Utilization of RxOutcome™ to Develop Curricular Integration Content Mapping

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Objectives/Intent:

To prepare pharmacy graduates to function in integrated healthcare systems and manage patients with complex medication profiles as defined by the CAPE Educational Outcomes, curricular integration is critical to promote appropriate breadth and depth in students' learning progression throughout their pharmacy education. The goal of curricular integration is to ensure that the intended curriculum, enacted curriculum, learned curriculum, and assessed curriculum are all aligned and to demonstrate achievement of curricular and programmatic outcomes.[1]

- Intended curriculum = What is listed in catalog
- Enacted curriculum = What is in course syllabi
- Learned curriculum = What is actually taught
- Assessed curriculum = What is assessed

The establishment of curricular integration requires intricate and elaborate planning of the course content. This education development model outlines the use of an electronic learning management system, RxOutcome™, to develop a comprehensive course content mapping and tracking system to monitor and manage the development and delivery of the didactic curriculum at CUSP.

Methods:

Using the course schedule in the course syllabi, faculty were asked to map each topic/subject to Appendix 1 and cognitive levels that aligned with the existing "Course to ACPE Appendix I Map". Five criteria were submitted to RxOutcome™ to set up the curricular content mapping. Primary criteria were: Course identification number, ACPE Appendix I (domains and sub-domains), and Subjects (disease states or non-disease related topics). Secondary criteria were Cognitive/behavioral levels (Foundational-1F, Intermediate-2I, Advanced-3A, or Mastery-4M) and Number of Contact Hour.

Process:

Step 1: Examples of source documents from course syllabi (T1 and T5) developed by faculty/course coordinators

Course ID: PHRM571 (T1)

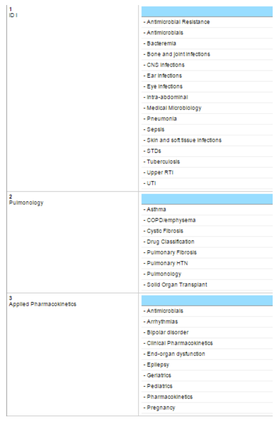
Week	Topic	Appendix 1	Cognitive Level	Contact Hours
1	Introduction to the U.S. Health Care System	SABS1	1F	2
1	Navigating the US Health Care System	SABS1	2I	1
2	Historical Makeup of the US Healthcare System	SABS11	1F	2
2	Interprofessional Care	SABS9	1F	1
3	Basics of Pharmacoeconomics	SABS2	1F	1
3	Pharmaceutical Care and MTM	SABS10	2I	2
4	Medication adherence/use process	CS9	1F	1
4	Medication adherence/use process	SABS1	2I	2
5	Health Insurance Basics & Medicare/Medicaid	SABS1	2I	2
5	International Health Care	SABS1	2I	1
6	Medication Safety and Error prevention	CS4	1F	1
6	Health Disparities & Public Health	CS3	1F	2
7	PBMs & Managed Care	SABS3	3A	3
8	Pharmacy Industry and FDA	SABS1	2I	1
8	Pharmacy Industry and FDA	PS2	1F	1
8	Post-Marketing Surveillance	SABS3	1F	0.5
8	Post-Marketing Surveillance	SABS4	1F	0.5
9	Specialty Pharmaceutics	SABS1	2I	2
9	Specialty Pharmaceutics	SABS3	1F	1
10	Affordable Care Act	SABS1	2I	2
10	Affordable Care Act	SABS3	1F	1
11	Health Policy Formation and Impact	SABS1	2I	2
11	Health Policy Formation and Impact	SABS10	1F	1
12	Pharmacy Associations and Leadership	SABS10	2I	3
13	Health Informatics	CS2	2I	2
13	Quality Improvement	SABS3	2I	0.5
13	Quality Improvement	SABS9	1F	0.5
14	Future of Pharmacy	SABS11	2I	2
14	Future of Pharmacy	SABS10	2I	1

Couese ID: PHRM552 (T5)

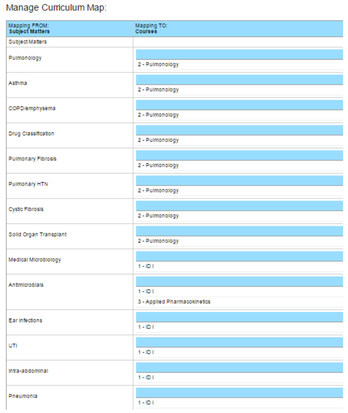
Week	Topic	Appendix 1	Cognitive Level	Contact Hour
1	Medical Bacteriology	BS4	4M	3
1	Diag Microbio & Pathogenesis	BS4	3A	4
1	Intro to antibacterial med chem	PS5	3A	2
2	Med Chem β-lactams	PS1	3A	1.5
2	Pharmacology β-lactams	PS5	3A	1.5
2	Med Chem quinolones, anti-folates, metronidazole, dapto	PS1	3A	2
2	Pharmacology quinolones, anti-folates, metronidazole,	PS5	3A	2
2	Med Chem aminoglyosides, vanco, polymyxins	PS1	3A	1
2	Pharmacology aminoglyosides, vanco, polymyxins	PS5	3A	1
3	PK of β-lactams, quinolones, Vanco, aminoglyosides, polymyxins	PS8	3A	3
3	MOA protein synthesis inhibitors, antimycobacterials	PS1	3A	2
3	Pharmacology protein synthesis inhibitors, antimycobacterials	PS5	3A	2
3	Antibiotic resistance mechanisms	BS4	3A	1
3	MDR Organisms	BS6	3A	1
4	UTI, prostatitis, Intra-abdominal infections	CS8	4M	3
4	Pneumonia (HAP, VAP, CAP, HCAP), Upper respiratory tract infections	CS8	4M	4
4	SSTIs, osteomyelitis	CS8	4M	2
5	Meningitis, Bacteremia/Endocarditis/Sepsis	CS8	4M	3
5	Tuberculosis, Otitis Media	CS8	4M	4
5	Conjunctivitis, *C. difficile*	CS8	4M	2

Step 2: RxOutcome™ only permits mapping of 2 primary criteria, therefore 2 separate reports are generated to include "Course to Subjects" and "Subjects to Appendix I" mapping with reverse mapping capability to provide visual evaluations of initial curriculum development.

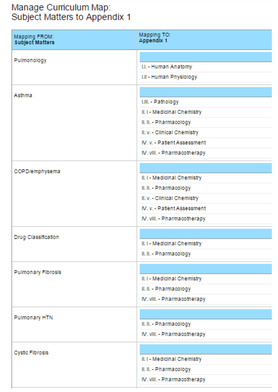
Course to Subject



Subject to Course – Reversed Mapping

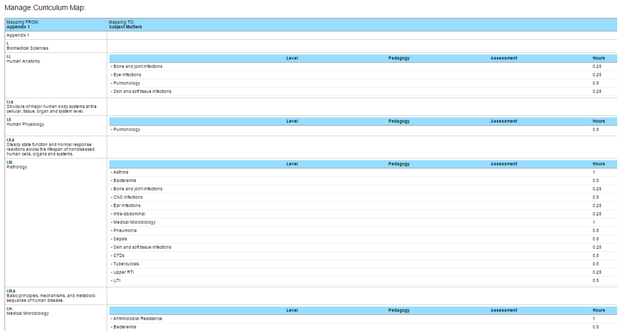


Subject to Appendix 1



Appendix 1 to Subject -Reverse Mapping Plus
Secondary criteria: Cognitive Level and Contact Hour

Manage Curriculum Map:



Step 3: Data will be exported to Excel for data analyses

Objective	Criteria To Be Used
Breath and Depth	Subject, # of Contact Hour, and Cognitive Level
Vertical Integration	Course, Subject, and # of Contact Hour
Horizontal Integration	Course, Subject, and Cognitive Level
Spiral integration	Course, Subject, # of Contact Hours and Cognitive Level

Step 4: Inclusion of learner assessment and faculty feedback data to evaluate curricular integration outcome & effectiveness. Data to be used:

1) ExamSoft™ summative assessment data (question items, checklist, and rubrics performance and their coding to the categories)
2) PCOA results
3) Tracking of content delivery per CUSP Flipped Framework (Institutional teaching and learning plan)
4) Faculty reflection and survey

Implications

- Step 1 and Step 2 will be expected to undergo continual refinement as the curriculum matures
- Step 2 provides faculty and staff a rapid feedback on the content and balance of the planned curriculum, and to recognize for major curriculum deficiencies, therefore allowing efficient adjustment of the curriculum if needed for each cohort of student pharmacists.
- Step 3 provides concrete evidence from the criteria data of our curriculum design that is supported by the principles of curriculum integration.
- Step 4 utilizes evidence-based approach to comprehensively determine the effectiveness of the curriculum.

This content mapping approach allows for a global examination of the didactic curricular integration. This organized approach enables alignment with the assessment outcomes to precisely identify areas of strength and weakness of the curriculum for continual improvement.

Acknowledgements

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References

1 A curriculum Committee Toolkit for Addressing the 2013 CAPE Outcomes. AACP Curriculum SIG Writing Group.