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Office of Institutional Effectiveness and Assessment

Workshop Title: Curriculum mapping
A powerful tool for discussion about courses, teaching, and learning outcomes

Suggested Citation:

Curriculum mapping

A powerful tool for discussion about courses, teaching, and learning outcomes

Introductions

Name

Degree Program

What is one thing you hope to learn today?

GOALS

Provide an overview of the curriculum mapping process

Identify a curriculum mapping process that would work for your program

Feel empowered to make your own map with these strategies and templates

ASSESSMENT
WHY DO WE DO IT?

OLD DOMINION UNIVERSITY

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ASSESSMENT
WHAT IS IT?

Assessment is the ongoing process of:

1. Establishing clear, measurable expected outcomes of student learning.

(Suskie, 2014, Assessing Student Learning)

Assessment is the ongoing process of:

1. Establishing clear, measurable expected outcomes of student learning.
2. Ensuring that students have sufficient opportunities to achieve those outcomes.

(Suskie, 2014, Assessing Student Learning)

Assessment is the ongoing process of:

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2. Ensuring that students have sufficient opportunities to achieve those outcomes.
3. Systematically gathering, analyzing, and interpreting evidence to determine how well student learning matches our expectations.

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4. Using the resulting information to understand and improve student learning.

(Suskie, 2014, Assessing Student Learning)

Collecting meaningful and actionable data that leads to program and student learning improvements.

Assessment for you

The capstone instructor last year reported her data (rubric scores) and impression of low graphing skills in seniors to the department.

After some faculty conversations, we arranged with the Mathematics department for greater emphasis on graphing in the required math course and for assessment of graphing skills during that course, working closely with the capstone instructor(s). We also arranged for graphing to be a required component in the program's 300 level required course.

The capstone instructor(s) will report next year whether graphing skills are stronger. Prof. Brody is currently developing a rubric to assess graphing skills more accurately within the program.

(Walwoord, 2004, Assessment Clear and Simple)

Assessment is the ongoing process of:

1. Establishing clear, measurable expected outcomes of student learning.
2. **Ensuring that students have sufficient opportunities to achieve those outcomes.**
3. Systematically gathering, analyzing, and interpreting evidence to determine how well student learning matches our expectations.
4. Using the resulting information to understand and improve student learning.

(Suskie, 2014, Assessing Student Learning)

2 Minute Free Write

Why do you want to do curriculum mapping in your program?

At the end of the process, what do you want to accomplish?

Curriculum Mapping

A method of aligning instruction with student learning outcomes

Makes visible how courses in a curriculum align to the learning outcomes

OUTCOMES

	Outcome 1	Outcome 2	Outcome 3

COURSES

OUTCOMES

	Outcome 1	Outcome 2	Outcome 3
Course 1			
Course 2			
Course 3			

OUTCOMES

COURSES

	Outcome 1	Outcome 2	Outcome 3
Course 1	X	X	
Course 2		X	
Course 3	X		X

SCALE

Guiding Questions for Making the Map

- What does our disciplinary association (or major authorities in our discipline) think students should learn?
- What do we want all students to get out of this program, regardless of the particular course, track, or professor they elect?
- After taking a particular course, what are students expected to demonstrate?
- Why do we offer or require this course, learning experience, or general education requirement? Why is it important that students study this? How do we want this experience to prepare them for or enrich whatever they do after graduation?

(NILOA: Mappling Learning)

Benefits

- Improves communication about curriculum and promotes program coherence
- Helps individual faculty connect the dots between their course and the goals of the program
- Informs decisions about course offerings, sequencing, and scheduling
- Reveals strengths and weaknesses in the curriculum
- Informs assessment of learning outcomes

(Carney, 2015, Washington State University; Rochester Institute of Technology)

Scales

Students who successfully complete this major will be able to:	Introductory Biology course (lecture and lab)	Lower division lecture courses	Lower division lab courses	Upper division Biochemistry/ Molecular Biology courses	Upper division Genetics and Cell Biology	Upper divisional emphasis-specific cores	Upper division lab courses	Upper division elective courses	Independent research
Describe basic biological concepts and principles	X			X	X	X			
Appreciate the different levels of biological organization, from molecules to ecosystems	X			X	X	X	X	X	
Understand that Biology has a chemical, physical, and mathematical basis	X	X	X	X	X	X	X	X	X
Explain the importance of the scientific method to understanding natural phenomena	X			X	X	X	X	X	X
Effectively communicate scientific data and ideas, both orally and in writing				X	X	X	X	X	X
Critically evaluate data, develop a hypothesis, and design experiments to address an interesting and novel problem						X	X	X	X
Demonstrate advanced knowledge in a specialized field of molecular and cell biology						X	X	X	X

X Marks the Spot

Students who successfully complete this major will be able to:	Introductory Biology course (lecture and lab)	Lower division lecture courses	Lower division lab courses	Upper division Biochemistry/ Molecular Biology courses	Upper division Genetics and Cell Biology	Upper divisional emphasis-specific cores	Upper division lab courses	Upper division elective courses	Independent research
Describe basic biological concepts and principles	X			X	X	X			
Appreciate the different levels of biological organization, from molecules to ecosystems	X			X	X	X	X	X	
Understand that Biology has a chemical, physical, and mathematical basis	X	X	X	X	X	X	X	X	X
Explain the importance of the scientific method to understanding natural phenomena	X			X	X	X	X	X	X
Effectively communicate scientific data and ideas, both orally and in writing				X	X	X	X	X	X
Critically evaluate data, develop a hypothesis, and design experiments to address an interesting and novel problem						X	X	X	X
Demonstrate advanced knowledge in a specialized field of molecular and cell biology						X	X	X	X

X Marks the Spot

Simply “X” the required learning activities/courses in which students are graded on their progress toward achieving the learning outcome

	Introductory Course	Research Methods	Advanced Content Course A	Laboratory / Practicum Course	Advanced Content Course B	Advanced Content Course C	Advanced Content Course D	Capstone Course
Content								
SLO 1: Disciplinary knowledge base (models and theories)	Introduced		Reinforced		Reinforced	Reinforced	Reinforced	Mastery / Assessed
SLO 2: Disciplinary methods		Introduced		Reinforced		Reinforced		Mastery / Assessed
SLO 3: Disciplinary applications	Introduced		Reinforced		Reinforced		Reinforced	Mastery / Assessed
Critical Thinking								
SLO 4: Analysis and use of evidence		Introduced		Reinforced	Reinforced		Reinforced	Mastery / Assessed
SLO 5: Evaluation, selection, and use of sources of information	Introduced	Reinforced		Reinforced		Reinforced		Mastery / Assessed
Communication								
SLO 6: Written communication skills	Introduced	Reinforced		Reinforced		Reinforced		Mastery / Assessed
SLO 7: Oral communication skills		Introduced	Reinforced		Reinforced	Mastery / Assessed		
Integrity / Values								
SLO 8: Disciplinary ethical standards		Introduced		Reinforced	Reinforced			Mastery / Assessed
SLO 9: Academic integrity	Introduced	Reinforced	Reinforced	Reinforced		Reinforced		Mastery / Assessed

Generic BFA in Art (sampling of courses)	A. Insert course names & #'s in columns and program outcomes in rows	**Perspectives in Western Art**	**Perspectives in Ancient & World Art**	**Critical Theories in Art**	**Foundation Studio I**	**Advanced Studio I**	**Future Media and Advanced Techniques**	**Senior Studio, Exhibition, and Portfolio**	
Program Outcomes	A. Insert course units	**9**	**9**	**12**	**9**	**9**	**9**	**24**	**D. Indirect Measures**
Appropriately conduct and incorporate research findings into their work	B. Insert "I," "A," or "M,"	I	I	I	I	A	A	M	Employer and alumni surveys
	C. Insert potential assessments	Written critiques	Written critiques	Mid-term and final papers	Artistic work product, oral presentation	Artistic work product, oral presentation	Artistic work product, oral presentation	Exhibition & portfolio presentation	
Evaluate art movements from various cultures and time periods	B. Insert "I," "A," or "M,"	I	I	I	I	A	A	M	Employer and alumni surveys
	C. Insert potential assessments	Written critiques	Written critiques	Mid-term and final papers	Artistic work product, oral presentation, written critiques of peer work	Artistic work product, oral presentation, written critiques of peer work	Artistic work product, oral presentation, written critiques of peer work	Exhibition & portfolio presentation, written critiques of peer work	
Articulate a philosophical and aesthetic approach to their art and its place in the larger cultural and historical context	B. Insert "I," "A," or "M,"				I	A	A	M	Employer and alumni surveys
	C. Insert potential assessments				Oral presentation of artistic work product	Oral presentation of artistic work product	Oral presentation of artistic work product	Exhibition & portfolio presentation	

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Program Outcomes	A. Insert course units	9	9	12	9	9	9	24	**D. Indirect Measures**
Appropriately conduct and incorporate research findings into their work	B. Insert "I," "A," or "M,"	I	I	I	I	A	A	M	Employer and alumni surveys
	C. Insert potential assessments	Written critiques	Written critiques	Mid-term and final papers	Artistic work product, oral presentation	Artistic work product, oral presentation	Artistic work product, oral presentation	Exhibition & portfolio presentation	
Evaluate art movements from various cultures and time periods	B. Insert "I," "A," or "M,"	I	I	I	I	A	A	M	Employer and alumni surveys
	C. Insert potential assessments	Written critiques	Written critiques	Mid-term and final papers	Artistic work product, oral presentation, written critiques of peer work	Artistic work product, oral presentation, written critiques of peer work	Artistic work product, oral presentation, written critiques of peer work	Exhibition & portfolio presentation, written critiques of peer work	
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	C. Insert potential assessments				Oral presentation of artistic work product	Oral presentation of artistic work product	Oral presentation of artistic work product	Exhibition & portfolio presentation	

	SCSC Core (36 - 37 hr)																
							Choose One			Choose Two				Choose One		Choose One	
SCSC Department	CHEM 222 Elements of Organic and Biological Chemistry (3)	SCSC 205 Problem Solving in Plant and Soil Systems (3)	SCSC 301 Soil Science (4)	SCSC 307 Crop Biology and Physiology (4)	SCSC 309 Water in Soils and Plants (4)	SCSC 481 Senior Seminar (2)	SCSC 484 Internship (3)	SCSC 491 Undergraduate Research (3)	Study Abroad (3)	PLPA 301/PLPA Plant Pathology and Plant Pathology Lab (4)	ENTO 201 General Entomology (3)	ENTO 401 Principles of Insect Pest Management (3)	SCSC 446 Weed Management and Ecology (3)	RENR 205 Fundamentals of Ecology (3)	SCSC 444 Forage Ecology and Management (3)	STAT 302 Statistical Methods (3)	ESSM 313 Sampling Methods and Design of Ecosystems (3)
1. Demonstrate Knowledge of Physical, Chemical, Biological, and Hydrological Properties of Soil		I	I	I	I/R								R				
2. Demonstrate Knowledge of Plant Growth, Development, Production, Adaptation, and Improvement		I		I/R	I								D				
3. Demonstrate Knowledge of Soil-Water-Plant-Environment Interactions		I	I	I/R	I/R						I	R	R	I			
4. Demonstrate critical thinking and problem-solving skills		I/R			I							R		I			D
5. Communicate Effectively		I/R		I								D		D			
6. Work Collaboratively		I		I	I							R	R	D			D
7. Practice personal and social responsibility		I		I	I								R				
8.Demonstrate social, culutural, and global competence													I	I			
9. Prepare to engage in lifelong learning		I		I	I								D				D

	Crops Emphasis (40-41 hrs)					Soil and Water Emphasis (40-41)								Turfgrass (40-41 hrs)						
												Choose One								
SCSC Department	SCSC 304 Plant Breeding (3)	SCSC 311 Principles of Crop Production (3)	SCSC 402 Crop Stress Management (4)	SCSC 410 International Agricultural Systems (3)	SCSC 441 Crop Production (3)	SCSC 310 Soil Morphology and Land Use Interpretations (2)	SCSC 405 Soil and Water Microbiology (4)	SCSC 422 Soil Fertility and Plant Nutrient Management (3)	SCSC 432 Soil Fertility and Plant Nutrient Management Lab (1)	SCSC 455 Environmental Soil and Water Science (3)	SCSC 458 Watersheds and Water Quality Management (3)	GEOG 390 Principles of Geographic Information Systems (3)	ESSM 351 Geographic Information Systems and Resource Management (3)	SCSC 302 Recreational Turf (3)	SCSC 312 Introductory Turf Management Lab (1)	SCSC 427 Sports Field Construction (4)	SCSC 428 Advanced Turf Ecology and Physiology (3)	SCSC 429 Turf Management Systems (4)	SCSC 430 Turf Maintenance (4)	MGMT 309 Survey of Management (3)
1. Demonstrate Knowledge of Physical, Chemical, Biological, and Hydrological Properties of Soil						R/D	I/R	R/D	R/D	R/D	R/D				I/R			R/D		
2. Demonstrate Knowledge of Plant Growth, Development, Production, Adaptation, and Improvement	R/D	I/R		R/D	D			I/R	I/R						I/R	I/R	I/R	R/D		
3. Demonstrate Knowledge of Soil-Water-Plant-Environment Interactions					D	R/D		R/D	R/D	R/D	R/D				I/R	I/R	I/R	R/D		
4. Demonstrate critical thinking and problem-solving skills	R/D			R/D	D	R/D	R	R/D	R/D	R/D	R	D	D		I/R	R/D	R/D	D		
5. Communicate Effectively	I			R/D	D	R/D	R			R/D	R				D	R/D		D		
6. Work Collaboratively					D	R/D	R			D					D	R/D		D		
7. Practice personal and social responsibility	I/R			R/D			R	R	R	D	R/D									
8.Demonstrate social, culutural, and global competence	I/R	I/R		D		R/D		R/D	R/D		R/D									
9. Prepare to engage in lifelong learning	R			R/D		R/D	R	D	D	D	R/D				D					
	Dir. El. 9 / Free El. 16-17					Dir. El. 6 / Free El. 15-16								Dir. El. 8 / Free El. 11-12						

	SCSC Core (36 - 37 hr)																	Crops Emphasis (40-41 hrs)					Soil and Water Emphasis (40-41)								Turfgrass (40-41 hrs)						
							Choose One			Choose Two				Choose One		Choose One													Choose One								
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1. Demonstrate Knowledge of Physical, Chemical, Biological, and Hydrological Properties of Soil		I	I	I	I/R								R										R/D	I/R	R/D	R/D	R/D	R/D				I/R			R/D		
2. Demonstrate Knowledge of Plant Growth, Development, Production, Adaptation, and Improvement		I		I/R	I								D					R/D	I/R		R/D	D			I/R	I/R						I/R	I/R	I/R	R/D		
3. Demonstrate Knowledge of Soil-Water-Plant-Environment Interactions		I	I	I/R	I/R						I	R	R	I								D	R/D		R/D	R/D	R/D	R/D				I/R	I/R	I/R	R/D		
4. Demonstrate critical thinking and problem-solving skills		I/R			I							R		I			D	R/D			R/D	D	R/D	R	R/D	R/D	R/D	R	D	D		I/R	R/D	R/D	D		
5. Communicate Effectively		I/R		I								D		D				I			R/D	D	R/D	R			R/D	R				D	R/D		D		
6. Work Collaboratively		I		I	I							R	R	D			D					D	R/D	R			D					D	R/D		D		
7. Practice personal and social responsibility		I		I	I								R					I/R			R/D			R	R	R	D	R/D									
8. Demonstrate social, culutural, and global competence													I	I				I/R	I/R		D		R/D		R/D	R/D		R/D									
9. Prepare to engage in lifelong learning		I		I	I								D				D	R			R/D		R/D	R	D	D	D	R/D				D					
																		Dir. El. 9 / Free El. 16-17					Dir. El. 6 / Free El. 15-16								Dir. El. 8 / Free El. 11-12						

CENTRAL GENERIC THEOLOGICAL SEMINARY

Curriculum Map: Concepts

Extent of coverage CODE: **5** A primary emphasis **4** A secondary emphasis **3** A moderate emphasis **2** Minimal coverage **1** Incidental coverage ☐ Not addressed

NOTE: This curriculum map depicts the weight or extent or coverage in courses of selected concepts and topics. Coverage is indicated for a range from Primary to "Not addressed." The map can help identify strengths of emphases and "gaps" in the curriculum.

Course	Adults	Art	Calling	Children	Christ	Church	Civil rights	Curriculum	Denomination	Discipleship	Doctrine	Ecology	Ecumenism	Evangelism	Family	Finances	Formation	Interpretation	Language	Literature	Media	Men	Ordinences	Ordination	Organization	Pastor	Philosophy	Politics \ War	Polity	Postmodernsm	Prayer	Psychology	Race Relations	Religions	Research	Science / Faith	Senior Adults	Sermon	Sex	Spiritual Gifts	Staff	Stewardship	Women	Worship	Writing	Youth
B1070 Models of Biblical Interpretation		3	2		3	3	3			3	4	3						5	5	3			2			4	3	3		4	3	3	3	2	5	3		4							5	
B1080 Topics in Biblical Interpretation					3	3	3			3	3	3						5	5	4						4	3	4		4	3	3	3		5	3		4				3			5	
B1091 Biblical Interpretation in the Church I	2	3	3		3	4	3			3	4	3						5	5	3			3			5	3	3		4	3	3	3	3	5	3		5					4	5	
B1092 Biblical Interpretation in the Church II	2	3	3		3	4	3			3	4	3						5	5	3			3			5	3	3		4	3	3	3	3	5	3		5					4	5	
B1111/2 Intro Old Testament I & II	3	2	3	2	3	3	4			3	4	3						5	5	3						3	2	3			2		3		4	3		4		3		3	3	5	
B1118 Humor in the Bible	2	4		2	2	3				2	3							5	5	3						2	2					4	2	2	5			3		2		4	2	5	
B1121/2 Intro Biblical Hebrew I & II											2							5	5	2						2		2				2		3		2		4				2	3	2	
B1123 Hebrew Readings		2			2	2					3								5	2						2	2					2			3	2		3					4	
B1125 Sin	3	2		3	4	4	3			3	5							5	5	3		3	3			5	4	3		2	2	4	3	2	5	4		4	2	2		3	2	5	3
B1135 Judges		2			2	2					3							5	5	2						2	2	3				2	3	2	3			3		3		4		4	
B1142 Jeremiah		2			2	2					3							5	5	2						2	3	3			2	2		2	3			3		2		2		4	
B1153 The Megilloth		2			2	2					3							5	5	3		3	2			2	3	2			3		3	4	3	3		3	3	2		4	3	4	
B1511/2 Intro New Testament I & II	3			3	2	5	4	2		3	3	3						5	5	4		3				3	2	2			3	2		3		4	2		3	2		4	2	4	
B1521/2 NT Greek I & II																		5	5	2						2	2					2						3		2		2			
B1531 The Gospel of John		2			3	2				3	3							5	4	3		2				3				2	2			2	3			2		3	3	3	3	4	
B1532 Greek Readings in Acts		2			2	2				2	2							5	5	2		2				2				2	2			2	2			2				3	2		
B1533 Acts (Eng)		2			2	2				3	2							5	4	3		2				3				2	3	2	2	2	3			2				3	3	4	
B1537 Greek Readings in the Gospel of Mark		2			3	2				3	3							5	5	2		2				2				2	2	2	2	2	2			2				3	2		
B1579 Women and New Testament Narratives	3	2	3	2	4	4	4			3	2							5	5	3		3				2		3		2	2	3		2	4		2	4	4	3		5	2	4	2
B1580 Christian Preaching about Jews and Judaism	2				4	4	3			3	4							5	5	3		3				3	2	3		2	2	4	4	2	4		2	4				3	2	4	
HT2111 Introduction to the Christian Tradition I & II	5	3				5	2			4															5					5															
HT2120 Creativity and Imagination: Women Leaders in Church	5	3				5				4			4				5								4																				
HT2123 Classics of Christian Literature	5					4				4			4				5																												
HT2125 Prayer in the Spirituality of the Ancient Church	5					4				4							5														5														
HT2140 Christianity and the Rise of Islam	5	3				4							5				5								4																				
HT2141 Monastic Roots in the Radical Reformation	5					5				4			4				4																												
HT2160 The Baptist Heritage	5					5			5	4			4				5								5				5	4														

Graduate Program Curriculum Map

I= introduced program outcomes and objectives for the course in reaching outcomes

R= course reinforces program outcomes and concepts

M= courses promote level of mastery

	Outcome	NEUR 5280 Intro Neuroscience	NEUR 5715 –Seminar (each semester)*	Neuroscience Speaker Series (weekly)**	NEUR 5100 Neuroanatomy	NEUR 5685 Neurophysiology	Neuroscience electives (3rd and 4th year)	NEUR 5980 Dissertation research	Qualifying Exams	Dissertation Defense
GOAL 1: Knowledge By graduation, students should have an advanced level of understanding of neuroscience, neuroanatomy, neurophysiology, as well as their major area of research. This knowledge is required to pass the qualifying exam for admission to PhD candidacy.	1.1 Demonstrate understanding of fundamental concepts	I	I,R,M	R	I	R	R, M	M	M	M
	1.2 Demonstrate understanding of advanced topics		I,R,M	R,M	I	R	R, M	M	M	M
GOAL 2: Communication Students should be able to communicate effectively their results and that of others.	2.1 Demonstrate communication skills using visual aids	I	I,R,M	R, M	I	R	R, M	M	M	M
	2.2 Demonstrate the ability to verbally communicate concepts and research	I	I,R,M	R,M	I	R	R,M	M	M	M
Goal 3. Scientific Proficiency Students should demonstrate the knowledge, research expertise, and methodology to become proficient Neuroscience researchers.		I	I,R,M	R,M	I	R	R,M	M	M	M

Five questions can help to promote an intentional mapping effort:

1. Purpose: What are we mapping and why?
2. Scope: What parts of the learning environment are included or left out by this approach?
3. Participation: Who should be involved in the conversations?
4. Form: How many layers do our maps need to make decisions and to address educational complexity?
5. Limitations: What ways of seeing are we excluding in our maps?

(Jankowski & Marshall, 2017)

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(Jankowski & Marshall, 2017)

Approach 1

A program or department chair, in isolation, completes the map based on a review of syllabi. The combined map is discussed at the program level.

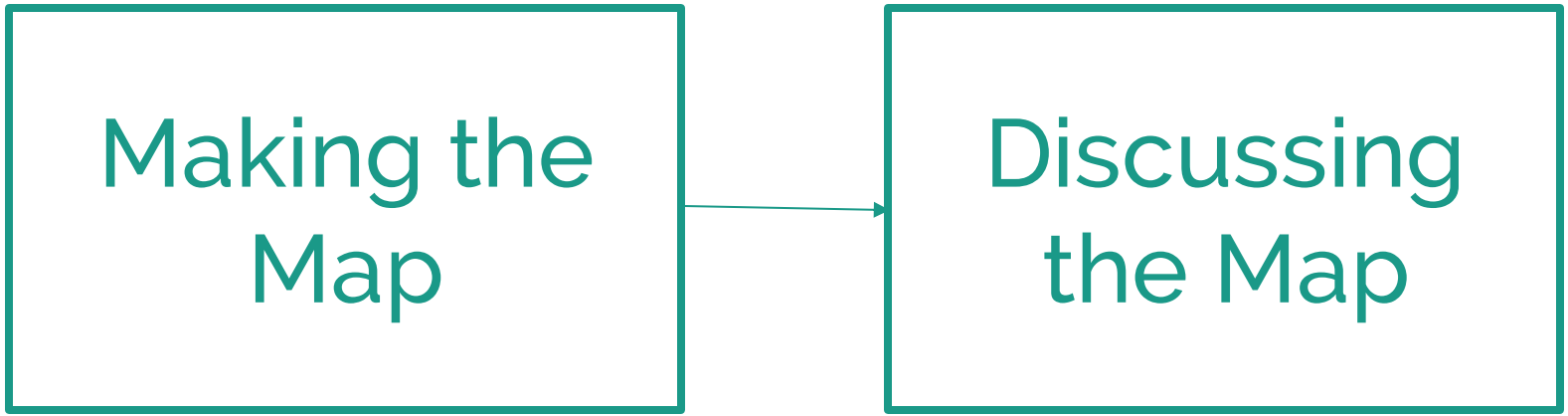
Approach 2

An excel spreadsheet is electronically sent around to faculty and individual faculty members complete the sheet based on the courses they teach. The combined map is discussed at the program level.

Approach 3

Faculty come together to identify where the learning outcomes are addressed within the courses.

Think, Pair, Share
Which curriculum map and approach do you like? What will work best for your progmam?


Making the Map
Discussing the Map

Map Discussion Questions

- In the key courses, are all outcomes addressed, in a logical order?
- Do all the key courses address at least one outcome?
- Do some outcomes get more coverage than others?
- Do students get practice on all the outcomes before being assessed, e.g., in the capstone?
- Do all students, regardless of which electives they choose, experience a coherent progression and coverage of all outcomes?

Activity
Based on the following map, what are two questions that you would ask the program?

	SCSC Core (36 - 37 hr)																	Crops Emphasis (40-41 hrs)					Soil and Water Emphasis (40-41)								Turfgrass (40-41 hrs)						
							Choose One			Choose Two				Choose One		Choose One													Choose One								
SCSC Department	CHEM 222 Elements of Organic and Biological Chemistry (3)	SCSC 205 Problem Solving in Plant and Soil Systems (3)	SCSC 301 Soil Science (4)	SCSC 307 Crop Biology and Physiology (4)	SCSC 309 Water in Soils and Plants (4)	SCSC 481 Senior Seminar (2)	SCSC 484 Internship (3)	SCSC 491 Undergraduate Research (3)	Study Abroad (3)	PLPA 301/PLPA 301L Plant Pathology and Plant Pathology Lab (4)	ENTO 201 General Entomology (3)	ENTO 401 Principles of Insect Pest Management (3)	SCSC 446 Weed Management and Ecology (3)	RENR 205 Fundamentals of Ecology (3)	SCSC 444 Forage Ecology and Management (3)	STAT 302 Statistical Methods (3)	ESSM 313 Sampling Methods and Designs of Ecosystems (3)	SCSC 304 Plant Breeding (3)	SCSC 311 Principles of Crop Production (3)	SCSC 402 Crop Stress Management (4)	SCSC 410 International Agricultural Systems (3)	SCSC 441 Crop Production (3)	SCSC 310 Soil Morphology and Land Use Interpretations (2)	SCSC 405 Soil and Water Microbiology (4)	SCSC 422 Soil Fertility and Plant Nutrient Management (3)	SCSC 432 Soil Fertility and Plant Nutrient Management Lab (1)	SCSC 455 Environmental Soil and Water Science (3)	SCSC 458 Watersheds and Water Quality Management (3)	GEOG 390 Principles of Geographic Information Systems (3)	ESSM 351 Geographic Information Systems and Resource Management (3)	SCSC 302 Recreational Turf (3)	SCSC 312 Introductory Turf Management Lab (1)	SCSC 427 Sports Field Construction (4)	SCSC 428 Advanced Turf Ecology and Physiology (3)	SCSC 429 Turf Management Systems (4)	SCSC 430 Turf Maintenance (4)	MGMT 309 Survey of Management (3)
1. Demonstrate Knowledge of Physical, Chemical, Biological, and Hydrological Properties of Soil		I	I	I	I/R								R										R/D	I/R	R/D	R/D	R/D	R/D				I/R			R/D		
2. Demonstrate Knowledge of Plant Growth, Development, Production, Adaptation, and Improvement		I		I/R	I								D					R/D	I/R		R/D	D			I/R	I/R						I/R	I/R	I/R	R/D		
3. Demonstrate Knowledge of Soil-Water-Plant-Environment Interactions		I	I	I/R	I/R						I	R	R	I								D	R/D		R/D	R/D	R/D	R/D				I/R	I/R	I/R	R/D		
4. Demonstrate critical thinking and problem-solving skills		I/R			I							R		I			D	R/D			R/D	D	R/D	R	R/D	R/D	R/D	R	D	D		I/R	R/D	R/D	D		
5. Communicate Effectively		I/R		I								D		D				I			R/D	D	R/D	R			R/D	R				D	R/D		D		
6. Work Collaboratively		I		I	I							R	R	D			D					D	R/D	R			D					D	R/D		D		
7. Practice personal and social responsibility		I		I	I								R					I/R			R/D			R	R	R	D	R/D									
8.Demonstrate social, culutural, and global competence													I	I				I/R	I/R		D		R/D		R/D	R/D		R/D									
9. Prepare to engage in lifelong learning		I		I	I								D				D	R			R/D		R/D	R	D	D	D	R/D				D					
																		Dir. El. 9 / Free El. 16-17					Dir. El. 6 / Free El. 15-16								Dir. El. 8 / Free El. 11-12						

If you were to start curriculum mapping, what would be your next step?

Thank you