

Out of Sequence Pre - & Corequisites Board Policy and Level of Scrutiny

Daylene M. Meuschke, EdD ~ RP Group

John Stankas, PhD ~ ASCCC

Barbara Illowsky, PhD ~ CCCCO

illowsky@cccco.edu

October 17, 2013



Website ~ Resources

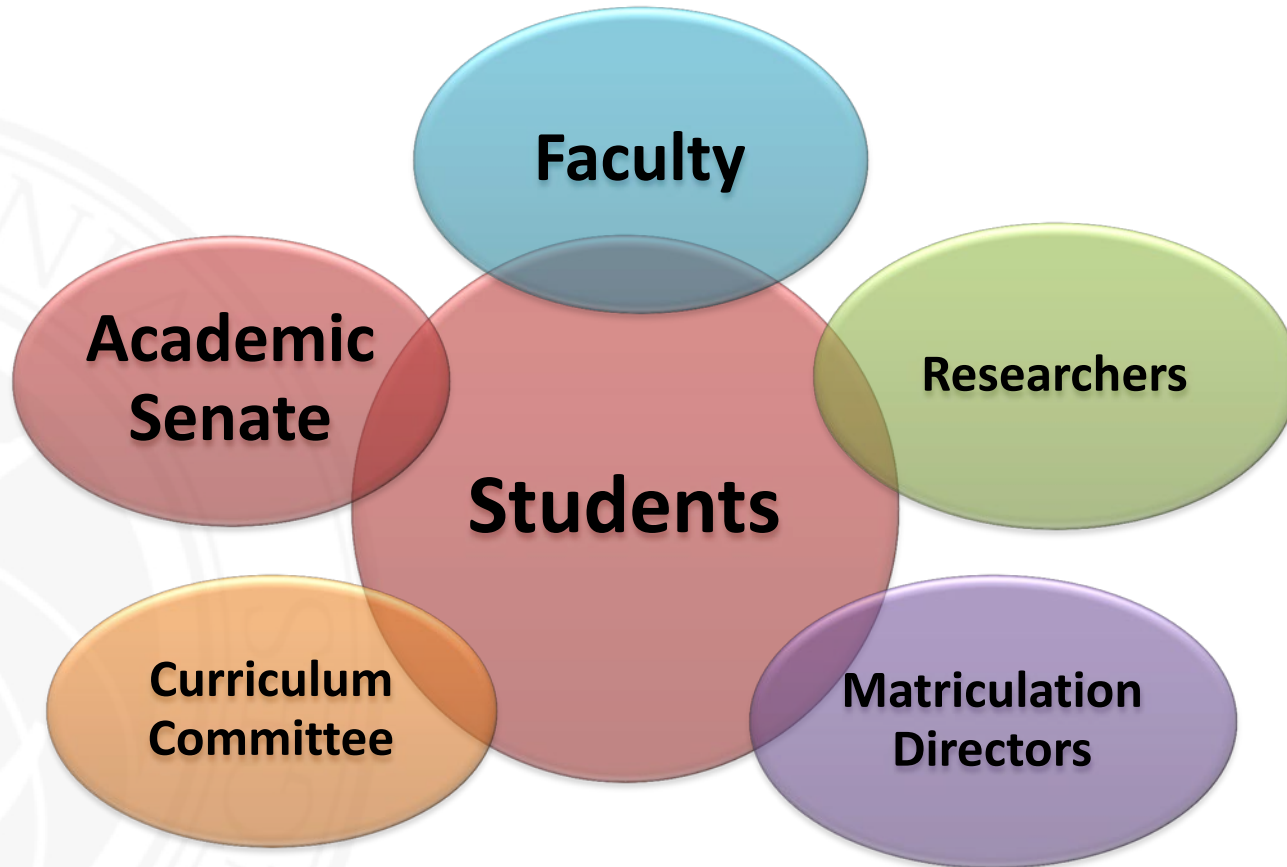
<http://extranet.cccco.edu/Divisions/AcademicAffairs/CurriculumandInstructionUnit/Curriculum.aspx>

or

<http://www.cccco.edu/> → Systems Operations
→ Divisions → Academic Affairs → Program
and Course Approval (in center under
“Academic Affairs Division Profile”)



The Players



Review of Board Policy

Originates with the Academic Senate and follows the normal review process



Board Policies/Procedures

- Policies can be broad enough to cover each college's procedure to follow either content review or statistical validation
- Administrative Procedures can be used to describe the practice at each campus within a district
- See sample Board Policies (BPs) and Administrative Procedures (APs) ~ website



Rigorous Content Review

- No matter the method an institution selects, rigorous content review is expected during the content review cycle or during the proposal review for a new course



Content Review ~ Title 5 § 55000(c)

“means a rigorous, systematic process developed in accordance with sections 53200 and 53204, approved by the Chancellor as part of the district matriculation plan required under section 55510, and that is conducted by faculty to identify the necessary and appropriate body of knowledge or skills students need to possess prior to enrolling in a course, or which students need to acquire through simultaneous enrollment in a corequisites course.”



Content Review

- Should include:
 - Evaluation of requisite skills for success
 - Dialog within the discipline of the course and between disciplines including basic skills faculty
- Local Curriculum Committees may want to review grading criteria, syllabi, and a broad range of assignments



Content Review

- Local Curriculum Committees should also evaluate the level of the course offered.
- Is it college level? *Critical thinking is demonstrated through writing or computation.*
- If not, is it degree applicable? Basic Skills? Noncredit?



Establishing Prerequisites

- Intermediate Algebra prerequisite for major's preparation science classes
- Match entry skills for science course with exit skills or outcomes from Intermediate Algebra
- http://info.assist.org/pdf/assist/2009_uc_tca_letter.pdf



Establishing Prerequisites

- Basic writing prerequisite for introductory chemistry
- Evaluation by the Curriculum Committee
 - Assignments
 - Writing skill level (see handout on website)
 - Impact
- Implementation



Establishing Prerequisites

- Chemistry prerequisite for physiology course
- Discipline Dialog within Biology
- Interdisciplinary Dialog with Chemistry
- Evaluation of course content and entry skills required for success



Overview ~ RP Group's Prerequisite Validation Guidelines

- Intended to help researchers
 - Execute the statistical analyses
 - Support faculty
- Developed by the RP Group with input from: matriculation, faculty, researchers
- Incorporated information from Academic Senate and Chancellor's office guidelines

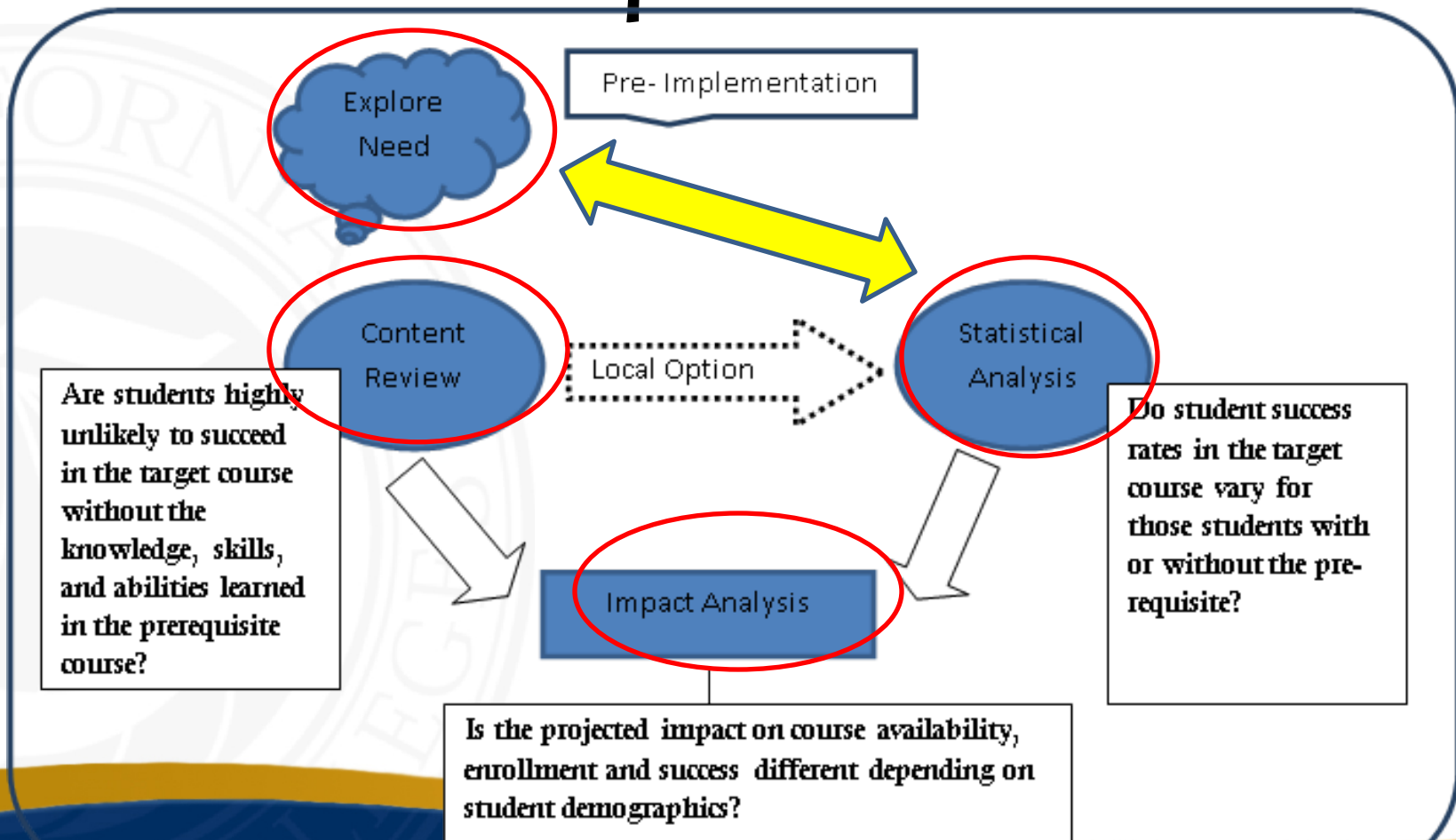


Title 5 § 55003 (d) (2)

“the prerequisite will assure, consistent with section 55002, that a student has the skills, concepts, and/or information that is presupposed in terms of the course or program for which it is being established, such that a student who has not met the prerequisite **is highly unlikely** to receive a satisfactory grade in the course (or at least one course within the program) for which the prerequisite is being established”



The Game Plan: Pre-Implementation



Content Review:

Sample Rating Template

<u>Skill: Ability to...</u>	Rater					<u>Mean Rating</u>
	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5</u>	
Skill 1: Solve radical, quadratic equations.	4	3	4	4	4	3.8
Skill 2: Solve logarithmic equations.	4	4	5	4	5	4.4
Skill 3: Solve equations.	Number of skills with a mean rating of ≥ 4.0: 4					4.0
Skill 4: Solve problems by applying the definitions, postulates and theorems of plane geometry.	Percent of skills with a mean rating of ≥ 4.0: 80%					4.2
Skill 5: Graph linear, quadratic, simple polynomial, exponential logarithmic functions and conic sections.	5	4	5	4	4	4.4

Sample Statistical Options for Researchers

Tests	Questions Answered with Prerequisite Validation
Chi-Square	Is there a statistically significant difference between success in the target course and completion of the prerequisite course? The difference may not be substantial.
T-tests	Is there a statistically significant difference between the average grade points in the prerequisite and target courses? The difference may not be substantial.
Pearson Correlation	Is there a significant relationship between grade points in the prerequisite and target courses?

(cont.) Options for Researchers

Tests	Questions Answered with Prerequisite Validation
Effect Size	What is the strength of the relationship between successfully completing the prerequisite course and successfully completing the target course?
Odds Ratio	How likely is it that students who meet the prerequisite will succeed in the target course compared to those who do not meet the prerequisite?
2:1 Ratio	Do students not meeting the prerequisite succeed at a rate that is half that for students meeting the prerequisite?
Average Percent Gain	What is the average percent gain in success in the target course of students who met the prerequisite over those who did not meet the prerequisite?

Chaffey College ~ Impact of Reading

Prereq on HIST-1, HIST-2 and HIST-7

Three-Pronged Approach

1. Comparison of Performance in the Target Course of Students Who Did and Did Not Meet the Prerequisite
2. Effect Size (accounts for influence of sample size) and Average Percent Gain
3. Restricted Bivariate Correlation Coefficient and Corrections for Restriction of Range
 - Pearson's r (Rule of Thumb: $r \geq .35$, assuming $p < .05$)
 - Chaffey also recalculates to correct for restriction of range

Chaffey College ~ Signals for Implementing or Not Implementing



- **Green** – Sufficient evidence exists to enforce prerequisite (at least two out of three measures are supported)
- **Yellow** – Although evidence exists, only one out of three measures supports enforcement of the prerequisite. Further discussion should occur within the department and the Curriculum Committee before the prerequisite is enforced
- **Red** – Data does not exist to support enforcement of the prerequisite. None of the measures explored meet pre-established criteria
- **Insufficient Data** – While evidence may point to the efficacy of the prerequisite, the sample size is too small to render a reliable decision

Chaffey College ~ Prerequisite Data Table

The Target Course Includes the Following Semesters: Fall 2005 Through Spring 2010
 The Prerequisite Course Completions and Placement Recommendations Include the Following Semesters: Fall 2001 Through Fall 2009

Selected Students Who Made Their First Attempt in Target Course Where a GOR Was Earned				Proposed Prerequisite Courses and Selected Students' Methods for Meeting Eligibility		Success Rate in Target Course of Students Who Met the Prerequisite			% of Target Course Eamers Who Met Prereq	Success Rate in Target Course of Students Who Did Not Meet the Prerequisite			Difference Between the Success Rates in the Target Course of Students Who Did and Did Not Meet the Prerequisite			Restricted Bivariate Correlation Coefficient				Meets Threshold	Disproportionate Impact
Course	Successful	GOR	%	Prerequisite Course	Method of Eligibility	Successful	GOR	%		Successful	GOR	%	P-Value	Effect Size	Average % Gain	Value	N	P-Value	Correlation Corrected for Restricted Range		
				READ-1																	
HIST-1	530	949	55.8%		READ-550 or Higher	8	17	47.1%	1.8%	478	858	55.7%	0.462	0.18	7%	0.29	14	0.310	0.49	Correlation Only	No
HIST-1	530	949	55.8%		Reading Proficient	8	14	57.1%	1.5%				0.922	0.03	1%	0.04	12	0.894	0.09	No	No
HIST-1	530	949	55.8%		READ-1 Placed	36	60	60.0%	6.3%				0.504	0.09	4%	0.04	55	0.777	0.10	No	No
HIST-1	530	949	55.8%		All Methods Combined	52	91	57.1%	9.6%				0.794	0.03	1%					No	No
				READ-450																	
HIST-1	1,815	3,196	56.8%		READ-550 or Higher	70	93	75.3%	2.9%	1,191	2,230	53.4%	0.000	0.38	15%	0.43	83	0.000	0.46	All 3	Yes
HIST-1	1,815	3,196	56.8%		Reading Proficient	130	194	67.0%	6.1%				0.003	0.22	9%	0.17	169	0.027	0.46	All 3	Yes
HIST-1	1,815	3,196	56.8%		READ-450 Placed	424	679	62.4%	21.2%				0.001	0.15	6%	0.12	573	0.004	0.28	P-Value Only	Yes
HIST-1	1,815	3,196	56.8%		All Methods Combined	624	966	64.6%	30.2%				0.000	0.23	9%					2 of 2	Yes
				READ-550																	
HIST-1	2,345	4,145	56.6%		READ-530 or Higher	120	169	71.0%	4.1%	1,072	2,139	50.1%	0.000	0.30	12%	0.41	144	0.000	0.61	All 3	Yes
HIST-1	2,345	4,145	56.6%		Reading Proficient	172	252	68.3%	6.1%				0.000	0.25	10%	0.10	220	0.147	0.28	2 of 3	Yes
HIST-1	2,345	4,145	56.6%		READ-550 Placed	981	1,585	61.9%	38.2%				0.000	0.17	7%	0.10	1,367	0.000	0.17	P-Value Only	Yes
HIST-1	2,345	4,145	56.6%		All Methods Combined	1,273	2,006	63.5%	48.4%				0.000	0.27	11%					2 of 2	Yes
				READ-530																	
HIST-1	2,345	4,145	56.6%		READ-520 or Higher	129	199	64.8%	4.8%	799	1,593	50.2%	0.016	0.17	7%	0.36	165	0.000	0.56	2 of 3	Yes
HIST-1	2,345	4,145	56.6%		Reading Proficient	172	252	68.3%	6.1%				0.000	0.25	10%	0.10	220	0.147	0.28	2 of 3	Yes
HIST-1	2,345	4,145	56.6%		READ-530 Placed	1,245	2,101	59.3%	50.7%				0.000	0.11	4%	0.17	1,802	0.000	0.20	P-Value Only	Yes

http://www.chaffey.edu/research/IR_PDF_Files/Research_Reports/Academic_Success/1011-History%201,%202,%20and%207%20Reading%20Prerequisite%20Validation.pdf

Statistical vs. Practical Significance

Statistical Significance=Yes ($p < .05$)

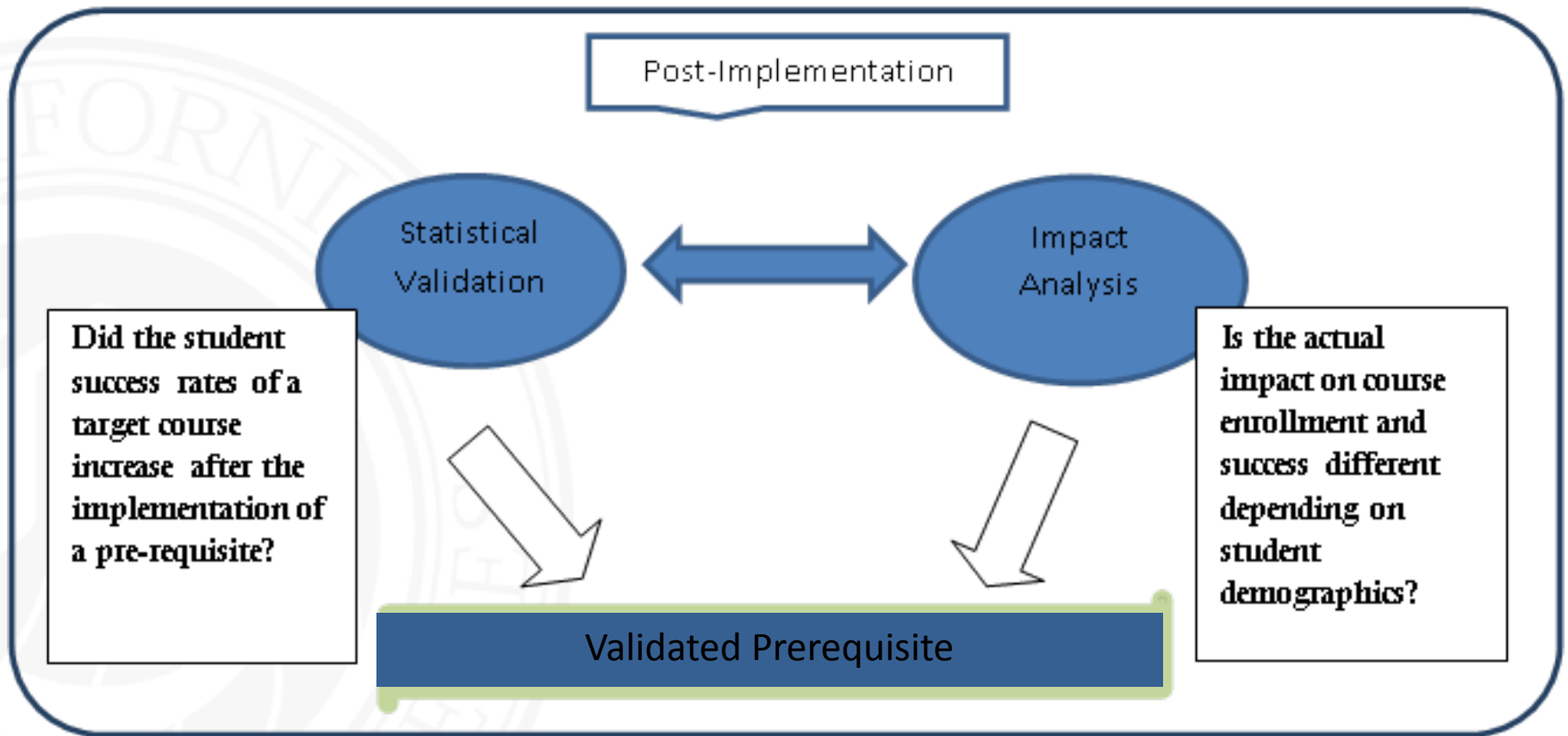
Discussion about what is “good enough”

Group	ENGR-123		
	# Successful	Total Enrolled (N)	% Successful
Successfully Completed Transfer-Level Math Prior to Enrolling in ENGR-123	76	103	74%
Not Co-Enrolled or Did Not Successfully Complete Transfer-Level Math Prior To ENGR-123	809	1,215	67%



There's statistical significance but 2/3 without prereq are successful

Post-Implementation



Website ~ Resources

<http://extranet.cccco.edu/Divisions/AcademicAffairs/CurriculumandInstructionUnit/Curriculum.aspx>

or

<http://www.cccco.edu/> → Systems Operations
→ Divisions → Academic Affairs → Program
and Course Approval (in center under
“Academic Affairs Division Profile”)



Questions?

Thank you!

