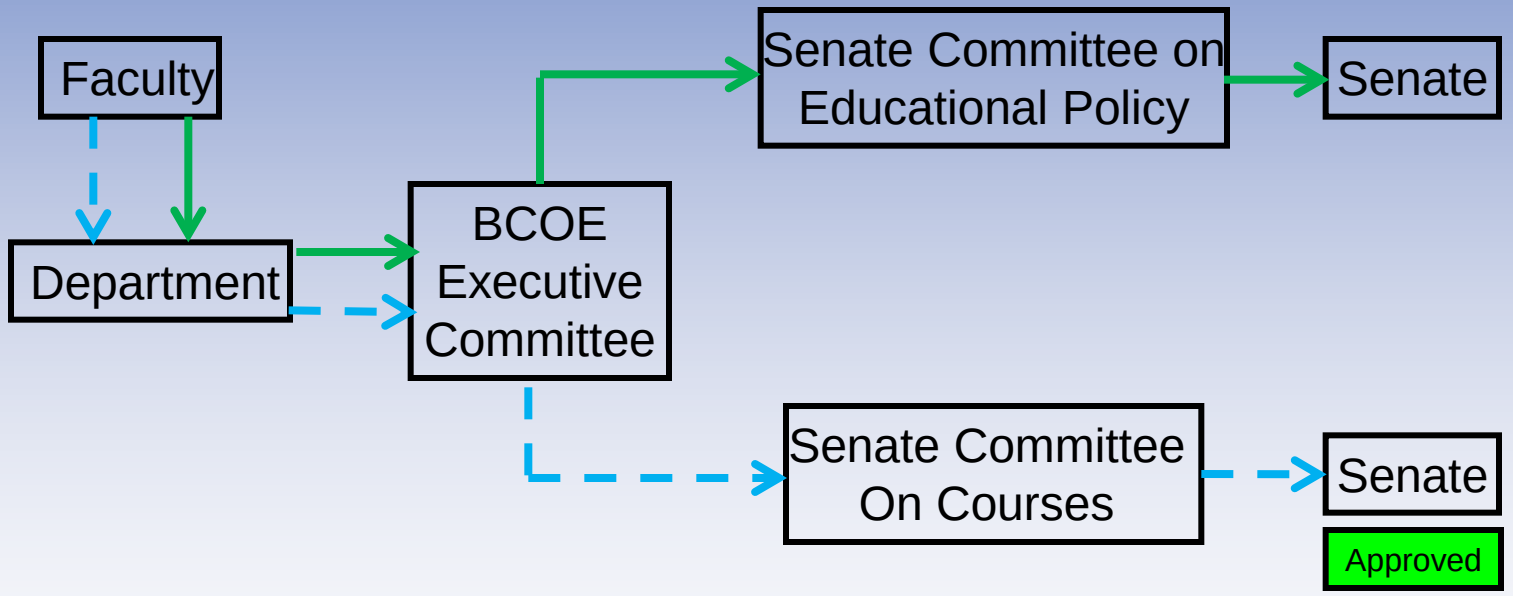
Material Science & Engineering Program

Computer Engineering Program

Computer Engineering Program

W. Najjar, Chair

Process for Obtaining Academic Approval for Program and Course Changes



Program Changes →

Course Changes →

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Candidate Actions for Milestone Scheduling

1. Complete any surveys.
2. Complete survey analysis, evaluation, and actions taken
3. Publish PEOs on website ~~and in 2012-2013 UCR catalog~~
4. Develop description of PEO continuous improvement process (including evidence and constituents)
5. Develop a strawman outline of the Self-Study document
6. Develop description of Student Outcomes continuous improvement process (including evidence)
7. Complete draft of Self-Study Document
8. ~~Provide a 2011 transcript for Chancellor's ABET letter~~
9. Provide 2011 transcripts for Self-Study document and visit
10. Arrange for Board of Advisors meeting if necessary
11. Hold mock review by consultant(s)
12. Identify action plan following review
13. Provide all graphs, photos, diagrams, etc for Self Study
14. Hold faculty meetings to acquaint them with the visit process
15. Hold student meetings to acquaint them with the visit process.
16. Complete final Self-Study.

ABET Material to be provided by campus, Student Affairs, Dean's Office, et. al.

1. UCR Course Catalog
2. Program Promotional information
3. Official transcripts for recent graduates – Program Coordinators input
4. Description of campus computer resources
5. Degree titles
6. Graduation rates from UCR colleges after 6 years
7. College entering freshman – engineering persistence
8. Degree titles/offered
9. Library services
10. Institutional computer facilities
11. Units responsible for library, tutoring, honors program
12. Organization chart showing program-to-Chancellor administration
13. Description of the process for approval of course and program changes
14. Placement – Career Center ,,,,Professional Development Milestones?
15. Others?

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Thoughts on Ethics Issues

- Difficulty to quantify capability
- Most Engineering Schools struggle with this
- ENGR 180W
  - Covers 5 of the a→k Student Outcomes(f→j)
  - Is not a required course
- Recommendation
  - Make course required
  - Tweak the focus on ethics
  - Consider using additional aides: text books, Videos, and expert speakers
  - Resource – use info from Texas Tech

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Existing Course Includes Ethics

ENGR 180W. Technical Communications (4) Lecture, 3 hours; workshop, 3 hours. Prerequisite(s): a grade of "C" or better in ENGL 001B. Develops oral, written, and graphical communication skills. Involves extensive, oral communication, presentations in small groups, and preparing and critiquing reports, proposals, instructions, and business correspondence. Emphasizes professional and ethical responsibilities and the need to stay current on technology and its global impact on economics, society, and the environment. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better.

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Information required from all faculty

Appendix B – Faculty Vitae

Please use the following format for the faculty vitae (2 pages maximum in Times New Roman 12 point type)

1. Name
2. Education – degree, discipline, institution, year
3. Academic experience – institution, rank, title (chair, coordinator, etc. if appropriate), when (ex. 1990-1995), full time or part time
4. Non-academic experience – company or entity, title, brief description of position, when (ex. 1993-1999), full time or part time
5. Certifications or professional registrations
6. Current membership in professional organizations
7. Honors and awards
8. Service activities (within and outside of the institution)
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities

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